

Appendix

Appendix 1

Breakdown of private equity investor data

This table shows the breakdown of the steps undertaken to get the private equity investor data sample.

| Criteria | Number of observations |
|--|------------------------|
| Target in Europe | 120,108 |
| Percent owned before (0%) acquisition and after (100%) acquisition | 75,788 |
| Deal type private equity buyout | 6,182 |
| Payment in Cash | 5,497 |
| Target publicly listed | 333 |
| Deal status completed | 272 |
| Non-operating target | 197 |
| Missing data (e.g. accounting figures) | 147 |
| Final number of takeovers done by private equity | 147 |

Appendix 2

Detailed explanation of the calculations behind the performed event study and the test for significance in the difference

The following equation needs to be solved to get the abnormal return:

$$AR_{it} = R_{it} - E(R_{it})$$

AR_{it} represents the abnormal return for company i at day t , R_{it} is the actual return of the company i at day t , it is thus the return which can easily be calculated when looking at the development of the stock price of the company i . $E(R_{it})$ is the expected return for company i at day t . The $E(R_{it})$ is, in this study, calculated with a market model (which is also consistent to Barger et al. (2008)) with the following formula:

$$E(R)_{it} = \alpha_i + \beta_i R_{mt}$$

Where: α_i = the intercept term; β_i = the slope; R_{mt} = the return on the market at day t (here the market is the FTSE World Europe index)

There are other models which can calculate the expected return. However, I decided to use the market model for two reasons. One is, as mentioned by McWilliams and Siegel (1997) the market model is one of the best models to use. Also, it should be noted that the model has some assumptions which are discussed in detail by Bromiley, Govekar and Marcus (1988). Whereby

one of the main assumptions is the efficiency of the market. The other reason, why I use this model is that it is also used by, for example, Bargaron et al. (2008), Masulis, Wang and Xie (2007) as well as Moeller, Schlingemann and Stulz (2004).

In order to estimate the intercept term (α_i) and the slope (β_i) the returns of the stock (R_{it}) is regressed on the market returns (R_{mt}). The market for R_{mt} is the FTSE World Europe index. The FTSE World Europe incorporates 612 European stocks and is therefore representing the European market pretty well. The estimation window (the timeframe the stock is regressed on the index to estimate the intercept and slope) ranges from 379 days until 127 days before the acquisition announcement (-379; -127). It is around one year long and until about six month before the acquisition announcement. This estimation window will make sure that it is not effected by any anticipation of the event. The same estimation window is also used by Bargaron et. al. (2008) and Schwert (1996).

Event windows in which the event (in this case the acquisition announcement) need to be defined. In order to provide validity of the results multiple event windows are calculated. Nevertheless, as outlined in the literature review, different researcher are using different event windows. I will mainly follow Bargaron et al. (2008) with the length of the event window. The longest event window will range from 63 days before the acquisition announcement until the day of the acquisition announcement. This will make sure that the mentioned pre-bid-runup is included in the calculation. Furthermore, an event window ranging from 42 days before until the acquisition announcement is calculated.

For all the daily abnormal returns the cumulative abnormal return needs to be calculated. This is done by using following formula:

$$CAR_i = \sum_{t=1}^T AR_{it}$$

This cumulative abnormal returns (CAR) of all targets will represent the dependent variable. It needs to be investigated if the average of the CARs are actually statistically significant. In order to do this, the t-test is performed (further discussed by Watson and Teelucksingh (2002) or Brooks (2014) for example). The t-test determines if the average CARs are statistically different from zero. Following formula is used for the t-test:

$$T \text{ statistic} = \sqrt{N} * \frac{ACAR - \mu}{\sigma(CAR)}$$

Where: N = number of observations (meaning the number of transactions); $ACAR$ = average cumulative abnormal return; μ = hypothesized mean (so equal to zero); $\sigma(CAR)$ = standard diversification of the CARs

The difference between the average cumulative abnormal returns of the different groups (strategic public investor, strategic private investor and private equity investor) will also be calculated. The significance of this difference is calculated with the two sample t-test (further discussed by Keselman, Othman, Wilcox and Fradette (2004) as well as Ruxton (2006)).

