Long-term justification of self-tender announcement return

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Abstract

This study researches the return around self-tender announcements, the possible justification in relation to returns two to five years after the announcement and if firm/offer characteristics can significantly explain differences in the level of justification. A significant, excess return around the announcement was identified of 2.1% for both the normal and abnormal return, confirmed to be significantly justified at 1 percent on a two and three year basis regarding the normal return and on a two to five year basis for the abnormal return. Several characteristics are identified that can explain the level of justification. Concerning the normal return on a two year basis, a firm noting a low deal value and high cash-to-enterprise value ratio, will most likely justify their initial excess return; on a three year basis, a low deal and equity value achieves the same result. Regarding the abnormal return on a two to five year basis, pursuing a high premium will achieve justification.

Keywords: Self-tender offer, Dutch auction offer, fixed-price offer, announcement period, self-tender announcement, initial excess return, average long-term excess return, justification and firm/offer characteristics.

Contents

1 Introduction

1.1 Defensive Measure

The share repurchase has gained enormous popularity since the 1970's: whereas the total value of US repurchases amounted to 3.4 billion US dollar in 1977 according to Bagwell and Shoven (1989), that amount has grown to 806 billion US dollar in 2018 (Rooney, 2019). This study concerns itself with a specific form of the share repurchase that is used as a response to defend against a hostile takeover: the self-tender offer.

There are two specific types of self-tender offers:

- Fixed-price: a single purchase price, amount of shares sought and expiration date is specified in advance; in the case of over-subscribing, the firm is bounded by the number of shares sought (Lie & McConnell, 1998).

- Dutch auction: a single number of shares sought is specified in advance, but instead of a specified offer price, a price range is established by interviewing each shareholder willing to sell about an acceptable selling price and number of shares sought. The offering firm determines the lowest price acceptable to reach the number of shares sought. In case of over-subscribing, the firm is bounded by the number of shares sought (Lie & McConnell, 1998). The Dutch auction offer allows the firm to buy a certain amount of shares for the smallest price possible. The cost savings this provides can explain the rising popularity of Dutch auction offers (Kamma, Kanatas and Raymar (1992).

One can distinguish four hypotheses describing how the self-tender offer could accomplish to defend against a hostile takeover. Bagwell (1991) modelled that the cost of a potential takeover increases if the target firm chooses to distribute cash using a share repurchase rather than cash dividends, assuming an upward-sloping supply curve for shares. The shareholders willing to sell in a share repurchase systematically value their shares lower than the shareholders who do not. This skews the remaining shareholders towards a higher value, thus increasing the potential cost for an acquirer.

Bagnoli, Gordon and Lipman (1989) developed a model in which stock repurchases convey private information about the firm value to the market. A manager only chooses to repurchase shares in an attempt to block a takeover if the cost is not too high. Assuming that the cost of a share repurchase is inversely related to the firm value, a repurchase will signal that the firm value is relatively high, thus potentially deterring a takeover.

Thirdly, Harris and Raviv (1988) and Stulz (1988) observed that a share repurchase could increase the control of voting rights of the manager. This makes it more difficult for an acquirer to gain control over the target and also decreases the potential gain for an acquirer, under the assumption that the control of voting rights of the manager is already relatively high.

An implicit assumption in the previous hypotheses is that the manager that initiates the share repurchase has a large holding in the firm. Sinha (1991) developed a model that is also applicable to firms where management has a small holding. A debt-financed share repurchase, according to Sinha, can function as a takeover defence if it is used to increase investment and reduce the amount of perquisite consumption, resulting in a value increase of the firm reducing the attractiveness as a target. This relevant role for debt as a defence mechanism is confirmed by Israel (1991), noting that the probability that a firm becomes a target decreases in the amount of leverage.

1.2 Price Reaction

This covers the theoretical background that regards the self-tender offer. This study revolves around researching an empirical regularity concerning the self-tender offer, first established by Dann (1980), Masulis (1980) and Vermaelen (1981). US firms which announced a tender offer between roughly 1962 and April 1978 experienced a permanent, abnormal stock price increase within one day from the announcement, which according to Vermaelen (1981) and Dann (1980) is explained by the *information signalling hypothesis*: a firm only chooses to repurchase shares at a premium if it possesses positive information about future performance, which conveys the information that the company is undervalued.

This hypothesis, which Vermaelen (1984) covered more extensively, is based on the assumption that the manager shareholder that initiates the share repurchase does not participate in the tender offer. This ensures that false signalling is costly to the manager. False signalling occurs if a manager shareholder determines a premium on a tender offer that exceeds the degree of undervaluation of the stock. The part of the premium that exceeds the fair market price is essentially equal to a dividend only benefitting the tendering shareholders, at the expense of non-tendering shareholders, of which the manager shareholder is one. This also explains why Vermaelen (1981) observes that share repurchases are mostly undertaken by small firms: the shares of such firms are mostly held by insiders, which makes false signalling very costly for those insiders; additionally, small firms receive less attention from investment analysts, which makes them more likely to be undervalued, thus strengthening the signalling power. Empirical evidence supporting that managers do not tender their shares is provided by Comment and Jarrell (1991) and Vermaelen (1981): managers, in practice, are often not allowed to sell the shares they own.

The second explanation for the positive price reaction is the *free cash flow hypothesis*, provided by Jensen (1986). Firms that hold greater amounts of cash than neccesary for profitable investment might be confronted with investments in projects with a net present value (NPV) lower than zero, reducing the firm value. The self-tender could function as a means to lower the amount of cash to reduce possible agency costs and avoid value-destroying investments. Joy and Vafeas (1995) confirm Jensen's hypothesis, reporting a significant relation between a reduction in free cash flow and abnormal stock returns around the announcement of a share repurchase, as well as Lie (1996) reporting that firms with large cash levels and low-NPV investment opportunities earn higher self-tender announcement period returns. Grullon and Michaely (2004) note that the market reaction is more positive towards repurchasing firms that are more likely to overinvest.

These two theories are the fundament of this study in explaining the price reaction around the announcement of a self-tender offer. This price reaction first has to be understood more extensively, with a focus on the size. Dann (1981), Masulis (1981) and Vermaelen (1981) observe on average a significant, positive, abnormal price reaction of 15 percent around the announcement of a tender offer. Comment and Jarrell (1991) modelled the distinction between the two different types of self-tender offers and noted that the fixed-price self-tender reported a significant excess return of 11 percent on average, whereas the excess return on the Dutch auction offer was just under 8 percent. This finding is confirmed by Persons (1994) & Lee, Mikkelson and Partch (1992), indicating that the fixed-price self-tender is a more effective signal of undervaluation. Persons argues that this is because a manager reduces the firm risk exposure to arrivals of new information about the firm value by choosing a Dutch auction offer. This makes the fixed-price offer a more credible sign of undervaluation. It should be noted that Lie and McConnell (1998) modelled the same distinction and found no difference in announcement-period excess return, with both self-tender offers reporting 8 percent excess return.

Moreover, now the size of the price reaction has been discussed, the question is: what factors influence the size of the price reaction? Vermaelen (1984) reports that the fraction of insider holdings, the target fraction and the premium offered, positively influence the price reaction; Comment and Jarrell (1991) note that the price reaction is greater following negative net-of-market stock returns and confirm that it increases in the fraction of shares sought. Lakonishok and Vermaelen (1990) add to this that in the 40 months preceding the announcement, smaller firms earned negative abnormal returns of 35 percent, with positive, abnormal returns of 24 percent after the announcement. This is consistent with the hypothesis that, on average, these firms were undervalued. Large firms, on the other hand, experienced positive abnormal returns preceding the announcement and abnormal returns close to zero after the announcement of the share repurchase, suggesting that for larger firms undervaluation does not play a relevant role.

Related to the size of the price reaction, the extent of the permanency has also been researched extensively. Permanent in terms of a price reaction is defined in this study as not reverting to the pre-announcement date price level in the relevant time span. Lakonishok and Vermaelen (1990), as mentioned earlier, report that a portfolio of share repurchasing companies earned significantly positive, abnormal returns in the two years after the tender period, mostly due to the behaviour of small firms. Ikenberry, Lakonishok and Vermaelen (1995) examined the long-run performance of share repurchasing firms, with a distinction between value and glamour stocks. In the four year after the announcement, the abnormal buy-and-hold return including both value and glamour stocks is 12 percent, whereas the abnormal return of just value stocks was, on average, 45.3 percent. Additionally, Peyer and Vermaelen (2007) observe even decades later that there still are significant, abnormal returns in the 4 years after the share repurchase announcement, with the largest returns for firms that experienced a negative price drop in the 6 months prior to the announcement. This is in line with earlier research and is empirically confirmed by survey results of Brav, Graham, Harvey, and Michaely (2005), reporting that of all interviewed CFO's 90 percent "agree or strongly agree" with the statement that one should buy back stock if shares are undervalued.

1.3 Research Goal

This covers the theoretical framework that will function as the fundament of the design of this study. The purpose of this paper is threefold. The first goal is to determine to what extent a significant, positive excess return around a self-tender announcement (*initial excess return* from this point onward) is to be found for US companies using a dataset from 1985 until 2014; this will be done for both the normal and abnormal excess return.

To continue with the second goal, this study will first establish the average long-term excess return after the self-tender announcement for US firms on a two to five year basis. A two to five year basis means that it will be calculated for the first two, three, four and five years after the announcement. By using a similar time horizon as Lakonishok and Vermaelen (1990), Ikenberry, Lakonishok and Vermaelen (1995) & Peyer and Vermaelen (2007), this study can build upon and extend their research regarding the long-term excess return.

The second goal of this study is to examine whether there is a significant relation between the excess return around the self-tender announcement and the average long-term excess return and thus to what extent the initial excess return is justified in the long-run, using univariate and multivariate Ordinary Least Squares (OLS) regression analysis. Justification is defined in this study as the degree to which the initial excess return is validated by an average long-term excess return of the same sign and a greater or equal size.

The third and last goal is to quantify this concept of justification by establishing a justification variable that measures the level of justification of the initial excess return in the long-run. This variable will be used to determine if there are firm and offer characteristics that can significantly explain differences in the level of justification and, if so, if those characteristics can be used to predict if the initial excess return of a self-tender offer announcement will be justified in the long-run.

The selection of firm and offer characteristics that will be tested are based on the academic literature, in particular the *information signalling hypothesis*, indicating that prior stock returns which may or may not have lead to undervaluation could have explanatory value for the initial excess return and the average long-term excess return and thus the level of justification and the *free cash flow hypothesis*, indicating that a high amount of cash relative to low NPV-investment opportunities, which has explanatory value regarding the initial excess return, could have explanatory value for the level of justification as well.

Moreover the factors that influence the size of the initial excess return can also potentially significantly explain the level of justification, namely the target fraction, the premium offered, the size of a firm and whether a self-tender is a Dutch auction or not. One factor that influences the size of the initial excess return is not included, the fraction of insider holdings, because of a lack of data. The book-to-market-value (BM), which determines whether stocks are value or glamour stocks and thus influences the size of the long-term abnormal excess return, may also significantly explain the level of justification. Lastly, the deal value, the earnings per share (EPS) and whether an self-tender offer was completed or not, which are generally relevant in this field of research, are tested.

