

MARKET REACTIONS TO THE ASSESSMENT OF OTHER SYSTEMICALLY IMPORTANT INSTITUTIONS

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4 June 2017

THE 12th YOUNG ECONOMISTS' SEMINAR
THE 23rd DUBROVNIK ECONOMIC CONFERENCE

Summary of the paper

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- How do financial markets react to the disclosure of the list of Other Systemically Important Institutions (O-SIIs) by the European Banking Authority?

- Using an **event study** we document that the **immediate reaction of the stock market is negative**.
 - ▣ However **within a few days** investors change their perception of *stigma*, resulting in an **increase in shareholders' wealth**.
 - ▣ **CDS spreads react similarly, increasing first before decreasing**.

- **CARs** are not only driven by the event *per se*, but are determined by other relevant factors such as **distance to default, turnover, and credit risk ratio**.

Preamble & Motivation (I)

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- On April 25th, 2016, EBA disclosed the first official list of **O-SIIs** → **financial institutions that are systemically important at a national level**, but are not included in the list of 29 global systemically important banks (G-SIBs).
- The objective is to identify institutions within the European Union with a **significant contribution to systemic risk at the national level**.

Preamble & Motivation (II)

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- We investigate how the publication of the O-SIIs list impacted banks' stock returns and CDS spreads →
 - ▣ a ***stigma effect***, i.e., the included financial institutions are perceived to be riskier,
 - ▣ ***no effect*** (or ***an opacity effect***), i.e., the event does not bring any new information to the market, or
 - ▣ a ***safety effect*** due to the fact that the institutions must maintain a capital buffer and are henceforth subject to a tighter supervision.

Preamble & Motivation (III)

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- Trade-off between *opacity* and *stigma effect* (Gorton and Ordoñez, 2016).
- Multiple studies have been conducted for assessing the market reaction to SIFIs / TBTF designation but there are no studies relating to publication of the **O-SIFs (D-SIBs) list**.
- **Positive / negative reaction** of market participants → **creating / destroying wealth** for the shareholders.

Main research question

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How did the publication of the O-SII list influence the banks' stock returns and CDS spreads?

Literature review

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- Market reaction to regulatory changes: **inconclusive results.**
 - Petrella and Resti (2013) **found no market reaction to EBA stress test** in 2011, concluding that **banks are opaque.**
 - Schafer et al. (2013) → **regulatory announcements have led to a decrease in banks' stock prices and an increase in CDS spread of banks** from Europe and the USA.
 - Sahin and de Haan(2016) → suggest that banks' stock market prices and CDS spreads generally showed **no reaction to the publication of the ECB's Comprehensive Assessment of banks in the euro area.**
 - Moenninghoff et al.'s (2015) results show **positive AR following the designation of the G-SIBs.**

Methodology (I)

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- **Event study methodology** (as in Schwert ,1981; MacKinlay 1997; Lamdin, 2001).
 - Estimation window: **250 trading days** prior to the each event day.
 - Event window: **11 trading days** (5 pre-event trading days, the event day, 5 post-event trading days).

Methodology (II)

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- Method for computing the expected returns → **market model**:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

- Abnormal returns (AR):

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}$$

- For assessing statistical significance of AR, 3 tests will be employed:
 - **1 parametric tests: t-test**, and
 - **2 non-parametric tests: generalized sign test** (Cowan, 1992) and **Corrado and Zivney rank test** (Corrado and Zivney, 1992; Cowan, 1992).
 - Other 2 parametric tests, i.e., **Patell's (1976)** and **Boehmer et al.'s (1991)** tests will be used for robustness checks.