For the calculation of the two sample t-test the pooled variance need to be calculated. I performed a f-test to investigate if the variance of the ACAR of the different groups are equal since this is an assumption of the two sample t-test (Keselman et al., 2004). The formula for the pooled variance is as followed:

$$s_{pooled}^2 = \frac{(df_1) s^2_1 + (df_2) s^2_2}{df_1 + df_2}$$

Where: df_1 = degree of freedom for the first sample; s^2_1 = variance of the first sample;

df_2 = degree of freedom for the second sample; s^2_2 = variance of the second sample

Following this calculation the t-statistic can be calculated by using:

$$two\ sample\ t\ statistic = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{S_{\bar{x}_1 - \bar{x}_2}}$$

$S_{\bar{x}_1 - \bar{x}_2}$ is calculated by:

$$S_{\bar{x}_1 - \bar{x}_2} = \sqrt{\frac{s_{pooled}^2}{n_1} + \frac{s_{pooled}^2}{n_2}}$$

Where: \bar{x}_1 = average of the first sample; \bar{x}_2 = average of the second sample; μ_1 and μ_2 = hypothesized mean of the first and second sample which always defaults to 0; n_1 and n_2 = number of observation of the first and the second sample

Beside the average cumulative the median of all CARs will be calculated and similar to the average calculation the statistical significance of the median will be investigated. Similar to Barger et al. (2008) and Graham et al. (2002) the statistical significance of the median will be based on the Wilcoxon test. Thereby the individual groups (strategic public acquirer for example) median will be investigated with the Wilcoxon sign rank-test. The statistically significant difference of the medians between the groups will be based on the Wilcoxon sign rank sum test. As Wilcoxon (1945) explains, this method is based on ranking the individual differences in order to approximate the significance. The advantage of using ranked data (applying the Wilcoxon method) is that, as described by Friedman (1937) it avoids the assumption of normal distribution. The results of the tests will be presented in table 1.

Appendix 3

Further analysis regarding DP3 and DP63 in Table 1

In order to make sure that the mentioned results in table 1 are not only true because of the way the abnormal returns are calculated I performed further calculations. The fifth to the eighth rows of Table 1, Panel A state the normal 3 days (DP3) and 63 days (DP63) premiums. This are the returns which are calculated by the following formula:

$$3DP = \frac{SP_{i,t}}{SP_{i,t-3}} \text{ and } 63DP = \frac{SP_{i,t}}{SP_{i,t-63}}$$

Where: $SP_{i,t-3}$ = Stock price of company i at time t;

t = day of the acquisition announcement;

t-3 = three days before acquisition announcement

As can be seen at the formula this returns are not adjusted to any insider trading or other abnormal returns. In a similar way Guo, Hotchkiss and Song (2011) are calculating the premiums to investigate if private equity buyouts still create value.