The main question that will be answered with this study, integrating the threefold purpose, is: *is there a significant, positive price reaction on average around self-tender announcements for US firms between 1985 and 2014, is this price reaction justified on a two to five year basis using a stock return perspective and are there firm or offer characteristics that can explain differences in the level of justification?*

By providing an answer to the main question, this study adds to the current academic literature in three ways:

- Researching the price reaction around self-tender announcements for a much larger dataset of 30 years and using more recent data than has been established in the academic literature.
- Researching the extent to which the initial excess return is justified using a five-year, long-term perspective, whereas the current academic literature has only established that repurchasing companies earn abnormal returns for at least four years after the announcement without relating the initial excess return to the long-term excess return.
- Researching firm and offer characteristics that could potentially explain whether an initial excess return will be justified in the long run, which is a new research topic regarding self-tender offers.

The knowledge provided by this study can be helpful for investors applying systematic trading methods on the basis of quantitative models, as does for example the hedge fund Renaissance Technologies. The study provides such investors information concerning how one can maximize the statistical likelihood of maximizing returns by exploiting the empirical relation between the initial excess return and the average long-term excess return, using the relevant firm and offer characteristics to determine the stocks with the highest return potential. This can be in itself the basis of a quantitative investment model.

This study consists in total of four sections, with this introduction as section I. In section II the relevant sample criteria and the complete data collection process will be discussed, as well as an extensive description of the methodology that has been applied to establish the initial excess return, average long-term excess return, the justification variable and an account of the univariate and multivariate OLS regressions that are used to answer the main question. In section III the answer to the main question will be provided along with it's economic meaning and lastly, in section IV, this study will conclude with a summary of the findings, reflect on the design of the research itself and make recommendations for future research.

2 Data and Methodology

2.1 Data

The data sample of self-tender offer announcements has been collected with the use of Thomson One. Thomson One has data for 3906 self-tender offers. The following criteria have been used to fine tune the sample:

- Company must be listed and active in the United States. The choice to use only data for US companies is mainly because this data is the most extensive and easily collectible. Using this dataset does not lead to data snooping, the bias that ensues if a single dataset is used more than once for model inference, as this study uses a larger dataset with more recent data than has been applied in the academic literature.

- The self-tender offer must have been active between 1985 and 2014. This period was chosen with the target of using as wide a time range as possible, as maximizing the amount of data helps avoid the problem of noise, caused by the ever changing environment of stock returns, which could result in a lack of statistical power: even if there was a significant relation between two variables, one would not be able to reject the null hypothesis (Chan & Lakonishok, 1993). 1985 is the first year that sufficient data related to firm and offer characteristics is available, thus the 1st of January 1985 is chosen as the start of the timeframe and the last date is the 31st of December 2014, leaving five years of price data at the end of the timeframe, neccesary to determine the average long-term excess return on a two to five year basis.

- The self-tender offer must not be done by a company that is active in the financial or real estate sector. The balance sheet has a very different meaning for companies active in these sectors compared to other sectors. A bank or real estate firm with 30 billion in assets is relatively small, but for any other sector this would be a very large amount. Including these sectors would very likely skew the results (Ritter & Welch 2002).

Using these criteria in Thomson One results in a dataset with 1005 self-tender announcements. Thomson One also provides most of the data related to the relevant firm and offer characteristics, which were discussed in the introduction. The following variables are collected regarding the 1005 self-tender announcements in the dataset: the deal status, a dummy variable stating whether the self-tender offer is a Dutch auction or not, the fraction of the total shares outstanding that is sought, EPS, BM, the equity value, the enterprise value, the deal value, the amount of cash held by a company and the tender price the firm is willing to pay in the self-tender offer. Lastly, the 6-digit CUSIP is identified for each company, which will be used to collect the price data from the Center for Research in Security Prices (CRSP).

This study uses the CRSP stock price data to calculate daily stock returns, which are the basis of the initial excess return and the average long-term excess return. Regarding the in total 1005 self-tender offers, there was price data available for 918 related to 674 companies. As to ensure a five-year margin on both sides of the event date time frame, the price data is collected from the 1st of January 1980 until the 31st of December 2019, making it possible to calculate the average long-term excess return on a two to five year basis after and before the announcement.

The variables collected in CRSP are: company name, ncusip, daily stock price at the end of a trading day, dividend paid, the return on the S&P500 including dividend and the daily risk-free rate on 26-week bills. The dividend paid is used to correct the daily stock price by subtracting it from the daily stock price to determine the adjusting closing price. CRSP data uses trading days, which thus automatically corrects for weekends and holidays. As this study researches stock returns, one can assume heteroscedasticity and the absence of autocorrelation. To correct for the heteroskedasticity, White Standard errors have been applied in each regression.

Table 2.1: Descriptive Statistics

Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Med**	**Max**
Normal	810	.0213	.0363	-.0592	.0142	.3553
Normal2	610	.0017	.0358	-.0459	.0004	.8833
Normal3	541	.0015	.0255	-.0314	.0004	.5913
Normal4	481	.0005	.0013	-.0034	.0003	.0158
Normal5	440	.0005	.0011	-.0029	.0004	.0127
Normal2Prior	683	.0006	.0032	-.0277	.0003	.0669
Normal3Prior	628	.0005	.0023	-.0185	.0003	.0467
Normal4Prior	574	.0005	.0019	-.0138	.0003	.0357
Normal5Prior	527	.0005	.0015	-.0108	.0003	.0284
AbnormalReturn	781	.0213	.0372	-.0604	.0144	.3545
AbnormalReturn2	590	.0015	.0366	-.0682	.0001	.8834
AbnormalReturn3	523	.0013	.0262	-.0683	.0001	.5915
AbnormalReturn4	465	.0001	.004	-.0684	.0000	.0155
AbnormalReturn5	424	.0001	.0041	-.0681	.0001	.015
AbnormalReturn2Prior	658	.0002	.0042	-.0265	.0001	.066
AbnormalReturn3Prior	599	0	.0035	-.0242	.0000	.0385
AbnormalReturn4Prior	546	0	.0033	-.0147	-.0001	.0366
AbnormalReturn5Prior	504	-.0001	.0031	-.0121	-.0002	.0267
Completed	810	.7407	.4385	0	1	1
DutchD	810	.4346	.496	0	0	1
FractionSought	614	22.2554	20.1013	.024	16.6695	100
EPS	745	.4736	21.2849	-473.8462	.5725	176
BM	725	3.7457	7.0437	0	1.8040	86.855
Equity	635	2810.663	12572.67	.07	354.171	252479.8
Enterprise	623	3417.666	14193.52	.253	398.6880	218318.8
DealValue	658	278.26	778.6064	.009	50.1850	10705.26
CashValue	602	.3334	2.3468	-.107	.1295	56.7273
Premium	634	7.3275	74.4841	-135.75	1.7850	1508.28
JustNormal2X	597	-.2655	6.0504	-107.5838	.0085	38.2552
JustNormal3X	529	-.232	5.1156	-64.4474	.0090	40.1439
JustNormal4X	471	-.083	4.0438	-53.9769	.0115	27.0057
JustNormal5X	431	.0141	3.0246	-38.3657	.0137	21.3714
JustAbnormal2X	590	-.1169	4.0847	-90.7364	.0120	25.3951
JustAbnormal3X	523	.0676	1.613	-12.2936	.0122	26.8971
JustAbnormal4X	465	.0364	1.4723	-11.2754	.0092	22.6534
JustAbnormal5X	424	.0772	1.8792	-11.5799	.0134	28.7521

The exact definition of each variable is available in the appendix. In the descriptive statistics in Table 2.1 two things stand out. The normal and abnormal excess return around the event date is larger than the excess return in subsequent years, with the average return declining almost every year. It seems the effect of the announcement thus declines the more one moves away in time. It can also be noted that the average value for the normal and abnormal return is positive for each year recorded.

The second thing concerns the amount of observations; it can readily be observed that the amount of observations declines the further one moves forward or backwards in time, away from the announcement date, with a stronger decline in the years after the announcement. A large amount of companies become inactive on the stock market earlier than five years subsequent to the event date. The difference in the amount of observations regarding the normal and abnormal return is the result of a lack of data for the control period used to calculate the abnormal excess return, which is not used for the calculation of the normal return.

2.2 Methodology

2.2.1 Initial Excess Return

The introduction established that essentially three separate variable concepts have to be defined and calculated to answer to the threefold purpose of this study: the initial excess return, the average long-term excess return and the justification variable. These concepts have to be defined for both the normal and abnormal excess return.

The initial excess return is the first variable concept to be established. The test period is equal to [-1,1] for both the normal and abnormal return and thus comprises three days around the self-tender announcement. The calculation of the normal initial excess return initiates with calculating the change in stock price on each of the three days in the test period, based on the adjusted closing stock price. This is adjusted by subtracting the risk-free rate to establish the excess normal return per day. The variable Normal is now calculated by averaging the return of these three days.

The calculation of the abnormal initial excess return is performed by using the market model. Brown and Warner (1980) noted that, beyond the market model, they found no evidence that a more complicated methodology would perform better. The parameters of the market model are estimated on the basis of the control period [-110, -11], a commonly used period that worked well with the data of this study, and the following three regressions:

$$\mathrm{R}_{i,t} = \mathrm{r}_{i,t} - \mathrm{r}_{f,t} \tag{1}$$

$$\mathrm{R}_{m,t} = \mathrm{r}_{m,t} - \mathrm{r}_{f,t} \tag{2}$$

$$\mathrm{R}_{i,t} = \alpha_{i,t} + \beta_{i,t}\mathrm{R}_{m,t} + \epsilon_{i,t} \tag{3}$$

The excess return on a specific day for a specific self-tender, $\mathrm{R}_{i,t}$ in regression 1, is equal to the normal return, $\mathrm{r}_{i,t}$, minus a risk-free rate, $\mathrm{r}_{f,t}$. The market excess return for a specific day, $\mathrm{R}_{m,t}$ in regression 2, is equal to the normal market return, $\mathrm{r}_{m,t}$, minus a risk-free rate, $\mathrm{r}_{f,t}$. The daily return on the S&P500 including dividends is used as a proxy for the market and thus as $\mathrm{r}_{m,t}$. Using regression 1 and 2, α_i and β_i in regression 3 can be estimated. The excess return on a specific day for a specific self-tender, $\mathrm{R}_{i,t}$, is equal to α_i, the daily excess return that is not explained by the market, plus β_i, the sensitivity of the daily excess return to the market, which is multiplied by $\mathrm{R}_{m,t}$, the daily excess return on the S&P500 including dividends, plus a statistical error term which is, on average, assumed to be zero.

With the use of the estimated parameters, the expected excess return in the test period can be estimated for a specific self-tender on a specific day on the basis of regression 4. The abnormal return for a specific company on a specific day, $A\mathrm{R}_{i,t}$ in regression 5, is equal to the realized excess return minus the expected excess return:

$$\hat{\mathrm{R}}_{i,t} = \hat{\alpha}_i + \hat{\beta}_i\mathrm{R}_{m,t} \tag{4}$$

$$A\mathrm{R}_{i,t} = \mathrm{R}_{i,t} - \hat{\mathrm{R}}_{i,t} \tag{5}$$

The abnormal return is determined for each of the three days in the test period by applying the market model as described. The variable Abnormal-Return is now calculated by averaging the daily abnormal excess return.