Methodology (III)

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- Even though the abnormal returns are mainly influenced by the event *per se*, it is of interest to study other relevant factors that may have a significant influence over the abnormal performance of the financial institutions.
- For this purpose, we run a cross-sectional regression model for the O-SII sample using the *OLS method* similar with MacKinlay (1997) using the cumulative abnormal return (CAR) as dependent variable.

$$CAR_{ij} [t1; t2] = \alpha + \beta_1 \times DTD_{ij} + \beta_2 \times Bank\ Characteristics_{ij} + \beta_3 \times Country\ Controls_j + \varepsilon_{ij}$$

Data (I)

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- **Sample:** 64 banks' stock prices and 41 CDS spreads for banks included on the O-SIIs list, published by the EBA (Thomson Reuters Datastream)
- **Frequency:** daily.
- **Evens dates:** (1) official date when EBA disclosed the O-SIIs list, and (2) national dates when the central banks submitted the lists to the EBA
- **Market portfolio(s):** *MSCI World Index* for official date, and national broad indices (blue-chips) for national dates. For the CDS spread: *DS Europe Banks 5Y CDS Index*.
- **Robustness checks** using different indices (e.g., *STOXX Europe 600 Banks, CDS Total Return Index*).

Data (II)

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| Variable name | Description | Source |
|--|---|-----------------|
| Market variables | | |
| Stock Return | Log return of banks' stock prices | Datastream |
| AR | Abnormal returns of banks' stock prices or CDS spreads | Own computation |
| AAR | Average abnormal returns of banks' stock prices or CDS spreads | Own computation |
| Stock CAR | Cumulative abnormal returns of banks' stock prices over the event window | Own computation |
| Stock CAAR | Cumulative average abnormal return of banks' stock prices over the event window | Own computation |
| CDS Return | Log return of banks' CDS spreads | Datastream |
| CDS CAR | Cumulative abnormal returns of banks' CDS spreads over the event window | Own computation |
| CDS CAAR | Cumulative average abnormal return of banks' CDS spreads over the event window | Own computation |
| MSCI World Index | Log return of the MSCI World Index | Datastream |
| Broad local market indices (the blue-chip ones) | Log return of each country's local market indices that include just the blue-chip companies | Datastream |
| STOXX 600 Banks | Log return of the global STOXX 600 index | Datastream |
| Datastream Europe Banks 5 years CDS index | Log return of the Datastream Europe Banks 5 years CDS index | Datastream |
| iTraxx Europe 5 years CDS Total Stock Return Index | The level of the iTraxx 5 years CDS Total Stock Return Index for Europe | Deutsche Bank |

Descriptive statistics

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Panel A: Official event

| | Obs. | Mean | Std. Dev. | Min | Max | Non-euro zone (mean) | Euro zone (mean) | Difference in means | |
|----------------------------|------|---------|-----------|----------|---------|----------------------|------------------|---------------------|----|
| Stock Return [0; 0] (%) | 54 | -1.78 | 1.93 | -8.10 | 1.92 | -0.99 | -2.28 | 1.29 | ** |
| Stock CAR [0; 0] (%) | 54 | -1.20 | 1.73 | -7.66 | 2.44 | -0.69 | -1.59 | 0.90 | ** |
| Stock Return [-5; 5] (%) | 594 | 0.02 | 2.51 | -11.33 | 11.78 | 0.03 | 0.02 | 0.01 | |
| Stock CAR [-5; 5] (%) | 54 | 3.56 | 7.46 | -7.31 | 37.24 | 2.04 | 4.53 | -2.49 | |
| CDS Return [0; 0] (b. p.) | 39 | 143.18 | 183.92 | -103.56 | 667.64 | - | - | - | |
| CDS CAR [0; 0] (b. p.) | 39 | 129.81 | 180.65 | -108.63 | 661.57 | - | - | - | |
| CDS Return [-5; 5] (b. p.) | 429 | -26.63 | 220.56 | -1466.83 | 1530.23 | - | - | - | |
| CDS CAR [-5; 5] (b. p.) | 39 | -411.98 | 529.02 | -1928.31 | 669.16 | - | - | - | |