Appendix 4 – Robustness check

Winsorized multiple regression analysis with CAR63 and CAR42

This table shows eight ordinary least square (OLS) regression models with all continuous variables winsorized at the 1% and 99% percentile. The dependent variable in model (1) to model (4) is the CAR63 (cumulative abnormal return from 63-trading days prior the acquisition announcement to the announcement day). The dependent variable for model (5) to model (8) is the CAR42 (cumulative abnormal return from 42-trading days prior the acquisition announcement to the announcement day). *Tobins_Q* is calculated as market capitalisation plus total liabilities plus preferred equity + minority interest divided by total assets. *EBITDA margin* is calculated as EBITDA divided by revenue. *Debt/MV_of_Eq+D* is calculated as debt (as short- and long-term debt) divided by debt plus market value of equity. *Debt/BV_of_Eq+D* is computed with debt divided by debt plus book value of equity. *OfcF/BV_of_Assets* is calculated as net income plus depreciation & amortization plus other noncash adjustments plus changes in non-cash working capital divided by debt plus book value of equity. *MB_ratio* is the market to book ratio. *Cash/Assets* is the cash on the balance sheet divided by total assets. *Size* is the transaction value of the target company. LIBOR is the three month LIBOR (London Interbank Offered Rate). *Log_size* is the natural log of the value of the target company 63 days prior the acquisition announcement. *PE_dummy* and *Private_str.dummy* are dummies equal to one if the acquirer is a private equity fund or a private operating company, respectively. *Y2008-2015_dummy* is a dummy equal to one if the acquisition occurred in 2008 until 2015. All other dummies are equal to one if the acquisition occurred in the respective year e.g. *Y2007_dummy* is one in 2007. Coefficients denoted with ***, ** or *, are significant at the 1%, 5% or 10% level, respectively.

| | CAR63 | | | | CAR42 | | | |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| TOBINS_Q | -0.06135 -3.59*** | -0.06208 -3.64*** | -0.05800 -3.43*** | -0.06060 -3.53*** | -0.03812 -2.45*** | -0.03882 -2.50*** | -0.03525 -2.29** | -0.03781 -2.42** |
| EBITDA_margin | -0.00089 -3.19*** | -0.00089 -3.19*** | -0.00088 -3.18*** | -0.00088 -3.10*** | -0.00067 -2.63*** | -0.00067 -2.62*** | -0.00066 -2.61*** | -0.00066 -2.59*** |
| Debt/MV_of_Eq+D | 0.19355 2.36*** | 0.20502 2.51*** | 0.19778 2.44*** | 0.19483 2.37*** | 0.22840 3.07*** | 0.23944 3.22*** | 0.23299 3.15*** | 0.22895 3.07*** |
| Debt/BV_of_Eq+D | -0.12477 -1.82* | -0.13148 -1.92* | -0.12761 -1.88* | -0.12480 -1.81* | -0.09659 -1.55 | -0.10306 -1.66* | -0.09902 -1.60 | -0.09667 -1.54 |
| Ofcf/BV_of_Assets | -0.23898 -2.53*** | -0.23067 -2.45*** | -0.26139 -2.78*** | -0.24014 -2.54*** | -0.25077 -2.92*** | -0.24275 -2.83*** | -0.26780 -3.13*** | -0.25093 -2.91*** |
| MB_ratio | 0.00710 1.89* | 0.00699 1.87* | 0.00679 1.83* | 0.00714 1.90* | 0.00536 1.57 | 0.00526 1.54 | 0.00509 1.50 | 0.00537 1.57 |
| Cash/Assets | 0.18825 2.23** | 0.16736 1.98** | 0.16432 1.96** | 0.18836 2.22** | 0.22283 2.90*** | 0.20268 2.64*** | 0.20015 2.62*** | 0.22249 2.88*** |
| LIBOR | -0.00051 -0.11 | 0.01010 1.68* | 0.00380 0.80 | 0.00038 0.07 | -0.00529 -1.28 | 0.00494 0.90 | -0.00209 -0.48 | -0.00535 -1.13 |
| Log_size | -0.01227 -1.87* | -0.01229 -1.88* | -0.01018 -1.56 | -0.01242 -1.89* | -0.01203 -2.02** | -0.01205 -2.03** | -0.01041 -1.76* | -0.01216 -2.03** |
| PE_dummy | -0.13323 -4.54*** | -0.13137 -4.49*** | -0.13068 -4.50*** | -0.13258 -4.50*** | -0.12345 -4.62*** | -0.12166 -4.57*** | -0.12189 -4.60*** | -0.12311 -4.59*** |
| Private_str_dummy | -0.13236 -5.29*** | -0.12840 -5.14*** | -0.13182 -5.31*** | -0.13229 -5.27*** | -0.11291 -4.96*** | -0.10909 -4.80*** | -0.11169 -4.94*** | -0.11314 -4.95*** |
| Y2008-2015_dummy | | 0.07876 2.67*** | | | | 0.07590 2.83*** | | |
| Y2007_dummy | | | -0.06337 -1.57 | | | | -0.04096 -1.12 | |
| Y2008_dummy | | | 0.07429 1.77* | | | | 0.07302 1.91* | |
| Y2009_dummy | | | 0.26532 4.26*** | | | | 0.22978 4.05*** | |
| Y2010_dummy | | | | 0.00292 0.06 | | | | -0.01074 -0.25 |
| Y2011_dummy | | | | 0.00329 0.06 | | | | 0.00068 0.01 |
| Y2012_dummy | | | | 0.04026 0.69 | | | | 0.01514 0.29 |
| Constant | 0.54269 11.44*** | 0.48371 9.27*** | 0.51002 10.76*** | 0.53713 10.81*** | 0.47092 10.91*** | 0.41407 8.73*** | 0.44350 10.27*** | 0.47124 10.42*** |
| Adjusted_R ² | 0.09980 | 0.10570 | 0.11980 | 0.09730 | 0.10120 | 0.10800 | 0.11870 | 0.09840 |
| Observation | 935 | 935 | 935 | 935 | 935 | 935 | 935 | 935 |