Three relevant data adjustments that are applied in case of a lack of data still have to be discussed:

- A self-tender offer is removed from the dataset indefinitely if it does not have data regarding either the normal or abnormal initial excess return.
- If a self-tender offer does not have price data for the full extent of the test period or the control period, it is temporarily removed from the dataset and will be restored after the relevant calculation is applied; thus, if a self-tender offer lacks data for a certain calculation, but provides sufficient data for a different calculation, the latter calculation will still be applied.
- If the announcement date is a non-trading day, the next trading day is assumed to be the announcement date.

2.2.2 Average Long-Term Excess Return

The second variable concept, the average long-term normal and abnormal excess return on a two to five year basis after and before the announcement, in total compromising sixteen variables, is now to be established.

This starts with the average, long-term normal excess return on a two to five year basis after the announcement. The test period spans between the second day after the self-tender announcement and respectively two, three, four and five years after the self-tender announcement. For each day in the test period, the change in stock price is calculated. The second day after the announcement is the starting point of the test period, because the return calculation of the initial excess return and long-term excess return are not allowed to overlap, as it will inflate the R^2 in the regression with the long-term excess return as independent variable and the initial excess return as dependent variable. The return is adjusted by subtracting the risk-free rate to determine the daily normal excess return. At last, Normal2, Normal3, Normal4 and Normal5 are calculated by averaging the daily normal excess return for the four test periods.

The calculation of the average long-term abnormal excess return on a two to five year basis after the announcement is based on the market model, with a control period of [-110,-11], similar to the calculation of AbnormalReturn; using a consistent control period is important to ensure that the resulting variables are comparable. The test period spans from the second day after the announcement and respectively two, three, four and five years after the announcement. The abnormal return is estimated for each day in the test period using the market model. The risk-free rate is subtracted to determine the daily abnormal excess return. AbnormalReturn2, AbnormalReturn3, AbnormalReturn4 and AbnormalReturn5 are now calculated by averaging the daily abnormal excess return over the four test periods.

The average long-term normal and abnormal excess return on a two to five year basis before the announcement are now to be established, starting with the normal return. The change in stock price is calculated for each day between the second day before the self-tender announcement and respectively two, three, four and five years before; the choice to end the test period at the second day before the announcement is again to avoid inflating the R^2. The normal return is adjusted by subtracting the risk-free rate, to determine the daily normal excess return. Normal2Prior, Normal3Prior, Normal4Prior and Normal5Prior are now calculated by averaging the daily normal excess return over the four test periods.

Lastly, the average long-term abnormal excess return on a two to five year basis before the announcement is provided by the market model, applying the same test period as the average long-term normal excess return before the announcement. The control period that was used earlier, [-110, -11], cannot be used under these circumstances: the control and test period would overlap, which is not preferable. In addition to this, the look-ahead bias could form a problem, which results from making predictions on the basis of information that was not available at the time the prediction is made. As an alternative, a dynamic control period is chosen that moves depending on the test period: the control period is chosen to be -110 up until -11 days before the beginning of the relevant test period. As there are four different test periods, there are thus also four different control periods.

Using the specified test period and control period, the daily abnormal return is estimated, which is adjusted by subtracting the risk-free rate, to determine the daily abnormal excess return. AbnormalReturn2Prior, AbnormalReturn3Prior, AbnormalReturn4Prior and AbnormalReturn5Prior are now calculated by averaging the daily abnormal excess return over the four test periods.

2.2.3 Justification variable

The last variable concept, the justification variable, now has to be established. This variable essentially has to measure to what extent the initial excess return is justified in the long-run. A suitable variable would adhere to the following description: be very positive if a positive initial excess return is followed by an even larger in size, positive average long-term excess return, slightly positive if it is followed by a smaller, positive average long-term excess return, slightly negative if it is followed by a smaller, negative average long-term excess return and extremely negative if it is followed by a larger, negative average long-term excess return. Furthermore, this variable should also be very positive if a negative initial excess return is followed by a larger in size, negative average long-term excess return, should be slightly positive if it is followed by a smaller, negative average long-term excess return, slightly negative if it is followed by a smaller, positive average long-term excess return and extremely negative if it is followed by a larger, positive average long-term excess return. A suitable variable should essentially determine if the direction of the initial excess return is persevered or preferably even strengthened in the long run, which the following does:

$$Justification_i = Average\ LongTerm\ Excess\ Return_i / Initial\ Excess\ Return_i \quad (6)$$

One problem with this justification variable is that a change that is small in absolute value, but which is relatively large, could result in an extremely large value that does not necessarily represent a justification of the initial excess return. The result will be a variable which might be highly skewed.

A way to solve this is by essentially factorizing the justification variable, dividing it into twenty groups on the basis of their value. The groups are assigned values ranging from -10 up to +10, where all positive values are divided over the ten positive number groups and the negative values over the negative number groups; the borders between each of the factor groups are determined by ensuring that each positive group has approximately the same amount of self-tender offers and each negative group has approximately the same amount of self-tender offers.

The application of this process results in eight factorized variables of justification, JustNormal2-5 and JustAbnormal2-5. It does not necessarily solve the essence of the problem; a change that is small in absolute value, but which is relatively large, which may not represent a justification of the initial excess return, will still result in a high value, but most of the skewness will be taken away. This makes that dividing the average, long-term excess return by the initial excess return can be used as a good proxy for the level of justification.

2.2.4 Regression Analysis

The three variables concepts have been established and are at the basis of answering the main question of this study in three steps. The first step is to test to what extent there is a positive initial excess return for US firms between 1985 and 2014 in the three days around the self-tender announcement. The process is quite simple: a one-sample t-test is performed under the null hypothesis that Normal and AbnormalReturn are larger than zero.

The second step is to test whether there is a significant relation between the initial excess return and the average long-term excess return. This can be performed by applying OLS regressions in accordance with the specific-to-general method (SPEC), one of two commonly applied methods to determine an optimal, multivariate model. In the univariate setting it will be determined which variables have significant, explanatory power regarding the dependent variable. The significant variables in the univariate setting are to be used as the core of the multivariate model.

As the goal of this study is to determine whether certain variables have significant explanatory power, the significance is leading in determining the optimal model and thus not the adjusted R^2. Any not significant variable in the multivariate setting will be removed to ensure a model that only has variables with significant, explanatory power. This study will only briefly discuss the univariate regression result, which are reported in the appendix, becuase there might be an omitted variable bias resulting in a bias of the univariate, OLS estimators. The significance of variables in the optimal, multivariate model is thus leading in answering the main question. The univariate model is only an aid to develop the multivariate model.

Moreover, there is a neccesity to correct for time-varying effects which might distort regression results; the effect of a self-tender may differ depending on the month or year, in particular with a timeframe as large as 30 years, for example as a result of a change in general characteristics of firms or offers, thus necessitating a correction for year and month effects. N-1 dummy variables for the amount of years and the amount of months are defined and added to each regression. The choice of the default dummy has no effect on the sign, size and T-statistic of the independent variables, the main interest of this study, but does have effect on the intercept of a regression model. The default month dummy variable is chosen to be January and the default year dummy variable is chosen to be 2014, the last year and thus the closest to the current year, which is the most interesting from the perspective of using the results of this study in the current day and age.

$$\begin{aligned} \textit{Initial Excess Return}_i = \alpha_1 + \beta_1 \textit{Average LongTerm Excess Return}_i \\ + \beta_{2-30}\, \textit{Year}_i + \beta_{31-41} \textit{Month}_i + \epsilon_i \end{aligned} \tag{7}$$

In regression 7, Normal and AbnormalReturn are used as the dependent variable and the explanatory variables are Normal2-5, AbnormalReturn2-5 and n-1 dummy variables for the amount of years in the dataset, 29 variables, and the amount of months, 11 variables. The process is applied uniformly regarding the normal and abnormal return, amounting to 8 univariate regressions in total, excuding possible multivariate regressions.

The third step in answering the main question is to test which firm and offer characteristics have significant, explanatory power regarding the level of justification. The characteristics to be used are: Normal2Prior-5Prior, AbnormalReturn2Prior-5Prior, FractionSought, Equity, Enterprise, DealValue, EPS, BM, CashValue, Premium, DutchD and Completed.

Some of these characteristics do not directly flow from the data. CashValue is calculated by dividing the amount of cash for each company by the enterprise value. Premium is calculated by subtracting the adjusted closing price on the day before the announcement from the tender price the company is willing to pay. One last adjustment is made to the values of DealValue, Equity and Enterprise: the logarithm is taken, as to ensure that the values are closer to each other and thus make it more easily researchable.

In regression 8, JustNormal2-5 and JustAbnormal2-5 are used as the dependent variable and the various firm and offer characteristics and n-1 dummy variables for the amount of years and months are used as explanatory variables:

$$\begin{aligned} Justification_i = \alpha_1 + \beta_1 Firm/Offer\ Characteristic_i \\ + \beta_{2-30}\, Year_i + \beta_{31-41} Month_i + \epsilon_i \end{aligned} \tag{8}$$

There are eight justification variables, which combined with 14 characteristics result in 112 univariate regressions, excluding the possible multivariate regressions. The optimal, multivariate model determines if, and if so which firm and offer characteristics are able to significantly explain differences in the level of justification.

3 Results

3.1 Initial Excess Return

3.1.1 Hypothesis

In accordance with the main question of this study, the first result to be discussed is the initial excess return for self-tender offers by US companies between 1985-2014. The expectation that is derived from the academic literature is of a significant, positive excess return in the three days around the self-tender announcement. Concerning the distinction between fixed-price and Dutch auction offers, the literature was not unambigious; Comment and Jarrell (1991), Lee, Mikkelson and Partch (1992) & Persons (1994) observe that fixed-price offers report a larger, positive initial excess return, whereas Lie and McConnell (1998) find no difference in the size of the initial excess return.

3.1.2 Normal Return

The result of the relevant T-test is in table 3.1 on the next page; this study reports a significant at 1 percent, normal excess return of 2.1 percent on average in the three days around the self-tender announcement for US companies between 1985 and 2014. This means that the stock price increases, on average, 2.1 percent per day between the day before the announcement and the day after the announcement. The price reaction on the day before the announcement is almost non-existent. The largest price reaction, of 3.99 percent, is on the day of the announcement. This is smaller than reported in the academic literature.

Moreover, the initial excess return for Dutch auction offers is equal to 2.5 percent, whereas for fixed-price offers it is just 1.8 percent, with both significant at 1 percent; it is thus not a difference in significance, even if viewed per day, but it is a difference in size. This finding does not conform with the academic literature.

Table 3.1: Amount of observations, mean and daily return for each day in the three-day test period around the announcement for one sided t-test under the null hypothesis larger than zero. Dutch Auction and Fixed-Price report the normal initial excess return for the specific self-tender offer form.