Empirical results and discussion (I) - Returns

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Panel A: Stock CAARs EBA date (%)

| Stock CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
|---------------------|--------|--------|---------|---------|---------|
| Full sample | -1.20 | 0.44 | 1.27 | 0.92 | 3.56 |
| Euro zone | -1.59 | 0.03 | 1.30 | 1.00 | 4.53 |
| Non-euro zone | -0.59 | 1.09 | 1.23 | 0.79 | 2.04 |

Significance tests - Full sample

| | | | | | |
|---|------------------------|-----------------------|-----------------------|----------------|-----------------------|
| t-test (p-value) | -2.66 (0.01) | 0.67 (0.49) | 1.62 (0.11) | 0.77 (0.44) | 2.38 (0.02) |
| Generalised sign test (p-value) | -4.08 (0.00) | 1.90 (0.06) | 2.71 (0.01) | 1.09 (0.28) | 2.72 (0.01) |
| Corrado and Zivney rank test (p-value) | -1.60 (0.10) | -0.07 (0.94) | 0.18 (0.86) | 0.01 (0.99) | 0.65 (0.51) |

Significance tests - Euro zone banks

| | | | | | |
|---|------------------------|-----------------|-----------------------|----------------|-----------------------|
| t-test (p-value) | -2.26 (0.02) | 0.03 (0.98) | 1.06 (0.29) | 0.53 (0.59) | 1.94 (0.05) |
| Generalised sign test (p-value) | -3.56 (0.00) | 0.62 (0.54) | 2.71 (0.01) | 0.97 (0.33) | 2.71 (0.01) |
| Corrado and Zivney rank test (p-value) | -1.73 (0.09) | -0.38 (0.71) | 0.30 (0.76) | 0.17 (0.87) | 0.73 (0.46) |

Significance tests - Non-euro zone banks

| | | | | | |
|---|------------------------|-----------------------|-----------------------|-----------------|----------------|
| t-test (p-value) | -1.58 (0.12) | 2.05 (0.04) | 1.88 (0.06) | 0.80 (0.43) | 1.64 (0.10) |
| Generalised sign test (p-value) | -2.09 (0.04) | 2.28 (0.02) | 0.97 (0.33) | 0.53 (0.60) | 0.97 (0.33) |
| Corrado and Zivney rank test (p-value) | -1.15 (0.25) | 0.44 (0.66) | 0.16 (0.87) | -0.13 (0.90) | 0.49 (0.62) |

Empirical results and discussion (II) – CDS spreads

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| <i>Panel A: CDS CAARs EBA date (b. p.)</i> | | | | | |
|--|--------|--------|---------|---------|---------|
| CDS CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | 129.81 | 102.44 | 65.67 | 172.81 | -411.97 |

Significance tests

| | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| t-test (p-value) | 2.05 (0.04) | 1.14 (0.25) | 0.60 (0.55) | 1.03 (0.30) | -1.95 (0.05) |
| Generalised sign test (p-value) | 3.45 (0.00) | 3.45 (0.00) | 2.46 (0.01) | 3.12 (0.00) | -2.77 (0.01) |
| Corrado and Zivney rank test (p-value) | 0.71 (0.48) | 0.38 (0.71) | -0.15 (0.88) | -0.65 (0.52) | -2.34 (0.02) |

Empirical results and discussion (III)

