
CROSS-SECTIONAL VARIATION IN THE EARNINGS RESPONSE COEFFICIENT:

CURRENT EVIDENCE FROM S&P500 COMPANIES

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3rd Assignment
Research on Corporate Transparency

EARNINGS RESPONSE COEFFICIENT (ERC) & ESTIMATION

- Earnings Response Coefficient (ERC) measures the response of stock prices to earnings announcements and is the stock price change associated with an unexpected earnings change.
- ERCs are expected to be an increasing function of the extent an earnings announcement results in a revision in expected earnings and a decreasing function of the expected rate of return.
- $CAR = a + bUE + e$; where CAR is a measure of risk-adjusted return for security i cumulated over period t, UE is a measure of unexpected earnings, and b as ERC.
- Sample: WRDS Data (Compustat, CRSP, I/B/E/S) from 11/2019 - 12/2020
- Estimation of ERC focusing on the year 2020:
 1. Cumulative Abnormal Returns (CAR) around the earnings announcements (event date)
 - with a 3-day-window of $CAR[-1;1]$
 - with a 4-day-window of $CAR[-3;0]$
 - both with an estimation window of 250 trading days prior to the event date
 - S&P500 price change as a benchmark.
 2. Unexpected earnings (UE) as actual announced EPS minus analysts' (first) estimation prior to the announcement.

ERC & DETERMINANTS

- Influencing determinants for variations in ERC could be:
 - Increasing risk (beta) → Decreasing ERC
 - Increasing debt → Decreasing ERC
 - Increasing growth → Increasing ERC
 - Increasing earnings persistence → Increasing ERC
 - Increasing accrual quality → Increasing ERC
- These factors might show variations within sectors.

RESULTS (1/2)

- CAR [-3;0] on a 4-day-window level turned out to be more representative, thus the following regression refers to CAR4d (refer to Table I).
- Table II shows a positive ERC, statistically significant on a 10% level for $CAR4d \sim UE$.

Table I: Descriptive statistics for the year 2020

Descriptive Statistics								
	N	Mean	Std. dev.	Min.	25 %	Median	75 %	Max.
gvkey	1,005	33,158.217	48,294.153	1,078.000	5,783.000	10,499.000	29,649.000	189,491.000
year	1,005	2,020.000	0.000	2,020.000	2,020.000	2,020.000	2,020.000	2,020.000
quarter	1,005	2.495	1.118	1.000	1.000	2.000	3.000	4.000
hsiccd	1,005	4,615.495	1,915.871	831.000	3,411.000	4,481.000	6,029.000	9,999.000
CAR3d	1,005	-0.002	0.069	-0.534	-0.039	-0.004	0.033	0.416
CAR4d	1,005	0.000	0.061	-0.289	-0.036	0.000	0.033	0.371
UE	1,005	0.094	0.783	-5.980	-0.020	0.060	0.210	9.030