Variable	**Obs**	**Mean**	**-1**	**0**	**1**
Normal Return	810	.0213***	.0025**	.0399***	.0213***
		(.0013)	(.0012)	(.0028)	(.0030)
Fixed-Price	458	.0184***	.0023*	.0329***	.0198***
		(.0020)	(.0015)	(.0039)	(.0048)
Dutch Auction	352	.0250***	.0029*	.0489***	.0231***
		(.0014)	(.0019)	(.0037)	(.0030)

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

Table 3.2: Amount of observations, mean and daily return for each day in the three-day test period around the announcement for one sided t-test under the null hypothesis larger than zero. Dutch Auction and Fixed-Price report the abnormal initial excess return for the specific self-tender offer form.

Variable	**Obs**	**Mean**	**-1**	**0**	**1**
AbnormalReturn	781	.0206***	.0023**	.0404***	.0213***
		(.0013)	(.0012)	(.0028)	(.0031)
Fixed-Price	433	.0183***	.0008	.0341***	.0200***
		(.0021)	(.0015)	(.0041)	(.0050)
Dutch Auction	348	.0251***	.0041**	.0482***	.0229***
		(.0015)	(.0018)	(.0038)	(.0031)

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

3.1.3 Abnormal Return

The relevant T-test is in table 3.2. US companies report between 1985 and 2014 an abnormal initial excess return of 2.1 percent, with the largest price reaction of 4.04 percent on the day of the announcement. The 2.1 percent in return is much smaller than reported in the academic literature, with Dann (1981), Masulis (1981) and Vermaelen (1981) observing on average a positive price reaction of 15 percent.

Furthermore the fixed-price offers earn, on average in the three days around the self-tender announcement, an excess return of 1.8 percent, with Dutch auction offers earning 2.5 percent; both are significant at 1 percent. This does not conform with the hypothesis derived from the academic literature, which indicated a higher initial excess return for fixed-price offers or no difference at all.

3.2 Average Long-Term Excess Return

3.2.1 Hypothesis

The second result to be discussed in accordance with the main question concerns to what extent Normal2-5 and AbnormalReturn2-5 have significant, explanatory power for variable Normal. The expectation formed by the academic literature is that share repurchasing companies report significant, abnormal returns for at least 4 years after the self-tender announcement, which off course adds to the already established positive, initial excess return. This study expands on the academic literature by determining whether the long-term excess return is significantly related to the initial excess return.

3.2.2 Normal Return

Table 3.3 provides the correlation coefficients and multivariate regression model. The correlation between Normal and Normal2-5 is positive for all four variables. In particular Normal2 and Normal3 have a high correlation with Normal of respectively 16.04 percent and 17.06 percent. In addition to this, a very high correlation can be observed between the long-term return variables Normal2, Normal3, Normal4 and Normal5 themselves. This can be explained by the overlap in their time span, each of them respectively spanning two, three, four and five years, logically resulting in a high correlation. The tabulated univariate regression results are reported in Table E in the appendix. Normal2 has a significant at 1 percent, positive relation with Normal, as does Normal3.

Table 3.3: Correlation table reporting the correlation between the normal initial excess return and the average long-term normal excess return on a two, three, four and five year basis. The coefficients, intercept, standard errors, adjusted R^2 and f-statistic are reported regarding the multivariate model using the significant variables in the univariate setting as the independent variables and the initial excess return as the dependent variable, with 2014 as the default year dummy variable and January as the default month dummy variable.

	Correlation Table						**Multivariate**
	Variables	(1)	(2)	(3)	(4)	(5)	(A)
(1)	Normal	1.0000					
(2)	Normal2	0.1604	1.0000				-.0443
							(.4081)
(3)	Normal3	0.1706	0.9986	1.0000			.2789
							(.6097)
(4)	Normal4	0.0767	0.4781	0.9301	1.0000		
(5)	Normal5	0.1045	0.4589	0.8768	0.9365	1.0000	
Intercept							.0206***
							(.0051)
Adj. R^2							0.0947
F-Statistic							2.35***

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

In applying the SPEC method to determine the optimal multivariate model, the two significant variables are used in the multivariate setting as explanatory variables for the initial excess return, as reported in table 3.3. The model has an R^2 of 9.47 percent, indicating that 9.47 percent of the variance in the initial excess return is explained by the average long-term excess return.

Both variables are not significant in the multivariate model. This is very likely the result of multi-collinearity, the phenomenon that two variables are very strongly correlated, with the correlation between the two variables equal to 99.86 percent. The result is that one knows that both variables jointly explain Normal, as indicated by the significance of the model at 1 percent, but one does not have enough statistical power to disentangle them. As the multivariate model is still significant, the result that Normal2 and Normal3 jointly have significant, explanatory power for the normal initial excess return still stands.

3.2.3 Abnormal Return

Table 3.4 provides the correlation coefficients and multivariate regression model. The correlation between AbnormalReturn2-5 and AbnormalReturn is much larger than it was between Normal and Normal2-5 and is relatively consistent. Moreover the correlation between AbnormalReturn2, AbnormalReturn3, AbnormalReturn4 and AbnormalReturn5 is exceptionally high, varying between 94,7 percent and 99,77 percent, which itself is also larger than for the normal return.

As reported in Table F in the appendix, AbnormalReturn2, AbnormalReturn3, AbnormalReturn4 and AbnormalReturn5 have a significant at 1 percent, positive relation with AbnormalReturn. The model consisting of all four significant variables has an R2 of 13.06 percent, itself much larger than with the normal multivariate model. All four variables are not significant in this setting. This is again very likely the result of multi-collinearity, the phenomenon that the explanatory variables are very strongly correlated, which was confirmed earlier. The result is a lack of statistical power to disentangle the effect of the four variables. Regardless, the result that AbnormalReturn2, AbnormalReturn3, AbnormalReturn4 and AbnormalReturn5 jointly have significant explanatory power for the abnormal initial excess return still stands, as the multivariate model is significant.

Table 3.4: Correlation table reporting the correlation between the abnormal initial excess return and the average long-term abnormal excess return on a two, three, four and five year basis. The coefficients, intercept, standard errors, adjusted R^2 and f-statistic are reported regarding the multivariate model using the significant variables in the univariate setting as the independent variables and the initial excess return as the dependent variable, with 2014 as the default year dummy variable and January as the default month dummy variable.

	Correlation Table						**Multivariate**
	Variables	(1)	(2)	(3)	(4)	(5)	(A)
(1)	Abnormal Return	1.0000					
(2)	Abnormal Return2	0.1752	1.0000				.5361
							(.9459)
(3)	Abnormal Return3	0.1944	0.9977	1.0000			-.9422
							(1.7901)
(4)	Abnormal Return4	0.2191	0.9470	0.9891	1.0000		-.4359
							(3.5402)
(5)	Abnormal Return5	0.2268	0.9541	0.9797	0.9936	1.0000	2.2145
							(2.9373)
Intercept							.0195***
							(.0056)
Adj. R^2							0.1306
F-Statistic							3.20***

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

3.3 Justification

3.3.1 Hypothesis

The third result to be discussed in accordance with the main question is whether firm and offer characteristics can explain a difference in the level of justification. It has been determined that Normal2 and Normal3 have significant, explanatory power for Normal and that AbnormalReturn2, AbnormalReturn3, AbnormalReturn4, and AbnormalReturn5 have significant, explanatory power for AbnormalReturn, for which thus the initial excess return is justified in the long-run. This significant relation was not found regarding Normal4 and Normal5. As there is no justification, it is not relevant to discuss whether firm and offer characteristics can explain a difference in the level of justification regarding those two variables.

The selection of firm and offer characteristics that were tested consist mainly of factors derived from the academic literature explaining the initial excess return. Any expectation about the relation between the initial excess return and such a factor cannot be directly translated to the relation between the justification variable and a firm or offer characteristic, because the initial excess return is only one part of the justification variable.

One thing that does remedy this problem slightly is the established significant, positive relation between the initial excess return and the average long-term excess return; this means that the average long-term excess return should be effected similarly to the initial excess return by such a factor, thus the justification variable should move uniformly. On average, thus an expectation about the relation between the initial excess return and such a factor should translate directly, on average, to the relation between the justification variable and a firm or offer characteristic. One should thus interpret the hypothesis as a rough estimate.

The expectation derived from the academic literature and the results established by this study so far, is that there is a positive relation between the justification variable and FractionSought, Premium, CashValue, EPS, Completed and DutchD. There should be a negative relation between the justification variable and prior market returns, LNDealValue, LNEquity and LNEnterprise. The relation with BM is undetermined and highly specific to circumstances.

One thing to note before analyzing the correlation coefficients and regression results, is that the size of the independent variable coefficients will not be discussed in depth. The result of factorizing the justification variable is that the assigned justification value to a specific self-tender offer is highly relative, as the borders between factor groups are determined to ensure equally sized groups. This makes that the coefficient does not provide much useful information, as it's value is not comparable to coefficients of other justification variables.

3.3.2 Normal Return

The tables 3.5 and 3.6 provide the correlation coefficients and table 3.7 the multivariate regressions models. To begin with table 3.5, the correlation coefficients relating JustNormal2 and the firm and offer characteristics. There are only three factors displaying to some degree a large correlation, namely the LNDealValue, LNEquity and LNEnterprise. Interestingly, the correlation with Normal2Prior, Normal3Prior, Normal4Prior and Normal5Prior, contrary to the hypothesis, is almost uniformly positive. The univariate setting in Table G in the appendix provides that there is a significant at 1 percent, negative relation between JustNormal2 and LNDealValue, LNEquity and LNEnterprise; moreover, there is a significant at 1 percent, positive relation with CashValue, despite the low correlation of 6.44 percent, and a significant at 5 percent, positive relation with Normal4Prior.

The multivariate model consists of the five significant variables and is reported in table 3.7. The optimal multivariate model is determined to be consisting of the independent variables LNDealValue and CashValue, with a significant at 1 percent, respectively negative and positive relation with JustNormal2, conform the hypothesis. The model has quite a modest R^2 value; just 4.66 percent of the variance in JustNormal2 is explained by the two independent variables. In conclusion, the variables CashValue and LNDealValue have significant, explanatory power for the level of justification on a two year, normal return basis.

Table 3.6 reports the correlation coefficients relating JustNormal3 and the firm and offer characteristics. The result is consistent with prior findings: only three factors report a somewhat large correlation, namely the LNDealValue, LNEquity and LNEnterprise. Quite surprisingly, the correlation with CashValue is almost nonexistent, at 0.04 percent. Moreover, contrary to the hypothesis, is the correlation with the prior market returns now entirely positive. The univariate setting in Table H provides that there is a significant at 1 percent, negative relation between JustNormal3 and LNDealValue, LNEquity and LNEnterprise.

The multivariate model consists of the three significant variables and is reported in table 3.7. After removing the not significant variables, the optimal model is determined to only consist of LNDealValue; there does not exist an optimal, multivariate model. A problem arises: one cannot conclude that LNDealValue solely has significant, explanatory power for JustNormal3, as the correlation with the also significant factors in the univariate setting, LNEquity and LNEnterprise, is respectively 79.85 and 78.01 percent. It would result in an omitted variable bias. The optimal, multivariate model thus consists of LNDealValue and LNEquity, the model that maximizes the F-statistic, reporting an even more modest R^2 of 3.74 percent. Considering that the model is still significant, this study concludes that the variables LNDealValue and LNEquity jointly have significant, explanatory power for the level of justification on a three year, normal return basis.