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| Variables | (1) Stock CAR [0; 0] | (2) Stock CAR [0; 1] | (3) Stock CAR [-1; 1] | (4) Stock CAR [-1; 5] | (5) Stock CAR [-5; 5] |
|--------------------------------|-------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|
| Model 1 | | | | | |
| Distance to default | 0.0032*** (0.0008) | -0.0007 (0.0015) | -0.0068** (0.0025) | -0.0074** (0.0031) | -0.0236** (0.0086) |
| Constant | -0.0178*** (0.0029) | 0.0058 (0.0044) | 0.0247*** (0.0075) | 0.0223** (0.0100) | 0.0770*** (0.0225) |
| Country clusters | YES | YES | YES | YES | YES |
| Observations | 53 | 53 | 53 | 53 | 53 |
| R-squared | 0.092 | 0.002 | 0.126 | 0.077 | 0.266 |
| Model 2 | | | | | |
| Distance to default | 0.0009 (0.0022) | 0.0008 (0.0035) | -0.0019 (0.0042) | -0.0061 (0.0058) | -0.0149* (0.0082) |
| Size | -0.0047 (0.0029) | -0.0016 (0.0035) | -0.0029 (0.0038) | -0.0064 (0.0057) | 0.0061 (0.0067) |
| Turnover by volume | 0.0029 (0.0027) | 0.0053** (0.0021) | 0.0055** (0.0025) | 0.0002 (0.0053) | 0.0022 (0.0064) |
| Tier 1 ratio | -0.0459 (0.0505) | -0.1230 (0.1620) | -0.0051 (0.1960) | -0.1110 (0.2840) | 0.4460 (0.4310) |
| Funding structure | -0.0222 (0.0198) | -0.0271 (0.0230) | 0.0041 (0.0267) | 0.0321 (0.0524) | 0.0926 (0.0721) |
| Leverage | -0.0017 (0.0020) | 0.0018 (0.0031) | 0.00323 (0.0028) | 0.0005 (0.0045) | 0.0108 (0.0068) |
| Credit risk ratio | 0.0377 (0.1600) | 0.2710* (0.1480) | 0.5630* (0.3220) | 0.6720 (0.4900) | 2.0900** (0.8590) |
| Dummy SSM | -0.0033 (0.0144) | -0.0163 (0.0121) | -0.0048 (0.0167) | -0.0194 (0.0271) | -0.0121 (0.0304) |
| Dummy EBA | 0.0046 (0.0221) | -0.0104 (0.0133) | -0.0094 (0.0158) | -0.0160 (0.0244) | -0.0103 (0.0322) |
| Dummy intervention | 0.0019 (0.0045) | -0.0082 (0.0058) | -0.0068 (0.0068) | 0.0134 (0.0129) | -0.0295 (0.0179) |
| Dummy state ownership | 0.0006 (0.0070) | 0.0072 (0.0069) | 0.0109 (0.0065) | 0.0013 (0.0157) | 0.0393* (0.0205) |
| Dummy crisis | -0.0105 (0.0149) | 0.0037 (0.0101) | 0.0137 (0.0136) | 0.0331 (0.0225) | 0.0321 (0.0289) |
| Size to GDP ratio | 3.1630 (6.2070) | -9.1970 (8.2560) | -3.6230 (8.2950) | 37.8900 (22.7800) | 35.2200 (22.3300) |
| GDP growth | -0.0296 (0.0398) | -0.0221 (0.0339) | -0.0542 (0.0412) | -0.0405 (0.0786) | 0.0986 (0.1040) |
| Constant | 0.0465 (0.0381) | -0.0230 (0.0815) | -0.0538 (0.0903) | 0.0929 (0.1140) | -0.3010* (0.1560) |
| Country clusters | YES | YES | YES | YES | YES |
| Observations | 50 | 50 | 50 | 50 | 50 |
| R-squared | 0.344 | 0.451 | 0.504 | 0.271 | 0.557 |
| Mean of dependent variable (%) | -1.20 | 0.44 | 1.27 | 0.92 | 3.56 |

Empirical results and discussion (III) - Returns

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| National events | Low Subgroup Stock CAARs (%) | High Subgroup Stock CAARs (%) | Diff |
|---|---|--|-------------|
| Bank characteristics | | | |
| Non Interest Income to Total Revenues | -0,036 | 0,002 | 0,038* |
| Total Loans to Total Assets | 0,003 | -0,038 | -0,041** |
| Distance to Default | -0,030 | -0,005 | 0,025* |
| Banking market characteristics | | | |
| Banking competition | 0,001 | -0,034 | -0,035* |
| Overall Restrictions on Banking Activities Index | -0,031 | 0,000 | 0,031 |
| Capital Regulatory Index | -0,038 | 0,003 | 0,041** |
| Independence of Supervisory Authority Index (overall) | -0,037 | 0,001 | 0,038* |
| Bank Concentration for deposits | -0,001 | -0,035 | -0,034* |
| Bank Concentration for assets | 0,002 | -0,038 | -0,040* |
| Foreign-owned banks | 0,006 | -0,036 | -0,042** |
| Bailouts to Total assets banking system | -0,001 | -0,035 | -0,034* |