Appendix 5 – Robustness check

Winsorized multiple regression analysis with DP3 and DP63

This table shows eight ordinary least square (OLS) regression models with all continues variables winsorized at the 1% and 99% percentile. The dependent variable in model (1) to model (4) is the DP3 (normal return from 3-trading days prior the acquisition announcement to the announcement day). The dependent variable for model (5) to model (8) is the DP63 (normal return from 63-trading days prior the acquisition announcement to the announcement day). *Tobins_Q* is calculated as market capitalisation plus total liabilities plus preferred equity + minority interest divided by total assets. *EBITDA margin* is calculated as EBITDA divided by revenue. *Debt/MV_of_Eq+D* is calculated as debt (as short- and long-term debt) divided by debt plus market value of equity. *Debt/BV_of_Eq+D* is computed with debt divided by debt plus book value of equity. *OfcF/BV_of Assets* is calculated as net income plus depreciation & amortization plus other noncash adjustments plus changes in non-cash working capital divided by debt plus book value of equity. *MB_ratio* is the market to book ratio. *Cash/Assets* is the cash on the balance sheet divided by total assets. *Size* is the transaction value of the target company. LIBOR is the three month LIBOR (London Interbank Offered Rate). *Log_size* is the natural log of the value of the target company 63 days prior the acquisition announcement. *PE_dummy* and *Private_str.dummy* are dummies equal to one if the acquirer is a private equity fund or a private operating company, respectively. *Y2008-2015_dummy* is a dummy equal to one if the acquisition occurred in 2008 until 2015. All other dummies are equal to one if the acquisition occurred in the respective year e.g. *Y2007_dummy* is one in 2007. Coefficients denoted with ***, ** or *, are significant at the 1%, 5% or 10% level, respectively.