In conclusion, the expected, negative relation based on Lakonishok and Vermaelen (1990) between the justification variable and the size of a firm, proxied by LNEquity and LNEnterprise, is confirmed regarding LNEquity, indicating a small-firm effect. Additionaly, the expected, negative relation with the deal value was very strongly confirmed. On the other hand, the expected negative relation between prior market returns and the level of justification could not be confirmed; the significant at 5 percent, positive relation between the justification variable on a two year basis and Normal4Prior, in addition to the almost uniformly positive correlation coefficients of the prior market returns, lean more towards disconfirming the hypothesis, although it is far from definitive. One last thing to note is the unambigious picture regarding CashValue: the significant, positive relation was confirmed in relation to JustNormal2, but the factor reported an almost non-existent correlation coefficient in relation to JustNormal3, confirming nor disconfirming the hypothesis.

Table 3.5: Correlation coefficients coupling the factorized justification variable on a two year, normal return basis and the firm and offer characteristics, with the variable names in the first column and the number assigned to each variable in the first row.

	Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
(1)	JustNormal2	1.0000														
(2)	Normal2Prior	-0.0302	1.0000													
(3)	Normal3Prior	0.0569	0.9647	1.0000												
(4)	Normal4Prior	0.1141	0.9418	0.9662	1.0000											
(5)	Normal5Prior	0.0905	0.9313	0.9495	0.9744	1.0000										
(6)	FractionSought	0.0281	0.0109	0.0268	0.0526	0.0306	1.0000									
(7)	LNDealValue	-0.1698	-0.0551	-0.0763	-0.1227	-0.1255	0.0373	1.0000								
(8)	LNEquity	-0.2091	-0.0218	-0.0564	-0.0965	-0.1168	-0.3072	0.7985	1.0000							
(9)	LNEnterprise	-0.2106	-0.0227	-0.0540	-0.1051	-0.1237	-0.3309	0.7801	0.9691	1.0000						
(10)	EPS	-0.0148	0.0312	0.0273	0.0308	0.0371	0.0184	0.0063	0.0296	0.0181	1.0000					
(11)	BM	-0.0242	0.0028	0.0061	-0.0102	-0.0118	-0.1206	0.1407	0.2107	0.2108	0.0018	1.0000				
(12)	CashValue	0.0644	-0.0157	-0.0108	0.0078	-0.0118	0.2351	-0.0232	-0.1013	-0.2093	-0.0034	-0.0410	1.0000			
(13)	Premium	0.0143	0.0014	-0.0095	-0.0175	-0.0194	-0.0251	0.0632	0.1206	0.1134	0.0836	-0.0109	-0.0102	1.0000		
(14)	DutchD	0.0528	-0.1025	-0.0934	-0.1024	-0.1126	-0.3006	0.2070	0.3111	0.2824	-0.0361	0.0331	0.0061	-0.0653	1.0000	
(15)	Completed	0.0110	-0.0838	-0.0684	-0.0668	-0.0703	0.0164	0.0152	0.0748	0.0739	-0.0264	0.0014	0.0123	-0.0234	0.2004	1.0000

Table 3.6:Correlation coefficients coupling the factorized justification variable on a three year, normal return basis and the firm and offer characteristics, with the variable names in the first column and the number assigned to each variable in the first row.

	Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
(1)	JustNormal3	1.0000														
(2)	Normal2Prior	0.0368	1.0000													
(3)	Normal3Prior	0.0425	0.9647	1.0000												
(4)	Normal4Prior	0.0611	0.9418	0.9662	1.0000											
(5)	Normal5Prior	0.0800	0.9313	0.9495	0.9744	1.0000										
(6)	FractionSought	-0.0220	0.0109	0.0268	0.0526	0.0306	1.0000									
(7)	LNDealValue	-0.1699	-0.0551	-0.0763	-0.1227	-0.1255	0.0373	1.0000								
(8)	LNEquity	-0.1822	-0.0218	-0.0564	-0.0965	-0.1168	-0.3072	0.7985	1.0000							
(9)	LNEnterprise	-0.1656	-0.0227	-0.0540	-0.1051	-0.1237	-0.3309	0.7801	0.9691	1.0000						
(10)	EPS	0.0214	0.0312	0.0273	0.0308	0.0371	0.0184	0.0063	0.0296	0.0181	1.0000					
(11)	BM	-0.0167	0.0028	0.0061	-0.0102	-0.0118	-0.1206	0.1407	0.2107	0.2108	0.0018	1.0000				
(12)	CashValue	0.0004	-0.0157	-0.0108	0.0078	-0.0118	0.2351	-0.0232	-0.1013	-0.2093	-0.0034	-0.0410	1.0000			
(13)	Premium	0.0262	0.0014	-0.0095	-0.0175	-0.0194	-0.0251	0.0632	0.1206	0.1134	0.0836	-0.0109	-0.0102	1.0000		
(14)	DutchD	0.0595	-0.1025	-0.0934	-0.1024	-0.1126	-0.3006	0.2070	0.3111	0.2824	-0.0361	0.0331	0.0061	-0.0653	1.0000	
(15)	Completed	0.0432	-0.0838	-0.0684	-0.0668	-0.0703	0.0164	0.0152	0.0748	0.0739	-0.0264	0.0014	0.0123	-0.0234	0.2004	1.0000

Table 3.7: The coefficients, intercept, the standard errors and adjusted R^2 are reported regarding the multivariate models using the significant variables in the univariate setting as the independent variables and the justification variable as the dependent variable, with 2014 as the default year dummy variable and January as the default month dummy variable.

	A				**B**	
Variable	(1)	(2)	(3)	(4)	(1)	(2)
Normal2Prior						
Normal3Prior						
Normal4Prior	82.1510					
	(537.722)					
Normal5Prior						
FractionSought						
LNDealValue	-.54156**	-.3775*	-.3863	-.4844***	-.5753***	-.4468**
	(.2282)	(.2139)	(.2134)	(.1368)	(.2344)	(.2181)
LNEquity	-1.0341	-.4608	-.1362		-.4635	-.1486
	(.8911)	(.7116)	(.2376)		(.6795)	(.2384))
LNEnterprise	.9247	.3096			.4519	
	(.8168)	(.6532)			(.6202)	
EPS						
BM						
CashValue	.1586**	.1282**	.1024***	.1090***		
	(.0731)	(.0609)	(.0356)	(.0359)		
Premium						
DutchD						
Completed						
Intercept	5.6261	4.7476*	4.6829*	4.1857*	8.2900***	8.7230***
	(3.6518)	(2.5534)	(2.5535)	(2.3338)	(1.9915)	(2.0254)
Adj. R^2	0.0335	0.0430	0.0449	0.0466	0.0381	0.0374

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

3.3.3 Abnormal Return

Table 3.8-3.11 provide the relevant correlation coefficients and table 3.12 the multivariate regression models; the univariate regression results are in the appendix. Table 3.10 reports the correlation coefficient relating JustAbnormal2 and the firm and offer characteristics. The factors LNDealValue, LNEquity and LNEnterprise display the highest correlation with the justification variable, as well as Abnormal2Prior. Surprisingly, of those variables only Abnormal2Prior has a significant at 5 percent, negative relation with JustAbnormal2 in the univariate setting reported in Table I. Premium, with only a correlation coefficient of 5.02 percent, notes a positive relation with JustAbnormal2, significant at 1 percent.

This contradictory result is most likely the effect of using year and month dummy variables, which this study confirmed by applying an identical univariate regression analysis, excluding the dummy variables. Each variable noted a significant at 5 percent, negative relation with JustAbnormal2. The high correlation coefficient thus appears to be the result of effects that were not constant over the time horizon of the data sample.

The multivariate model consists of the two significant variables and is reported in table 3.12; only the variable Premium is significant, rendering it impossible to develop a multivariate model. The conclusion is that Premium has significant, explanatory power for the justification variable on a two year, abnormal return basis. Interpreting Premium in this manner does not result in an omitted variable bias, as the correlation between Premium and Abnormal2Prior is equal to 0.16 percent, almost nonexistent.

The conclusion concerning JustAbnormal3, JustAbnormal4 and JustAbnormal5 is simpler: the univariate setting in Table J-L provides that only the variable Premium is significant, reporting a significant at 1 percent, positive relation with JustAbnormal3 and JustAbnormal4 and a significant at 5 percent, positive relation with JustAbnormal5. Considering that all the other variables are not significant, there is no point in extensively discussing them; without significance they will neither confirm nor disconfirm any hypothesis, thus providing no answer to the main question.

In conclusion, there is only one variable relevant in determining to what extent the abnormal initial excess return will be justified in the long-run, Premium. This confirms the expected positive relation between the justification variable and the premium based on the 1984 paper of Vermaelen, although it should be noted that the coefficient is extremely small, ranging from 0.0057 up to 0.0081, with a relatively large, positive intercept, indicating that generally the level of justification is positive.

Table 3.8:Correlation coefficients coupling the factorized justification variable on a two year, abnormal return basis and the firm and offer characteristics, with the variable names in the first column and the number assigned to each variable in the first row.

	Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
(1)	JustAbnormal2	1.0000														
(2)	Abnormal2Prior	-0.0800	1.0000													
(3)	Abnormal3Prior	-0.0033	0.3531	1.0000												
(4)	Abnormal4Prior	0.0618	0.3586	0.2438	1.0000											
(5)	Abnormal5Prior	0.0229	0.3468	0.3271	0.1988	1.0000										
(6)	FractionSought	-0.0111	-0.0141	-0.0338	0.0807	0.0510	1.0000									
(7)	LNDealValue	-0.1003	-0.0379	-0.0082	-0.0240	-0.1022	0.0373	1.0000								
(8)	LNEquity	-0.1056	-0.0260	0.0259	-0.0233	-0.1183	-0.3072	0.7985	1.0000							
(9)	LNEnterprise	-0.0896	-0.0235	0.0311	-0.0294	-0.1226	-0.3309	0.7801	0.9691	1.0000						
(10)	EPS	-0.0164	0.0110	-0.0522	0.0364	0.0071	0.0184	0.0063	0.0296	0.0181	1.0000					
(11)	BM	-0.0507	-0.0399	0.0094	-0.0200	-0.0321	-0.1206	0.1407	0.2107	0.2108	0.0018	1.0000				
(12)	CashValue	0.0360	-0.0520	0.0449	0.2194	0.0810	0.2351	-0.0232	-0.1013	-0.2093	-0.0034	-0.0410	1.0000			
(13)	Premium	0.0502	0.0016	0.0451	0.0330	-0.0175	-0.0251	0.0632	0.1206	0.1134	0.0836	-0.0109	-0.0102	1.0000		
(14)	DutchD	0.0096	-0.1251	-0.0569	-0.0679	-0.1583	-0.3006	0.2070	0.3111	0.2824	-0.0361	0.0331	0.0061	-0.0653	1.0000	
(15)	Completed	0.0685	-0.0792	-0.0593	-0.0532	-0.0438	0.0164	0.0152	0.0748	0.0739	-0.0264	0.0014	0.0123	-0.0234	0.2004	1.0000

Table 3.9:Correlation coefficients coupling the factorized justification variable on a three year, abnormal return basis and the firm and offer characteristics, with the variable names in the first column and the number assigned to each variable in the first row.

	Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
(1)	JustAbnormal3	1.0000														
(2)	Abnormal2Prior	-0.0871	1.0000													
(3)	Abnormal3Prior	0.0246	0.3531	1.0000												
(4)	Abnormal4Prior	0.0328	0.3586	0.2438	1.0000											
(5)	Abnormal5Prior	-0.0127	0.3468	0.3271	0.1988	1.0000										
(6)	FractionSought	0.0148	-0.0141	-0.0338	0.0807	0.0510	1.0000									
(7)	LNDealValue	-0.0702	-0.0379	-0.0082	-0.0240	-0.1022	0.0373	1.0000								
(8)	LNEquity	-0.0955	-0.0260	0.0259	-0.0233	-0.1183	-0.3072	0.7985	1.0000							
(9)	LNEnterprise	-0.0762	-0.0235	0.0311	-0.0294	-0.1226	-0.3309	0.7801	0.9691	1.0000						
(10)	EPS	-0.0078	0.0110	-0.0522	0.0364	0.0071	0.0184	0.0063	0.0296	0.0181	1.0000					
(11)	BM	-0.0141	-0.0399	0.0094	-0.0200	-0.0321	-0.1206	0.1407	0.2107	0.2108	0.0018	1.0000				
(12)	CashValue	-0.0133	-0.0520	0.0449	0.2194	0.0810	0.2351	-0.0232	-0.1013	-0.2093	-0.0034	-0.0410	1.0000			
(13)	Premium	0.0594	0.0016	0.0451	0.0330	-0.0175	-0.0251	0.0632	0.1206	0.1134	0.0836	-0.0109	-0.0102	1.0000		
(14)	DutchD	0.0158	-0.1251	-0.0569	-0.0679	-0.1583	-0.3006	0.2070	0.3111	0.2824	-0.0361	0.0331	0.0061	-0.0653	1.0000	
(15)	Completed	0.0335	-0.0792	-0.0593	-0.0532	-0.0438	0.0164	0.0152	0.0748	0.0739	-0.0264	0.0014	0.0123	-0.0234	0.2004	1.0000

Table 3.10:Correlation coefficients coupling the factorized justification variable on a four year, abnormal return basis and the firm and offer characteristics, with the variable names in the first column and the number assigned to each variable in the first row.

	Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
(1)	JustAbnormal4	1.0000														
(2)	Abnormal2Prior	-0.0920	1.0000													
(3)	Abnormal3Prior	0.0043	0.3531	1.0000												
(4)	Abnormal4Prior	0.0234	0.3586	0.2438	1.0000											
(5)	Abnormal5Prior	-0.0573	0.3468	0.3271	0.1988	1.0000										
(6)	FractionSought	0.0744	-0.0141	-0.0338	0.0807	0.0510	1.0000									
(7)	LNDealValue	-0.0600	-0.0379	-0.0082	-0.0240	-0.1022	0.0373	1.0000								
(8)	LNEquity	-0.1415	-0.0260	0.0259	-0.0233	-0.1183	-0.3072	0.7985	1.0000							
(9)	LNEnterprise	-0.1289	-0.0235	0.0311	-0.0294	-0.1226	-0.3309	0.7801	0.9691	1.0000						
(10)	EPS	0.0046	0.0110	-0.0522	0.0364	0.0071	0.0184	0.0063	0.0296	0.0181	1.0000					
(11)	BM	-0.0279	-0.0399	0.0094	-0.0200	-0.0321	-0.1206	0.1407	0.2107	0.2108	0.0018	1.0000				
(12)	CashValue	0.0289	-0.0520	0.0449	0.2194	0.0810	0.2351	-0.0232	-0.1013	-0.2093	-0.0034	-0.0410	1.0000			
(13)	Premium	0.0646	0.0016	0.0451	0.0330	-0.0175	-0.0251	0.0632	0.1206	0.1134	0.0836	-0.0109	-0.0102	1.0000		
(14)	DutchD	0.0000	-0.1251	-0.0569	-0.0679	-0.1583	-0.3006	0.2070	0.3111	0.2824	-0.0361	0.0331	0.0061	-0.0653	1.0000	
(15)	Completed	-0.0017	-0.0792	-0.0593	-0.0532	-0.0438	0.0164	0.0152	0.0748	0.0739	-0.0264	0.0014	0.0123	-0.0234	0.2004	1.0000

Table 3.11:Correlation coefficients coupling the factorized justification variable on a five year, abnormal return basis and the firm and offer characteristics, with the variable names in the first column and the number assigned to each variable in the first row.

	Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
(1)	JustAbnormal5	1.0000														
(2)	Abnormal2Prior	-0.0506	1.0000													
(3)	Abnormal3Prior	-0.0468	0.3531	1.0000												
(4)	Abnormal4Prior	0.0392	0.3586	0.2438	1.0000											
(5)	Abnormal5Prior	-0.0619	0.3468	0.3271	0.1988	1.0000										
(6)	FractionSought	0.0817	-0.0141	-0.0338	0.0807	0.0510	1.0000									
(7)	LNDealValue	-0.0744	-0.0379	-0.0082	-0.0240	-0.1022	0.0373	1.0000								
(8)	LNEquity	-0.1248	-0.0260	0.0259	-0.0233	-0.1183	-0.3072	0.7985	1.0000							
(9)	LNEnterprise	-0.1175	-0.0235	0.0311	-0.0294	-0.1226	-0.3309	0.7801	0.9691	1.0000						
(10)	EPS	-0.0220	0.0110	-0.0522	0.0364	0.0071	0.0184	0.0063	0.0296	0.0181	1.0000					
(11)	BM	-0.0369	-0.0399	0.0094	-0.0200	-0.0321	-0.1206	0.1407	0.2107	0.2108	0.0018	1.0000				
(12)	CashValue	0.0195	-0.0520	0.0449	0.2194	0.0810	0.2351	-0.0232	-0.1013	-0.2093	-0.0034	-0.0410	1.0000			
(13)	Premium	0.0655	0.0016	0.0451	0.0330	-0.0175	-0.0251	0.0632	0.1206	0.1134	0.0836	-0.0109	-0.0102	1.0000		
(14)	DutchD	-0.0183	-0.1251	-0.0569	-0.0679	-0.1583	-0.3006	0.2070	0.3111	0.2824	-0.0361	0.0331	0.0061	-0.0653	1.0000	
(15)	Completed	0.0041	-0.0792	-0.0593	-0.0532	-0.0438	0.0164	0.0152	0.0748	0.0739	-0.0264	0.0014	0.0123	-0.0234	0.2004	1.0000

Table 3.12: The coefficients, intercept, standard errors and adjusted R^2 are reported regarding the multivariate model using the significant variables in the univariate setting as the independent variables and the justification variable as the dependent variable, with 2014 as the default year dummy variable and January as the default month dummy variable.

	A
Variable	(1)
Abnormal2Prior	-175.7253
	(115.4349)
Abnormal3Prior	
Abnormal4Prior	
Abnormal5Prior	
FractionSought	
LNDealValue	
LNEquity	
LNEnterprise	
EPS	
BM	
CashValue	
Premium	.0049**
	(.0020)
DutchD	
Completed	
Intercept	1.8247
	(2.6325)
Adj. R^2	-0.0077

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

3.4 Economic Meaning

The economic meaning of this study can be explained best from the perspective of a long-term, return-maximizing investor. What suggestions does this study make to this investor? In a general sense, an investor should analyze two values: the reported initial excess return and the justification value. Regarding these two values, the investor has four options that maximize the statistical likelihood of maximizing returns:

- Develop a long position in stocks that maximize the initial excess return and the justification value. This maximizes the statistical likelihood that the high initial excess return is prolonged, with the investor benefiting from the positive stock returns.
- Develop a long position in stocks that minimize the initial excess return and minimize the justification value, maximizing the statistical likelihood that the low initial excess return is reversed, with the investor benefiting from the positive stock returns.
- Develop a short position in stocks that minimize the initial excess return and maximize the justification value, maximizing the statistical likelihood that the low initial excess return is prolonged, with the investor benefiting from selling the stock at a high price and actually delivering on that sell by buying at a lower price.
- Develop a short position in stocks that maximize the initial excess return and minimize the justification value. This maximizes the statistical likelihood that the high initial excess return is reversed, with the investor benefiting from selling the stock at a high price and actually delivering on that sell by buying at a lower price.

The investor thus has to choose a combination of the initial excess return and the level of justification that is optimal. To determine what combination is optimal, one has to examine the definition of the justification variable: the average long-term excess return divided by the initial excess return. Assuming that the initial excess return is known and that the level of justification can be estimated with the established multivariate models, it is possible to calculate the expected average long-term excess return:

$$\begin{aligned} \textit{Average Longterm Excess Return}_i = \textit{Justification Variable}_i \\ \times \textit{Initial Excess Return}_i \end{aligned} \tag{9}$$

Essentially, the absolute value of this equation should be maximized. As the initial excess return is assumed to be known, one only has to estimate the level of justification, with a distinction regarding the normal and abnormal return. Concerning the average long-term normal excess return, there are two multivariate models. The investor that chooses to maximize the average long-term normal excess return on a two year basis, has to reckon with the LNDealValue and CashValue:

$$\begin{aligned} \textit{JustNormal2}_i = 4.1857 - 0.4884\textit{LNDealValue}_i + 0.1090\textit{CashValue}_i \\ + \beta 2 - 30\,\textit{Year}_i + \beta 31 - 41\textit{Month}_i \end{aligned} \tag{10}$$

The default year dummy variable is 2014, the last year and thus the closest to the current year, which is the most interesting from the perspective of making predictions. The default month dummy variable is chosen to be January, but can be changed to a different month in accordance with the situation of the investor using Table 3.13 at the end of this section.

The investor that chooses to maximize the average long-term normal excess return on a three year basis has to reckon with LNDealValue and LNEquity and should again choose the default month dummy variable in accordance with their situation:

$$\begin{aligned} \textit{JustNormal3}_i = 8.7230 - 0.4468\textit{LNDealValue}_i - .1486\textit{LNEquity}_i \\ + \beta 2 - 30\,\textit{Year}_i + \beta 31 - 41\textit{Month}_i \end{aligned} \tag{11}$$

On the other hand, if an investor chooses to maximize the average long-term abnormal excess return, there are four relevant regression models, all consisting of just one variable: Premium. The investor should again choose the default month dummy variable in accordance with their situation:

$$\begin{aligned} JustAbnormal2_i = 2.1038 + .0057 Premium_i + \beta 2 - 30\, Year_i \\ + \beta 31 - 41 Month_i \end{aligned} \tag{12}$$

$$\begin{aligned} JustAbnormal3_i = 2.6388 + .0081 Premium_i + \beta 2 - 30\, Year_i \\ + \beta 31 - 41 Month_i \end{aligned} \tag{13}$$

$$\begin{aligned} JustAbnormal3_i = 4.4634 + .0070 Premium_i + \beta 2 - 30\, Year_i \\ + \beta 31 - 41 Month_i \end{aligned} \tag{14}$$

$$\begin{aligned} JustAbnormal3_i = 5.3514 + .0062 Premium_i + \beta 2 - 30\, Year_i \\ + \beta 31 - 41 Month_i \end{aligned} \tag{15}$$

In applying this process, an investor should be able to determine a return-maximizing strategy, in accordance with their specific situation. In particular, this process could be automatized as part of a quantitative investment model.

