INFORMATION ASYMMETRY AND ITS IMPACT ON COST OF CAPITAL: VOLKSWAGEN CASE
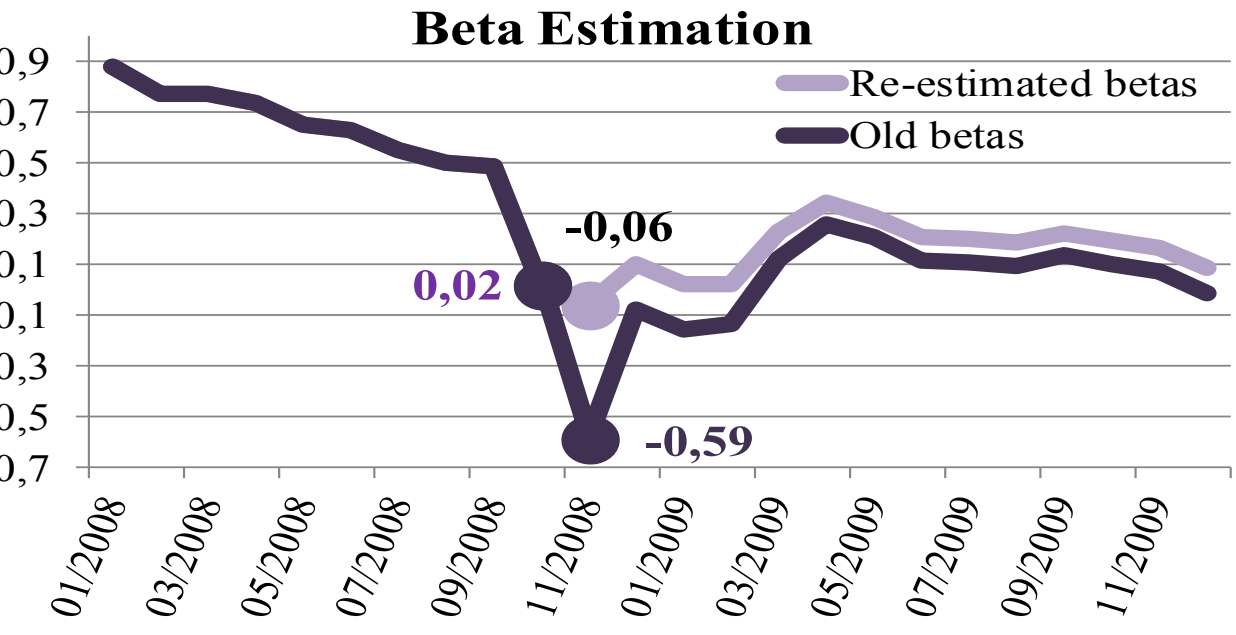