| | DP3 | | | | DP63 | | | |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| TOBINS_Q | -0.04105 -3.15*** | -0.04205 -3.27*** | -0.03995 -3.07*** | -0.04034 -3.10*** | -0.06760 -3.13*** | -0.06883 -3.20*** | -0.06595 -3.06*** | -0.06800 -3.15*** |
| EBITDA_margin | -0.00075 -3.52*** | -0.00074 -3.53*** | -0.00074 -3.49*** | -0.00075 -3.51*** | -0.00101 -2.87** | -0.00101 -2.87** | -0.00098 -2.78** | -0.00106 -2.98** |
| Debt/MV_of_Eq+D | 0.05925 0.95 | 0.07494 1.22 | 0.06302 1.01 | 0.06507 1.04 | 0.29837 2.88*** | 0.31772 3.09*** | 0.29841 2.89*** | 0.30654 2.97*** |
| Debt/BV_of_Eq+D | -0.09303 -1.78* | -0.10222 -1.98** | -0.09409 -1.80* | -0.09974 -1.91* | -0.19361 -2.24** | -0.20494 -2.38** | -0.19095 -2.21** | -0.20637 -2.38** |
| Ofcf/BV_of_Assets | -0.02233 0.31 | -0.03371 0.47 | -0.01976 0.27 | -0.01649 0.23 | -0.16482 2.68*** | -0.15077 2.66*** | -0.16479 2.62*** | -0.17471 2.74*** |
| MB_ratio | 0.00471 1.65* | 0.00455 1.61 | 0.00459 1.61 | 0.00488 1.71* | 0.01273 -1.38000 | 0.01254 -1.27000 | 0.01240 -1.38000 | 0.01300 -1.47000 |
| Cash/Assets | 0.11777 1.84* | 0.08916 1.40 | 0.10505 1.63 | 0.10653 1.65* | 0.29498 2.77*** | 0.25969 2.44** | 0.27316 2.56*** | 0.27428 2.57*** |
| LIBOR | -0.01108 -3.22*** | 0.00344 0.76 | -0.01081 -2.97*** | -0.00695 -1.76* | -0.01177 -2.06** | 0.00615 0.81000 | -0.01004 -1.66* | -0.00415 -0.63000 |
| Log_size | -0.00316 -0.63 | -0.00319 -0.65 | -0.00288 -0.58 | -0.00287 -0.58 | 0.00051 0.06 | 0.00047 0.06 | 0.00143 0.17 | 0.00170 0.21 |
| PE_dummy | -0.12124 -5.43*** | -0.11869 -5.38*** | -0.12183 -5.45*** | -0.11838 -5.3*** | -0.17573 -4.74*** | -0.17258 -4.68*** | -0.17626 -4.76*** | -0.17199 -4.64*** |
| Private_str_dummy | -0.09684 -5.08*** | -0.09142 -4.85*** | -0.09494 -4.98*** | -0.09466 -4.97*** | -0.13972 -4.42*** | -0.13303 -4.22*** | -0.13749 -4.35*** | -0.13458 -4.26*** |
| Y2008-2015_dummy | | 0.10781 4.85*** | | | | 0.13299 3.58*** | | |
| Y2007_dummy | | | 0.01094 0.35 | | | | -0.03566 -0.69000 | |
| Y2008_dummy | | | 0.04421 1.37 | | | | 0.11962 2.24** | |
| Y2009_dummy | | | 0.09277 1.94* | | | | 0.14436 1.82* | |
| Y2010_dummy | | | | 0.04157 1.17 | | | | 0.12197 2.06** |
| Y2011_dummy | | | | 0.08001 2.04** | | | | 0.15115 2.33** |
| Y2012_dummy | | | | 0.04475 1.02 | | | | -0.00409 -0.06000 |
| Constant | 0.35900 9.95*** | 0.27826 7.07*** | 0.34972 9.6*** | 0.33636 8.92*** | 0.58223 9.71*** | 0.48263 7.34*** | 0.56229 9.31*** | 0.54097 8.65*** |
| Adjusted R ² | 0.09260 | 0.11420 | 0.09510 | 0.09490 | 0.09550 | 0.09630 | 0.09060 | 0.09020 |
| Observation | 935 | 935 | 935 | 935 | 935 | 935 | 935 | 935 |