Table 3.13: Coefficients values of the month dummy variables, which can be used to adapt the normal and abnormal multivariate regression models to the particular situation of an investor The default month is January.

	Normal Return		**Abnormal Return**			
Variable	(1)	(2)	(1)	(2)	(3)	(4)
February	-1.2739	-1.1819	-.9019	-1.1586	-2.4480	-2.0910
March	1.1174	1.4595	-2.3027	-2.2208	-5.6429	-5.5645
April	.6239	1.1605	-3.3436	-2.9977	-5.7066	-5.7407
May	.2407	-.1639	-2.1700	-2.9591	-4.5445	-4.2999
June	-.1650	1.0661	-2.6613	-1.8212	-3.1450	-3.1553
July	-.2368	.4993	-2.0728	-1.2902	-2.8751	-2.9867
August	.0208	.5509	-1.7109	-1.7476	-3.9863	-2.8746
September	-.3547	-2.1469	-.5265	-1.5573	-2.7204	-2.3247
October	.1289	.4270	.3232	-.3578	-1.6090	-.8310
November	-1.4288	-1.2147	-.6604	-.8697	-2.4443	-2.3700
December	-.9301	-1.7650	-.5606	-1.2302	-2.4443	-2.7699

4 Conclusion

This study aimed to analyze whether there are significant, positive price reactions around the announcement of a self-tender offer for US firms between 1985 and 2014, whether that price reaction was justified in the long-run and if there exist firm or offer characteristics that can explain differences in the level of justification.

A significant, positive price reaction in the three days around the self-tender announcement was identified, on average, for both the normal and abnormal return, with both reporting an excess return of 2.1 percent. That price reaction was confirmed to be significantly justified at 1 percent on a two and three year basis regarding the normal return and on a two to five year basis for the abnormal return. The multivariate model that comprises the initial excess return as the dependent variable and the long-term normal return variables as the independent variables, noted a R^2 of 9.47 percent, whereas the abnormal, multivariate model noted a R^2 of 13.06 percent.

The initial excess return is thus found to be justified in the long-run to some extent. There are several firm and offer characteristics which can significantly explain a difference in the level of justification and thus are able to determine to what extent an initial excess return will be justified several years from now. As regards to the normal return on a two year basis, a firm noting a low deal value and a high cash to enterprise ratio, is statistically most likely to justify their initial excess return; on a three year basis, a firm noting a low deal value combined with a low equity value achieves the same result. With respect to the abnormal return on a two to five year basis, only the value of the premium is relevant. A firm that pursues a high premium is most likely to justify their initial excess return in the long-run.

The larger implication of these findings is the confirmation of the significantly positive price reaction around the share repurchase announcement, first identified by Dann (1981), Masulis (1981) and Vermaelen (1981) using a larger dataset with more recent data, is the identification of the significantly positive relation between the initial price reaction and the long-term stock returns and is the identification of characteristics which can significantly explain differences in the level of justification, which could be the fundament of a quantative investment model.

One relevant critical note concerns the data sample. The full price data concerning the five-year margin before and after the announcement is not available with respect to some self-tender offers; in the most serious case, Normal5Prior, 440 data points of the 918 self-tender announcements are available. If the companies for whom the data is missing, as a result of becoming inactive on the stock market after the announcement or not being active in the five years prior to the announcement, have a certain factor in common that is not present in companies for which the full extent of data is in the sample, this may result in a bias. In particular for companies that become inactive after the announcement because of a bankruptcy, a survival bias could be in place, considering that the inactive companies are most likely to report negative stock returns, whereas active companies are more likely to report positive stock returns. Determining to what extent this bias is present, is beyond the scope of this study, but is certainly very interesting for future research as it might change the results.

There are two more interesting paths for future research. This study provides clear-cut recommendations for the long-term return-maximizing investor to maximize the statistical likelihood of maximizing returns. If these recommendations are to become integrated in a quantitative investment model, it would be sincerely interesting to test the accuracy of the model predictions, which itself lies outside the scope of this study. In addition to this, to improve the accuracy of the existing multivariate regressions models, future research could focus on testing an even wider range of firm and offer characteristics that could potentially have significant, explanatory power for the level of justification.

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Appendix

Variable Definition

Table A: Variable name and description of all the variables used in this study; part 1.

Variable	Definition
Normal	The normal initial excess return, which is the daily average of the excess return in the test period [-1,1] around the self-tender announcement.
Normal2	The average long-term normal excess return on a two year basis, which is the daily average of the normal excess return in the test period that spans from the second day after and two years after the self-tender announcement.
Normal3	The average long-term normal excess return on a three year basis, which is the daily average of the normal excess return in the test period that spans from the second day after and three years after the self-tender announcement.
Normal4	The average long-term normal excess return on a four year basis, which is the daily average of the normal excess return in the test period that spans from the second day after and four years after the self-tender announcement.
Normal5	The average long-term normal excess return on a five year basis, which is the daily average of the normal excess return in the test period that spans from the second day after and five years after the self-tender announcement.
Normal2Prior	The average long-term normal excess return preceding the self-tender announcement on a two year basis, which is the daily average of the normal excess return in the test period that spans from the second day before and two years before the self-tender announcement.
Normal3Prior	The average long-term normal excess return preceding the self-tender announcement on a three year basis, which is the daily average of the normal excess return in the test period that spans from the second day before and three years before the self-tender announcement.
Normal4Prior	The average long-term normal excess return preceding the self-tender announcement on a four year basis, which is the daily average of the normal excess return in the test period that spans from the second day before and four years before the self-tender announcement.
Normal5Prior	The average long-term normal excess return preceding the self-tender announcement on a five year basis, which is the daily average of the normal excess return in the test period that spans from the second day before and five years before the self-tender announcement.

Table B: Variable name and description of all the variables used in this study; part 2.

Variable	**Definition**
AbnormalReturn	The abnormal initial excess return, which is the daily average of the excess return in the test period [-1,1] around the self-tender announcement.
AbnormalReturn2	The average long-term abnormal excess return on a two year basis, which is the daily average of the abnormal excess return in the test period that spans from the second day after and two years after the self-tender announcement.
AbnormalReturn3	The average long-term abnormal excess return on a three year basis, which is the daily average of the abnormal excess return in the test period that spans from the second day after and three years after the self-tender announcement.
AbnormalReturn4	The average long-term abnormal excess return on a four year basis, which is the daily average of the abnormal excess return in the test period that spans from the second day after and four years after the self-tender announcement.
AbnormalReturn5	The average long-term abnormal excess return on a five year basis, which is the daily average of the abnormal excess return in the test period that spans from the second day after and five years after the self-tender announcement.
AbnormalReturn2Prior	The average long-term abnormal excess return preceding the self-tender announcement on a two year basis, which is the daily average of the abnormal excess return in the test period that spans from the second day before and two years before the self-tender announcement.
AbnormalReturn3Prior	The average long-term abnormal excess return preceding the self-tender announcement on a three year basis, which is the daily average of the abnormal excess return in the test period that spans from the second day before and three years before the self-tender announcement.
AbnormalReturn4Prior	The average long-term abnormal excess return preceding the self-tender announcement on a four year basis, which is the daily average of the abnormal excess return in the test period that spans from the second day before and four years before the self-tender announcement.
AbnormalReturn5Prior	The average long-term abnormal excess return preceding the self-tender announcement on a five year basis, which is the daily average of the abnormal excess return in the test period that spans from the second day before and five years before the self-tender announcement.

Table C: Variable name and description of all the variables used in this study; part 3.

Variable	**Definition**
JustNormal2X	The average long-term normal excess return on a two year basis divided by the initial excess return.
JustNormal3X	The average long-term normal excess return on a three year basis divided by the initial excess return.
JustNormal4X	The average long-term normal excess return on a four year basis divided by the initial excess return.
JustNormal5X	The average long-term normal excess return on a five year basis divided by the initial excess return.
JustAbnormal2X	The average long-term abnormal excess return on a two year basis divided by the initial excess return.
JustAbnormal3X	The average long-term abnormal excess return on a three year basis divided by the initial excess return.
JustAbnormal4X	The average long-term abnormal excess return on a four year basis divided by the initial excess return.
JustAbnormal5X	The average long-term abnormal excess return on a five year basis divided by the initial excess return.
JustNormal2	The factorized justification variable consisting of twenty factor groups with values ranging from -10 up to +10. Each self-tender offer is assigned a value in accordance with their JustNormal2X value and the relevant borders between factor groups.
JustNormal3	The factorized justification variable consisting of twenty factor groups with values ranging from -10 up to +10. Each self-tender offer is assigned a value in accordance with their JustNormal3X value and the relevant borders between factor groups.
JustNormal4	The factorized justification variable consisting of twenty factor groups with values ranging from -10 up to +10. Each self-tender offer is assigned a value in accordance with their JustNormal4X value and the relevant borders between factor groups.
JustNormal5	The factorized justification variable consisting of twenty factor groups with values ranging from -10 up to +10. Each self-tender offer is assigned a value in accordance with their JustNormal5X value and the relevant borders between factor groups.
JustAbnormal2	The factorized justification variable consisting of twenty factor groups with values ranging from -10 up to +10. Each self-tender offer is assigned a value in accordance with their JustAbnormal2X value and the relevant borders between factor groups.

Table D: Variable name and description of all the variables used in this study; part 4.

Variable	**Definition**
JustAbnormal3	The factorized justification variable consisting of twenty factor groups with values ranging from -10 up to +10. Each self-tender offer is assigned a value in accordance with their JustAbnormal3X value and the relevant borders between factor groups.
JustAbnormal4	The factorized justification variable consisting of twenty factor groups with values ranging from -10 up to +10. Each self-tender offer is assigned a value in accordance with their JustAbnormal4X value and the relevant borders between factor groups.
JustAbnormal5	The factorized justification variable consisting of twenty factor groups with values ranging from -10 up to +10. Each self-tender offer is assigned a value in accordance with their JustAbnormal5X value and the relevant borders between factor groups.
FractionSought	The percentage of the total outstanding shares that was sought with the self-tender offer.
LNDealValue	The logarithm of the deal value of the self-tender offer, which is equal to the amount of shares asked times the offered share price.
LNEquity	The logarithm of the equity value of the company at the day of the self-tender announcement.
LNEnterprise	The logarithm of the enterprise value of the company at the day of the self-tender announcement.
EPS	The earnings per share of the company on a trailing twelve-month basis.
BM	The book value of the company divided by the market value thirty days before the self-tender announcement.
CashValue	The amount of cash a company had at the announcement date divided by the enterprise value at that point in time.
Premium	The difference between the stock market price at the announcement date and the price that was offered to buy the stock.
DutchD	Dummy variable with value 1 if an self-tender offer is of the Dutch Auction Offer form and 0 if it is not.
Completed	Dummy variable with value 1 if an self-tender offer was completed and 0 if it was not. This might mean the offer was still pending or was withdrawn.