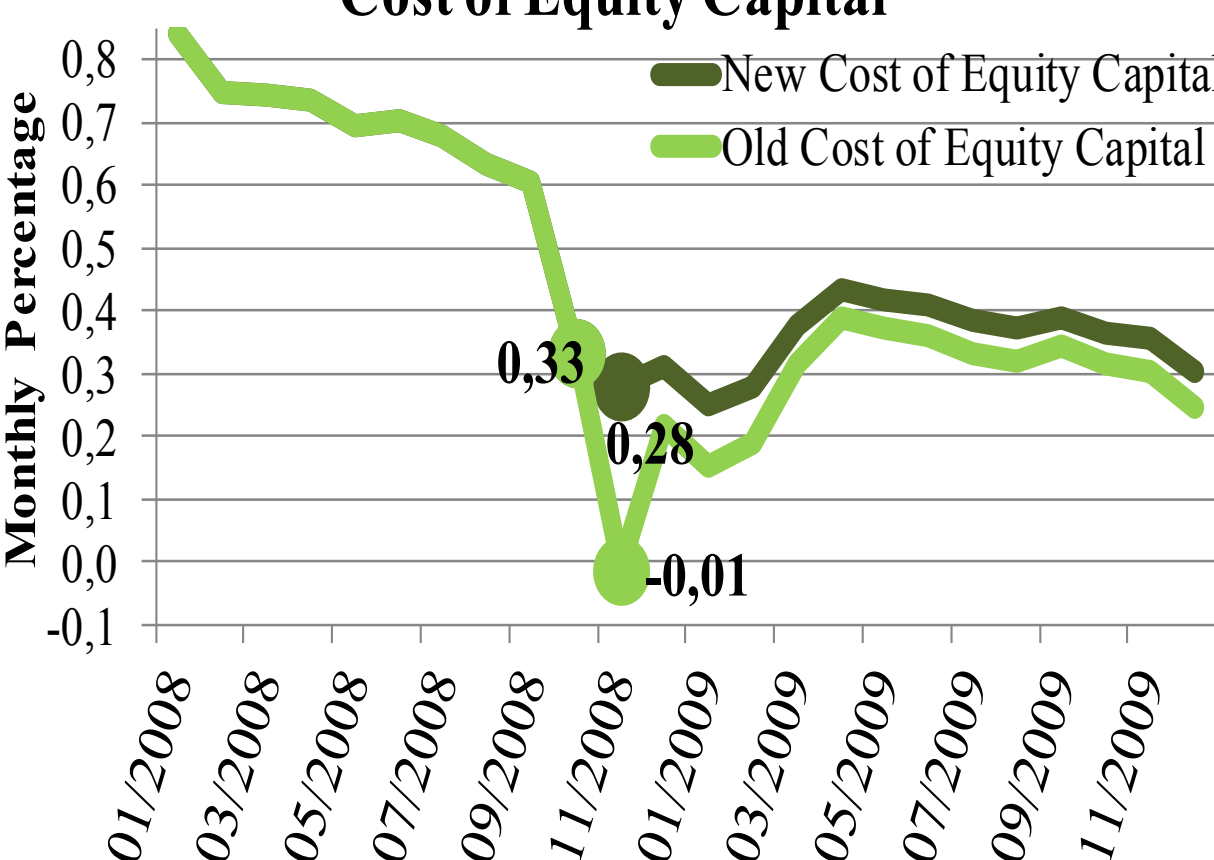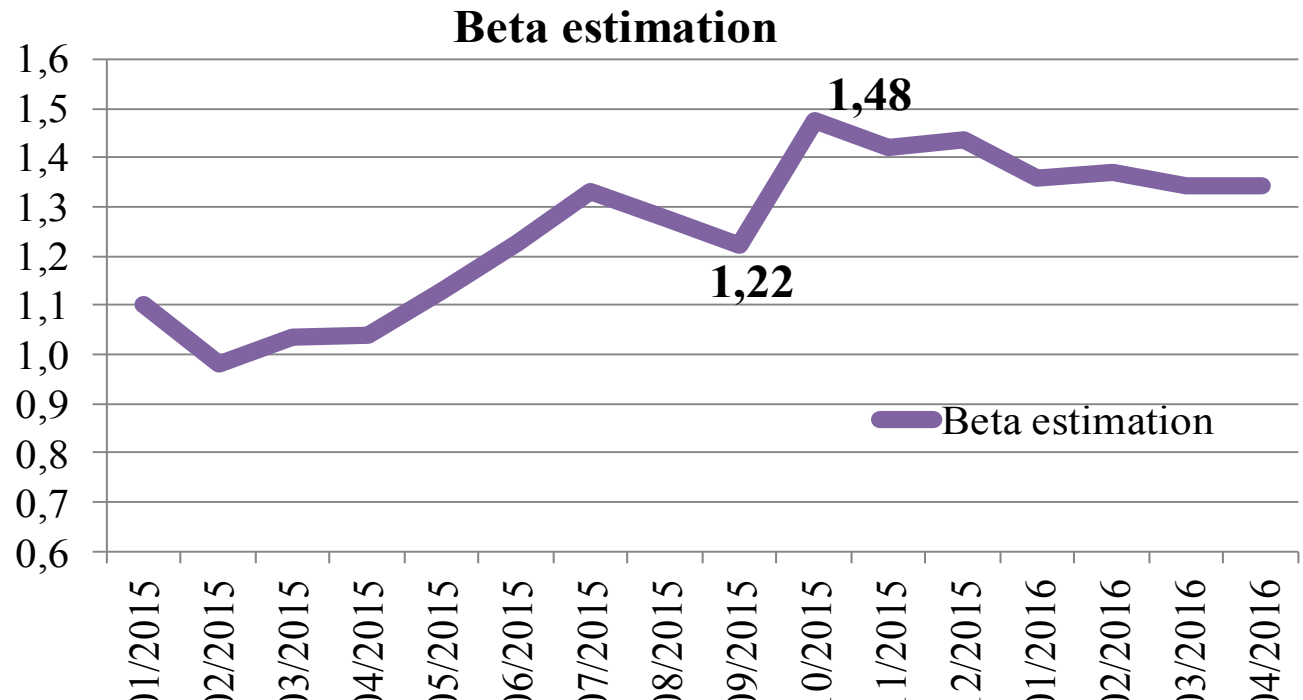