Appendix 6 – Robustness check

Quantile multiple regression analysis with CAR63 and CAR42

This table shows eight quantile (median) regression models. The dependent variable in model (1) to model (4) is the CAR63 (cumulative abnormal return from 63-trading days prior the acquisition announcement to the announcement day). The dependent variable for model (5) to model (8) is the CAR42 (cumulative abnormal return from 42-trading days prior the acquisition announcement to the announcement day). *Tobins_Q* is calculated as market capitalisation plus total liabilities plus preferred equity + minority interest divided by total assets. *EBITDA margin* is calculated as EBITDA divided by revenue. *Debt/MV_of_Eq+D* is calculated as debt (as short- and long-term debt) divided by debt plus market value of equity. *Debt/BV_of_Eq+D* is computed with debt divided by debt plus book value of equity. *OfcF/BV_of Assets* is calculated as net income plus depreciation & amortization plus other noncash adjustments plus changes in non-cash working capital divided by debt plus book value of equity. *MB_ratio* is the market to book ratio. *Cash/Assets* is the cash on the balance sheet divided by total assets. *Size* is the transaction value of the target company. LIBOR is the three month LIBOR (London Interbank Offered Rate). *Log_size* is the natural log of the value of the target company 63 days prior the acquisition announcement. *PE_dummy* and *Private_str.dummy* are dummies equal to one if the acquirer is a private equity fund or a private operating company, respectively. *Y2008-2015_dummy* is a dummy equal to one if the acquisition occurred in 2008 until 2015. All other dummies are equal to one if the acquisition occurred in the respective year e.g. *Y2007_dummy* is one in 2007. Coefficients denoted with ***, ** or *, are significant at the 1%, 5% or 10% level, respectively.

| | CAR63 | | | | CAR42 | | | |
|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| TOBINS_Q | -0.05510 -3.85*** | -0.04988 -3.82*** | -0.04870 -4.12*** | -0.05454 -3.78*** | -0.03292 -2.68*** | -0.03302 -2.81*** | -0.03405 -3.09*** | -0.03401 -2.79*** |
| EBITDA_margin | -0.00012 -2.93*** | -0.00012 -3.52*** | -0.00013 -4.06*** | -0.00011 -2.63*** | -0.00012 -3.53*** | -0.00012 -3.80*** | -0.00012 -4.17*** | -0.00010 -3.02*** |
| Debt/MV_of_Eq+D | -0.01062 -0.16 | -0.00367 -0.06 | 0.01667 0.30 | -0.00961 -0.15 | 0.07330 1.34 | 0.08458 1.62 | 0.08996 1.85* | 0.07755 1.44 |
| Debt/BV_of_Eq+D | 0.02167 0.76 | 0.02238 0.92 | 0.02382 1.00 | 0.02225 0.79 | 0.02304 0.98 | 0.02341 1.04 | 0.02489 1.19 | 0.02382 1.02 |
| OfcF/BV_of_Assets | -0.24426 -2.88*** | -0.26578 -3.63*** | -0.25497 -3.48*** | -0.25202 -2.92*** | -0.22846 -3.21*** | -0.22043 -3.26*** | -0.22598 -3.56*** | -0.23285 -3.28*** |
| MB_ratio | 0.00003 0.35 | 0.00003 0.40 | 0.00003 0.46 | 0.00003 0.34 | 0.00002 0.29 | 0.00002 0.35 | 0.00002 0.32 | 0.00001 0.22 |
| Cash/Assets | 0.17718 1.86* | 0.14398 1.74* | 0.12193 1.51 | 0.18327 1.91* | 0.32159 4.13*** | 0.28917 3.82*** | 0.30510 4.30*** | 0.31932 4.06*** |
| LIBOR | -0.00004 -0.01 | 0.01357 1.91* | 0.00428 0.89 | 0.00412 0.66 | -0.00490 -1.09 | 0.00351 0.62 | -0.00166 -0.39 | -0.00095 -0.19 |
| Log_size | -0.01263 -1.67* | -0.01060 -1.63* | -0.00906 -1.43 | -0.01100 -1.47 | -0.00942 -1.52 | -0.00933 -1.57 | -0.00757 -1.37 | -0.00828 -1.34 |
| PE_dummy | -0.11390 -3.22*** | -0.10323 -3.42*** | -0.11053 -3.75*** | -0.11804 -3.38*** | -0.10405 -3.58*** | -0.10052 -3.65*** | -0.10735 -4.13*** | -0.10675 -3.71*** |
| Private_str_dummy | -0.10624 -3.51*** | -0.10344 -3.99*** | -0.11271 -4.51*** | -0.10446 -3.49*** | -0.09339 -3.77*** | -0.09642 -4.06*** | -0.09587 -4.32*** | -0.08435 -3.44*** |
| Y2008-2015_dummy | | 0.08551 2.80*** | | | | 0.05940 2.12** | | |
| Y2007_dummy | | | -0.08649 0.90 | | | | -0.06816 0.97 | |
| Y2008_dummy | | | 0.09728 2.3** | | | | 0.05600 -1.89* | |
| Y2009_dummy | | | 0.11568 1.92* | | | | 0.10979 1.99** | |
| Y2010_dummy | | | | 0.04500 0.80 | | | | 0.07010 1.54 |
| Y2011_dummy | | | | 0.02906 0.47 | | | | 0.03221 0.64 |
| Y2012_dummy | | | | 0.05129 0.72 | | | | 0.08098 1.40 |
| Constant | 0.51909 9.55*** | 0.42897 8.27*** | 0.47248 10.49*** | 0.48744 8.61*** | 0.40780 9.15*** | 0.36141 7.61*** | 0.38630 9.65*** | 0.38424 8.3*** |
| Pseudo R ² | 0.04840 | 0.05290 | 0.05810 | 0.04940 | 0.05740 | 0.06160 | 0.06200 | 0.06040 |
| Observation | 935 | 935 | 935 | 935 | 935 | 935 | 935 | 935 |