Univariate Regressions

Table E: Intercept, slope, standard error and adjusted R^2 concerning four univariate regressions, using the normal initial excess return as the dependent variable and the average long-term normal excess return on a two to five year basis as the independent variable.

Variable	**Intercept**	**Slope**	**Adj.** R^2
Normal2	.0226***	.1438***	0.0897
	(.0049)	(.0050)	
Normal3	.0206***	.2128***	0.0965
	(.0051)	(.0082)	
Normal4	.0232***	1.2528	0.0583
	(.0052)	(.9862)	
Normal5	.0215***	1.4506	0.0803
	(.0053)	(1.1200)	

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

Table F: Intercept, slope, standard error and adjusted R^2 concerning four univariate regressions, with the abnormal initial excess return as the dependent variable and the average long-term abnormal excess return on a two to five year basis as the independent variable.

Variable	**Intercept**	**Slope**	**Adj.** R^2
AbnormalReturn2	.0217***	.1546***	0.1073
	(.0051)	(.0129)	
AbnormalReturn3	.0195***	.2361***	0.1211
	(.0054)	(.0260)	
AbnormalReturn4	.0209***	1.3704***	0.1129
	(.0054)	(.2736)	
AbnormalReturn5	.0193***	1.3340***	0.1354
	(.0055)	(.2174)	

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

Table G: Intercept, slope, standard error and adjusted R^2 concerning fourteen univariate regressions, using the justification variable on a two year, normal return basis as the dependent variable and the firm/offer characteristics as the independent variable.

Variable	**Intercept**	**Slope**	**Adj.** R^2
Normal2Prior	.5101	-159.3321	0.0086
	(1.9529)	(131.3041)	
Normal3Prior	-.4616	269.1751	0.0037
	(2.2400)	(337.1572)	
Normal4Prior	-.8317	827.3159**	0.0211
	(2.3223)	(409.4555)	
Normal5Prior	.2253	477.8549	0.0269
	(2.3684)	(498.8059)	
FractionSought	2.3331	.0018	0.0182
	4.5999	(.0182)	
LNDealValue	2.8690	-.4239***	0.0507
	(1.9403)	(.1320)	
LNEquity	5.4986**	-.4772***	0.0488
	(2.4800)	(.1439)	
LNEnterprise	5.3102**	-.4506***	0.0455
	(2.4727)	(.1401)	
EPS	-.1528	-.0002	0.0101
	(1.8036)	(.0083)	
BM	-.9459	-.0019	0.0165
	(1.8377)	(.0379)	
CashValue	2.0268	.1127***	0.0178
	(2.1600)	(.0350)	
Premium	2.0233	.0025	0.0258
	(2.1237)	(.0025)	
DutchD	-.7232	.7253	0.0114
	(1.8086)	(.5460)	
Completed	-.2074	-.1244	0.0085
	(1.8138)	(.6448)	

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

Table H: Intercept, slope, standard error and adjusted R^2 concerning fourteen univariate regressions, using the justification variable on a three year, normal return basis as the dependent variable and the firm/offer characteristics as the independent variable.

Variable	**Intercept**	**Slope**	**Adj.** R^2
Normal2Prior	3.9901**	93.5852	-0.0064
	(1.7182)	(140.6943)	
Normal3Prior	3.3865*	242.1262	-0.0013
	(1.9687)	(356.8907)	
Normal4Prior	3.3287	326.5483	-0.0100
	(2.0760)	(450.4748)	
Normal5Prior	4.1824**	441.1368	-0.0015
	(1.8156)	(563.7734)	
FractionSought	6.4720**	-.0087	0.0009
	(2.6860)	(.0204)	
LNDealValue	5.4376***	-.4692***	0.0224
	(1.8981)	(.1435)	
LNEquity	9.4714***	-.4967***	0.0368
	(1.9452)	(.1550)	
LNEnterprise	8.9165***	-.4223***	0.0294
	(1.9378)	(.1546)	
EPS	3.9396**	.0040	0.0000
	(1.6644)	(.0048)	
BM	3.9155**	.0057	0.0017
	(1.7232)	(.0367)	
CashValue	5.8180***	-.3683	-0.0054
	(1.4103)	(.9204)	
Premium	5.7690***	.0029	0.0103
	(1.4645)	(.0028)	
DutchD	3.8820**	.6404	0.0070
	(1.6839)	(.5674)	
Completed	4.1700**	.1832	0.0047
	(1.6749)	(.6832)	

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

Table I: Intercept, slope, standard error and adjusted R^2 concerning fourteen univariate regressions, using the justification variable on a two year, abnormal return basis as the dependent variable and the firm/offer characteristics as the independent variable.

Variable	**Intercept**	**Slope**	**Adj.** R^2
Abnormal2Prior	3.9506**	-187.7915**	-0.0104
	(1.9254)	(89.0965)	
Abnormal3Prior	4.8074**	-3.1633	-0.0042
	(1.9684)	(109.2685)	
Abnormal4Prior	4.9261**	113.1664	0.0032
	(2.0072)	(111.8227)	
Abnormal5Prior	5.9522***	115.3631	-0.0071
	(2.0369)	(119.3417)	
FractionSought	-.2665	-.0147	-0.0004
	(5.1834)	(.0190)	
LNDealValue	3.2465	-.2013	-0.0080
	(2.071)	(.1462)	
LNEquity	2.7216	-.1684	-0.0089
	(2.6469)	(.1670)	
LNEnterprise	2.3465	-.1059	-0.0108
	(2.6040)	(.1551)	
EPS	2.8055	-.0049	-0.0138
	(1.8794)	(.0088)	
BM	2.0193	-.0343	-0.0086
	(1.8507)	(.0473)	
CashValue	1.6669	.0460	-0.0059
	(2.4174)	(.0356)	
Premium	1.1614	.0057***	-0.0050
	2.3696	(.0021)	
DutchD	2.5684	.2798	-0.0182
	(1.8756)	(.5499)	
Completed	2.3189	.8289	-0.0154
	(1.8725)	(.6734)	

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

Table J: Intercept, slope, standard error and adjusted R^2 concerning fourteen univariate regressions, using the justification variable on a three year, abnormal return basis as the dependent variable and the firm/offer characteristics as the independent variable.

Variable	**Intercept**	**Slope**	**Adj.** R^2
Abnormal2Prior	3.4018	-168.3037*	-0.0413
	(2.1251)	(100.3646)	
Abnormal3Prior	4.2131*	48.5701	-0.0458
	(2.2526)	(124.5025)	
Abnormal4Prior	4.4475*	49.7310	-0.0332
	(2.3240)	(135.1745)	
Abnormal5Prior	4.5204*	63.1513	-0.0504
	(2.4411)	(127.9645)	
FractionSought	-1.9489	-.0101	-0.0386
	(4.1780)	(.0213)	
LNDealValue	2.7467	-.1725	-0.0287
	(2.2115)	(.1652)	
LNEquity	2.1346	-.1808	-0.0337
	(2.8503)	(.1804)	
LNEnterprise	1.7953	-.1317	-0.0379
	(2.8205)	(.1714)	
EPS	3.1996	-.0018	-0.0304
	(2.0964)	(.0092)	
BM	2.1501	-.0012	-0.0265
	(2.0833)	(.0446)	
CashValue	.9778	-.8035	-0.0434
	(2.6500)	(.9612)	
Premium	.3262	.0081***	-0.0291
	(2.3625)	(.0022)	
DutchD	2.7911	.2922	-0.0330
	(2.0808)	(.5880)	
Completed	2.7303	.4979	-0.0324
	(2.0632)	(.7024)	

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

Table K: Intercept, slope, standard error and adjusted R^2 concerning fourteen univariate regressions, using the justification variable on a four year, abnormal return basis as the dependent variable and the firm/offer characteristics as the independent variable.

Variable	**Intercept**	**Slope**	**Adj.** R^2
Abnormal2Prior	4.8922*	-181.0014*	-0.0216
	(2.6296)	(109.1432)	
Abnormal3Prior	6.1450**	14.6937	-0.0267
	(2.7290)	(127.9462)	
Abnormal4Prior	6.4572**	-7.8071	-0.0267
	(2.8252)	(149.2519)	
Abnormal5Prior	5.7631**	-82.2793	-0.0310
	(2.9155)	(132.7266)	
FractionSought	-6.3957***	.0115	-0.0071
	(1.5330)	(.0223)	
LNDealValue	4.4128	-.1214	-0.0097
	(2.7712)	(.1844)	
LNEquity	3.1802*	-.2788	0.0006
	(3.3359)	(.1940)	
LNEnterprise	2.9101	-.2418	-0.0040
	(3.3114)	(.1879)	
EPS	4.5190*	-.0022	-0.0182
	(2.5008)	(.0085)	
BM	3.1339	-.0165	-0.0149
	(2.4575)	(.0479)	
CashValue	1.17347	-.1016	-0.0173
	(3.2011)	(1.1040)	
Premium	.6557	.0070***	-0.0044
	(2.8290)	(.0025)	
DutchD	4.3076*	.1765	-0.0198
	(2.5074)	(.6197)	
Completed	4.413608*	.0038	-0.0200
	2.4846)	(.7671)	

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*

Table L: Intercept, slope, standard error and adjusted R^2 concerning fourteen univariate regressions, using the justification variable on a five year, abnormal return basis as the dependent variable and the firm/offer characteristics as the independent variable.

Variable	**Intercept**	**Slope**	**Adj.** R^2
Abnormal2Prior	4.5812*	-102.9228	-0.0231
	(2.6812)	(105.0537)	
Abnormal3Prior	6.0780**	-81.4104	-0.0191
	(2.6208)	(139.7151)	
Abnormal4Prior	6.3015**	37.2900	-0.0138
	(2.7460)	(146.7341)	
Abnormal5Prior	5.4243*	-92.8519	-0.0287
	(2.8000)	(134.5047)	
FractionSought	-6.4032***	.01505	-0.0042
	(1.6137)	(.02300)	
LNDealValue	4.4169	-.1571	-0.0083
	(2.8606)	(.1879)	
LNEquity	2.3802	-.2081	-0.0114
	(3.4957)	(.2087)	
LNEnterprise	2.2568	-.1940	-0.0120
	(3.4532)	(.1960)	
EPS	4.2862*	-.0076	-0.0175
	(2.5747)	(.0090)	
BM	2.8047	-.01683	-0.0153
	(2.4691)	(.0507)	
CashValue	1.0248	-.5472	-0.0209
	(3.3636)	(1.0157)	
Premium	.4510	0062**	-0.0036
	(3.0153)	(.0025)	
DutchD	4.3210*	-.1886	-0.0163
	(2.5238)	(.6506)	
Completed	4.1304	.1681	-0.0164
	(2.5241)	(.7800)	

*White (1980) Heteroskedastic consistent standard errors in parentheses. ***, **, * show that a coefficient is significant respectively on a 1, 5 and 10 percent level.*