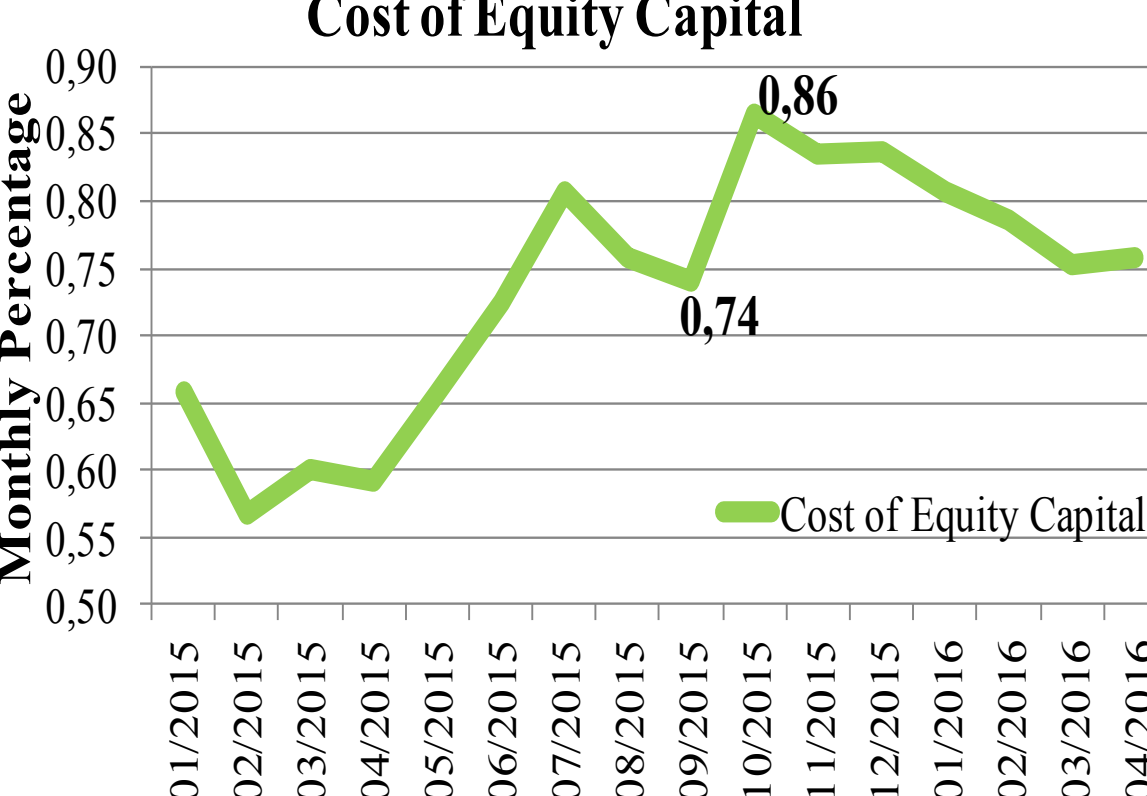
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