Figure I: Regression CARs and UE, year = 2020

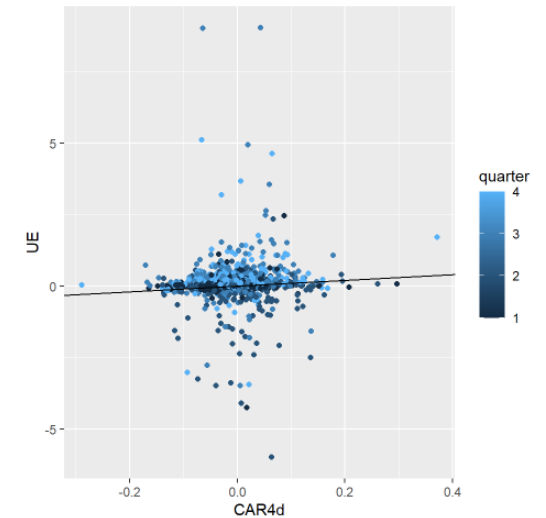


Table II: Regression CAR4d and UE, year = 2020

```
lm(formula = df$CAR4d ~ df$UE)

Residuals:
    Min       1Q   Median       3Q      Max
-0.28833 -0.03562 -0.00122  0.03398  0.36409

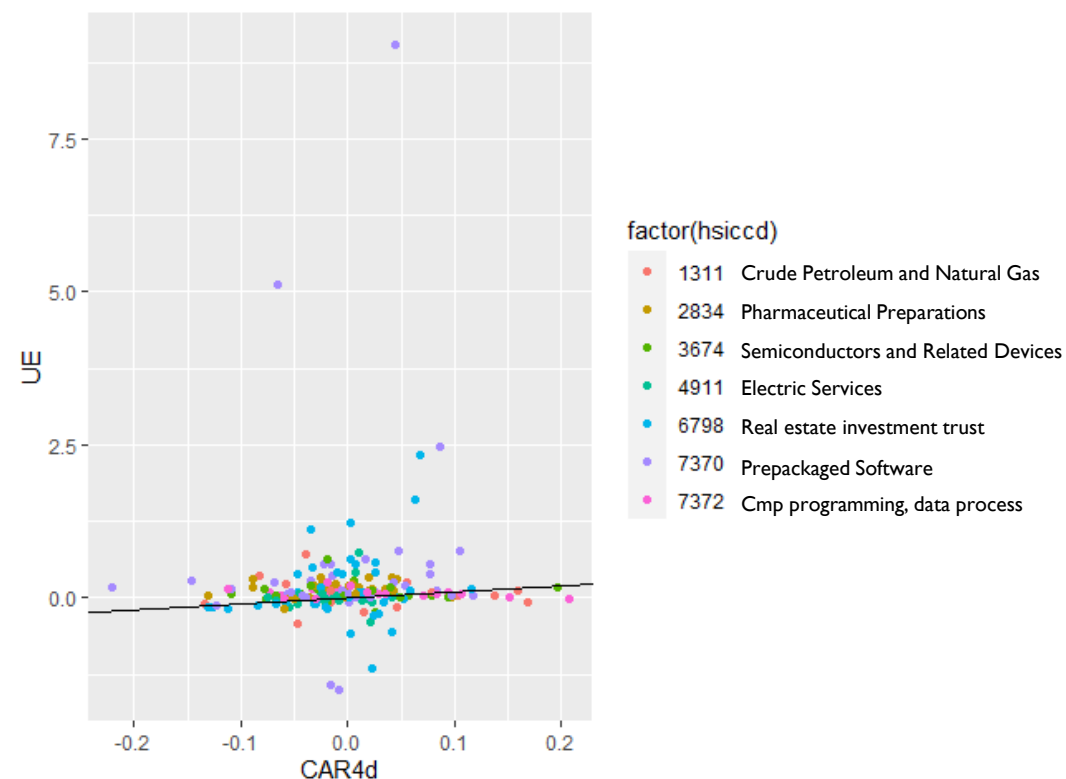
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -0.0005887   0.0019327   -0.305   0.7607
df$UE        0.0045554   0.0024930    1.827   0.0679 .
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.06188 on 1038 degrees of freedom
Multiple R-squared:  0.003207, Adjusted R-squared:  0.002246
F-statistic: 3.339 on 1 and 1038 DF, p-value: 0.06794
```

RESULTS (2/2)

- Figure II shows the sectors that were most represented in the dataset (No. of companies within sectors).
- Plotting the regression of CAR4d and UE highlighting different sectors at Q42020 and different quarters within the year 2020, show a diverse picture which could explain the variation in ERC (Figure II).
- Sector 7370 shows a high ERC that might be related to high growth firms, same as sector 7372.
- Other displayed sectors might result in a higher ERC due to lower risk, debt and higher accrual quality.

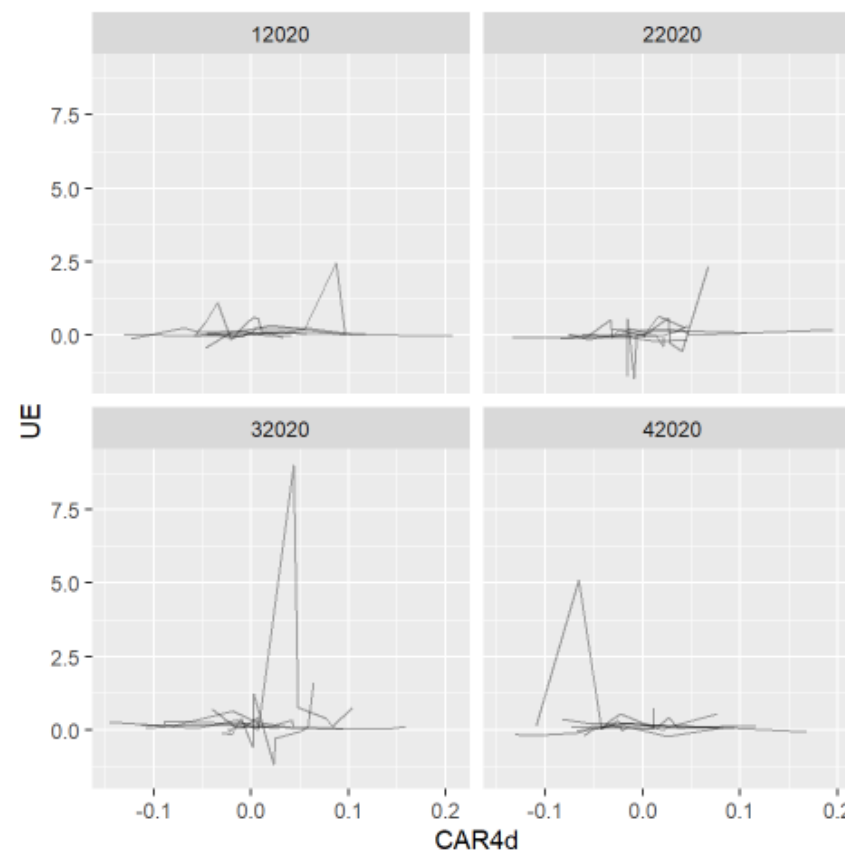
Figure II: Regression CAR4d and UE, showing the most represented sectors (hsiccd) in Q42020



ERC CROSS-SECTIONAL INTERPRETATION & LIMITATIONS

- ERC in 2020 was shown to be an increasing function of the extent an earnings announcement results in a revision in expected earnings (sign: 10% level), indicating there is information in the announcements.
- The variations might be explained by the differences between the sectors and quarters (see also Figure III).
- The cross-sectional variation with regard to sector could be extended. Other determinants that might have an effect on the results are risk (beta), capital structure and company size.
- Other estimation windows might extend the robustness of the findings.

Figure III: CAR4d and UE per quarter Q1-Q4 2020 showing most represented sectors



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