Appendix 7 - Robustness check

Quantile multiple regression analysis with DP3 and DP63

This table shows eight quantile (median) regression models. The dependent variable in model (1) to model (4) is the DP3 (normal return from 3-trading days prior the acquisition announcement to the announcement day). The dependent variable for model (5) to model (8) is the DP63 (normal return from 63-trading days prior the acquisition announcement to the announcement day). *Tobins_Q* is calculated as market capitalisation plus total liabilities plus preferred equity + minority interest divided by total assets. *EBITDA margin* is calculated as EBITDA divided by revenue. *Debt/MV_of_Eq+D* is calculated as debt (as short- and long-term debt) divided by debt plus market value of equity. *Debt/BV_of_Eq+D* is computed with debt divided by debt plus book value of equity. *OfcF/BV_of_Assets* is calculated as net income plus depreciation & amortization plus other noncash adjustments plus changes in non-cash working capital divided by debt plus book value of equity. *MB_ratio* is the market to book ratio. *Cash/Assets* is the cash on the balance sheet divided by total assets. *Size* is the transaction value of the target company. LIBOR is the three month LIBOR (London Interbank Offered Rate). *Log_size* is the natural log of the value of the target company 63 days prior the acquisition announcement. *PE_dummy* and *Private_str.dummy* are dummies equal to one if the acquirer is a private equity fund or a private operating company, respectively. *Y2008-2015_dummy* is a dummy equal to one if the acquisition occurred in 2008 until 2015. All other dummies are equal to one if the acquisition occurred in the respective year e.g. *Y2007_dummy* is one in 2007. Coefficients denoted with ***, ** or *, are significant at the 1%, 5% or 10% level, respectively.