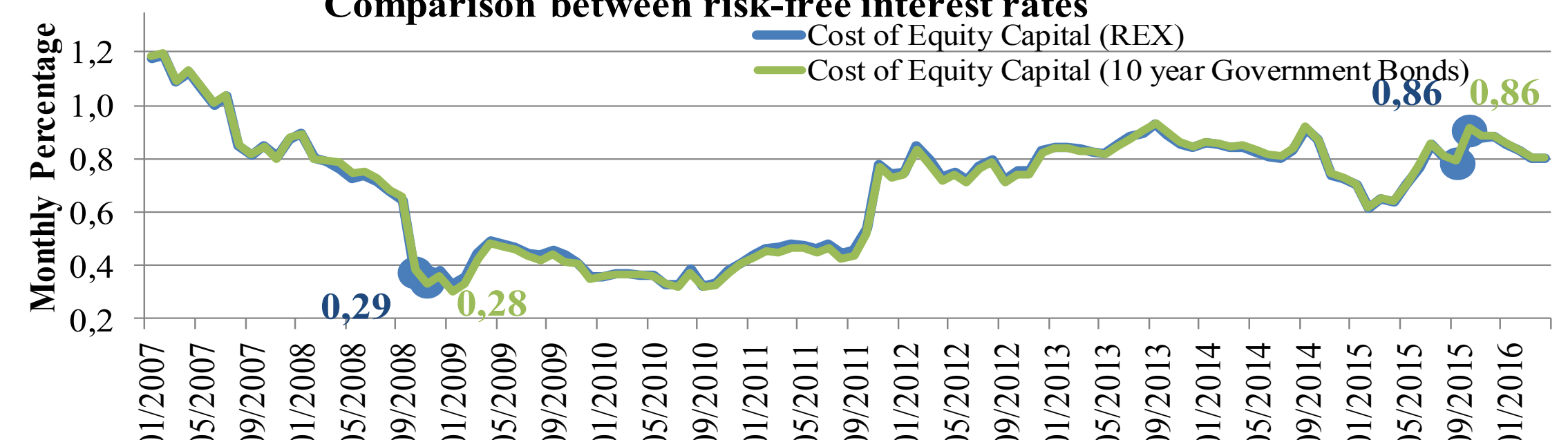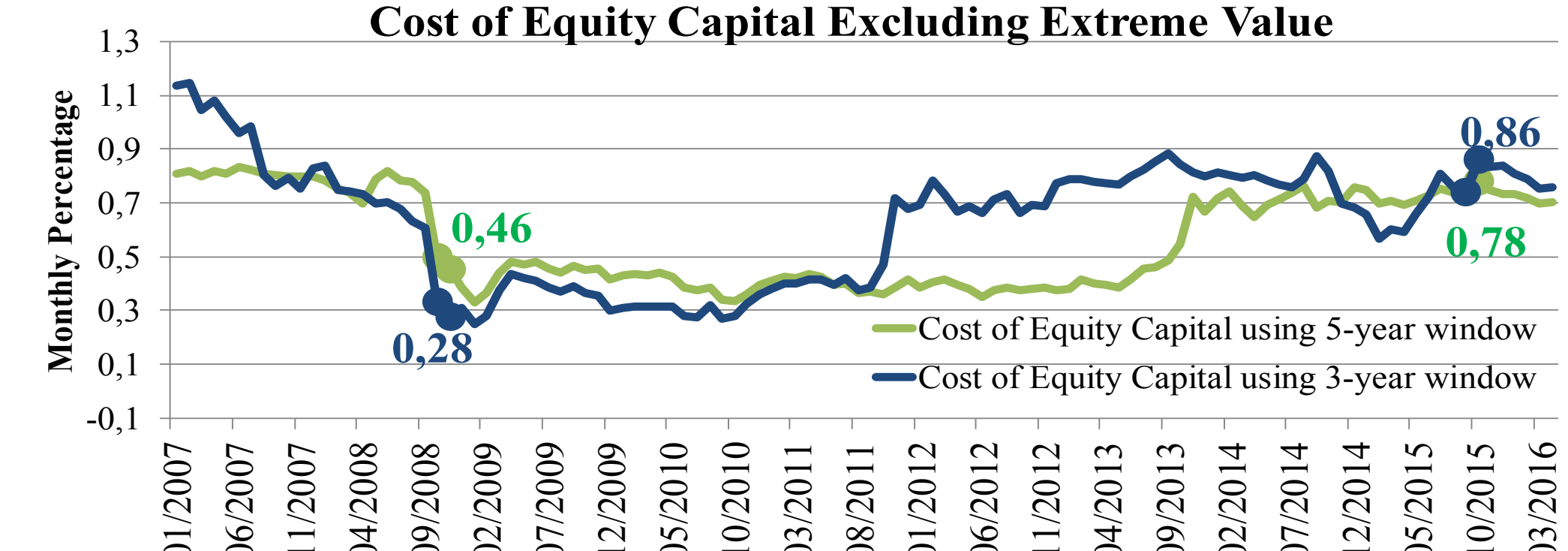
ABSTRACT