Empirical results and discussion (III)

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| Dependent variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Stock CAARs (%) | | | | | | | |
| Distance to Default | -0.0062** (0.0022) | -0.0051* (0.0025) | -0.0049** (0.0023) | -0.0042* (0.0021) | -0.0064** (0.0026) | -0.0053** (0.0021) | -0.0061** (0.0023) |
| Non Interest Income to Total Revenues | 0.1036** (0.0387) | 0.0801** (0.0379) | 0.0772* (0.0386) | 0.0578 (0.0367) | 0.0491 (0.0333) | 0.0386 (0.0354) | 0.0701* (0.0376) |
| MTBV | | | -0.0064** (0.0026) | -0.0059** (0.0025) | -0.0072*** (0.0024) | -0.0064*** (0.0018) | -0.0086*** (0.0022) |
| Restrictions on Banking Activities Index | -0.0099*** (0.0029) | -0.0094*** (0.0026) | -0.0096*** (0.0028) | -0.0126*** (0.0028) | -0.0090** (0.0034) | -0.0135*** (0.0039) | -0.0161*** (0.0023) |
| Independence of Supervisory Authority | -0.0093* (0.0052) | -0.0147** (0.0052) | -0.0150** (0.0053) | -0.0178*** (0.0048) | -0.0241*** (0.0059) | -0.0281*** (0.0037) | -0.0269*** (0.0030) |
| Lerner Index | 0.1227*** (0.0394) | 0.1061** (0.0389) | 0.1192** (0.0417) | 0.0877** (0.0358) | 0.1519*** (0.0521) | 0.1401*** (0.0381) | 0.1596*** (0.0432) |
| Financial transparency | | 0.0148** (0.0056) | 0.0145** (0.0060) | 0.0185** (0.0068) | 0.0269*** (0.0092) | 0.0360*** (0.0046) | 0.0273*** (0.0045) |
| Bank_concentration | | | | 0.0004** (0.0002) | 0.0005** (0.0002) | 0.0006** (0.0002) | 0.0003 (0.0002) |
| Inflation | | | | | 1.3113* (0.6918) | 0.8073 (0.6362) | 0.4907 (0.4178) |
| Bailouts to Total assets banking system | | | | | | -0.1412** (0.0555) | -0.1441*** (0.0374) |
| Constant | 0.0420* (0.0228) | -0.0203 (0.0283) | -0.0143 (0.0290) | -0.0302 (0.0290) | -0.1105* (0.0555) | -0.1126*** (0.0285) | -0.0283 (0.0309) |
| Observations | 40 | 40 | 40 | 40 | 40 | 39 | 39 |
| R-squared | 0.388 | 0.437 | 0.454 | 0.494 | 0.560 | 0.609 | 0.668 |
| F | 3.387 | 4.491 | 5.530 | 5.740 | 6.614 | 65.12 | 45.37 |

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Conclusion (I)

- For the **official event**, we document that the **immediate reaction of the stock market is negative**. However within a few days investors change their perception of **stigma**, resulting in an **increase in shareholders' wealth**. And this is the case for both euro zone and non-euro zone banks.
- **CDS spreads react similarly, increasing first before decreasing.**
- For the **national event**, CAARs are negative across all windows, but statistically insignificant, although with some exceptions where only one significance test out of three shows that the CAARs are statistically different from zero.

Conclusion (II)

- One can conclude that we **have rather an opacity effect, that is, the events did not bring new information for the investors, and they waited for an official designation.**
- Abnormal returns are not only driven by the event *per se*.
- The most prominent explanatory factors of the **official event CARs are distance to default.**

THANK YOU!

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