| | DP3 | | | | DP63 | | | |
|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| TOBINS_Q | -0.01855 -2.34** | -0.01948 -2.39** | -0.01931 -2.21** | -0.02083 -3.32*** | -0.01953 -1.47 | -0.02207 -1.4500 | -0.01701 -1.21 | -0.02295 -1.63 |
| EBITDA_margin | -0.00005 -2.35** | -0.00005 -2.51*** | -0.00005 -2.23** | -0.00006 -3.11*** | -0.00005 -0.98 | -0.00009 -1.67* | -0.00004 -0.86 | -0.00017 -3.28*** |
| Debt/MV_of_Eq+D | -0.00269 -0.07 | 0.01611 0.43 | -0.00990 -0.25 | 0.00476 -0.16 | 0.06862 1.11 | 0.06201 0.93 | 0.06709 1.10 | 0.04319 0.69 |
| Debt/BV_of_Eq+D | -0.04861 -2.80*** | -0.05592 -3.18*** | -0.04722 -2.47*** | -0.04267 -3.02*** | -0.06537 2.45** | -0.06377 2.22* | -0.06498 2.46*** | -0.06211 2.32** |
| Ofcf/BV_of_Assets | 0.00779 0.17 | 0.02900 0.66 | 0.00290 0.06 | 0.01675 0.47 | -0.06124 -0.75 | -0.10209 -1.17 | -0.13168 -1.65* | -0.09566 -1.17 |
| MB_ratio | -0.00003 -1.06 | -0.00002 -0.56 | 0.00001 0.14 | -0.00002 -0.30 | 0.00001 0.09 | 0.00000 0.03 | 0.00000 0.06 | 0.00000 -0.05 |
| Cash/Assets | 0.12135 2.44** | 0.09128 1.80* | 0.11006 2.02** | 0.09229 2.25** | 0.24970 2.77*** | 0.22121 2.31** | 0.22416 2.50*** | 0.16849 1.89* |
| LIBOR | -0.00568 -2.01** | -0.00051 -0.13 | -0.00488 -1.50 | -0.00017 -0.06 | -0.01049 -2.07** | 0.00448 0.62 | -0.00801 -1.51 | -0.00221 -0.38 |
| Log_size | -0.00313 -0.80 | -0.00241 -0.60 | -0.00327 -0.77 | -0.00103 -0.33 | -0.00472 -0.67 | -0.00728 -0.96 | -0.00630 -0.90 | -0.01207 -1.71* |
| PE_dummy | -0.12876 -7.04*** | -0.12760 -6.85*** | -0.12957 -6.53*** | -0.11854 -7.89*** | -0.17527 -5.32*** | -0.15877 -4.48*** | -0.16524 -5.05*** | -0.14994 -4.54*** |
| Private_str_dummy | -0.08632 -5.52*** | -0.08854 -5.52*** | -0.09142 -5.36*** | -0.08545 -6.66*** | -0.14783 -5.28*** | -0.13312 -4.41*** | -0.14636 -5.26*** | -0.13324 -4.73*** |
| Y2008-2015_dummy | | 0.04162 2.21** | | | | 0.10404 2.91*** | | |
| Y2007_dummy | | | -0.00873 -0.32 | | | | -0.04761 -1.05 | |
| Y2008_dummy | | | -0.0374767 -1.32 | | | | 0.09559 2.05** | |
| Y2009_dummy | | | -0.0049619 -0.12 | | | | 0.13689 1.98** | |
| Y2010_dummy | | | | 0.07005 2.93*** | | | | 0.12409 2.37** |
| Y2011_dummy | | | | 0.09472 3.60*** | | | | 0.15836 2.75*** |
| Y2012_dummy | | | | 0.02272 0.75 | | | | 0.10172 1.53 |
| Constant | 0.25627 9.11*** | 0.22342 6.95*** | 0.26276 8.52*** | 0.21792 8.97*** | 0.46778 9.34*** | 0.40530 6.69*** | 0.46767 9.25*** | 0.48375 9.07*** |
| Pseudo R ² | 0.05750 | 0.05170 | 0.06370 | 0.05110 | 0.06910 | 0.06460 | 0.06960 | 0.06180 |
| Observation | 935 | 935 | 935 | 935 | 935 | 935 | 935 | 935 |