Information asymmetry takes place when the information between two parties undertaking a transaction differs. The disclosure of the information creates an impact on the organization's cost of capital (Diamond & Verrecchia, 1991). This paper is investigating the effect of this factor in cost of equity capital by using the Capital Asset Pricing Model. The study will be done through an analysis of the disclosure of positive and negative news for Volkswagen Company.

INFORMATION ASYMMETRY AND RELATIONSHIP WITH COST OF CAPITAL

Review of Literature:

- **Diamond and Verrecchia** (1991) and **Kim and Verrecchia** (1994) concluded that there is a negative relationship between the disclosure level and the cost of capital.
- **Luzi Hail**'s empirical study in 2000, where 73 Swiss firms were analysed, shows that the disclosure of the information decreases the cost of capital in univariate analysis.
- **Botosan and Plumlee**'s investigation in 2002 shows that higher annual report disclosure is related with lower cost of equity capital after controlling for market beta and firm size.
- **Easley and O'Hara** (2004) concluded that investors who have less private information demand higher return for the stock due to the risk which is created by the appearance of private information (information asymmetry).
- **Leuz and Verrecchia** (2004), they argue that poor-quality reporting creates information risk which translates into higher cost of capital.
- **Kothari and Short** (2003) concluded that the impact on cost of capital depends on the person who is making the disclosure.
  - **Biggest impact:** Financial press or manager's negative disclosure
  - **No impact:** Analyst disclosure or manager's positive disclosure

CAPITAL ASSET PRICING MODEL (CAPM)

Graham and Harvey's (2001) study where 392 CEOs were surveyed: only 64% calculate the cost of equity and from them: 73,5% almost always use the CAPM model.

Capital Asset Pricing Model estimates the expected return:

$$E(r_i) = r_f + (E(r_m) - r_f)\beta_i$$

- **E(r_i):** The expected return on the stock.
- **Beta**: was estimated using a rolling window of three years of monthly returns ending in the month for which the beta is estimated.
- **Risk-free interest rate**: proxied by 10-year Government Bonds.
- **Expected market risk premium**: proxied by market portfolio:
  * Market index: DAX 30.
  * **Market risk premium: 0,556%** (Sample period: 2004-2016)

⇒ This model is based on restrictive assumptions.
⇒ **Database: Thomson Reuters DataStream**

NEWS SELECTED AND ITS IMPACT ON STOCK PRICES

1. Positive News Disclosure:

- Takes place 28th of October 2008 in "The New York Times"
- Porsche increased its stakes in Volkswagen from 35% to 74.1%.
- Disclosure made through an agent who is related to the firm

2. Negative News Disclosure:

- Takes place 18th of September 2015 in "The New York Times"
- Environmental Protection Agency (E.P.A) held Volkswagen responsible for using special software which was activating or deactivating the equipment responsible for CO_2 emissions
- Disclosure made through independent agent: E.P.A

RESULTS

Positive News Disclosure

Beta Estimation

⇒ **Negative beta:**
⇒ DAX30 decline in 2007-2008 due to the crisis.
⇒ Increase in VW share prices due to news.

⇒ **Speculation** related to Porsche disclosure and hedge funds.
⇒ **CAPM assumptions were violated**: share prices are higher than its intrinsic value due to Speculation effect.
  - **Re-estimate the model**: omit extreme observation of **November 2008** (Brealey, Myers, & Allen, 2010).
⇒ Cost of Equity Capital decreased 15,15% (103,03% with extreme value).
⇒ Share price increase of 46,15% due to News and Speculation.

Cost of Equity Capital

Negative News Disclosure

Beta estimation

⇒ **Positive beta:**
⇒ Stock moves in the same direction as the market but to higher extend.
⇒ Stock prices decrease: 34,15%.

⇒ The effect of the disclosure is seen in an increase in Cost of Equity Capital as the theory states.
⇒ Cost of Equity Capital increased 16,22%.

Cost of Equity Capital

ROBUSTNESS CHECKS

REX interest rate

⇒ **REX index includes:** German government bonds, Federal debt obligations and Treasury notes with a fix coupon and remaining term between 6 months to 10.5 years.
⇒ The results are not affected by the modification of long-term risk-free proxy.

Comparison between risk-free interest rates

Five Year Rolling Window

⇒ **Results are in general robust** to the size of the rolling window
⇒ **Exception**: Gap during 2011-2013 driven by an extreme observation October 2008.

Cost of Equity Capital Excluding Extreme Value

CONCLUSIONS

Empirical evidence suggests that:

⇒ **The positive news** has decreased the Cost of Equity Capital.
⇒ Porsche, to a certain extent, is considered as a separate entity by the market in case of positive disclosure.
⇒ **The negative** news has increased the Cost of Equity Capital.
⇒ **Results are robust** to risk-free proxy changes and different rolling window estimation.
⇒ Because the speculation took place, results about the positive news should be considered with caution.
⇒ We do not control for other elements like growth, etc. that could take place simultaneously.

Future research that could be performed to see the differences in the impact of the news on Cost of Equity Capital:

- The usage of different Cost of Equity model like multibeta model (which controls different elements that may affect the cost of capital)
- The usage of short-term risk-free interest rate as there is not proper method to choose the correct proxy.
- The change of market proxy for DAFOX index (which represent the value-weighted portfolio of all stocks that are traded on the Frankfurt Stock Exchange).