

# University of Economics, Prague

## Faculty of Finance and Accounting

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### **Doctoral Thesis**

## **The Cross-Border M&A Wealth Impact in the European Banking Industry**

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September, 2018

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## **1. Introduction**

- ☐ **Chapter I** introduces the M&A trends in banking industry.
- ☐ **Chapter II** is the comprehensive theoretical background, and surveys the empirical evidence in previous literature.
- ☐ **Chapter III** includes the methodology and hypothesis employed in the study, the population and sample
- ☐ **Chapter IV** presents the results of the data analysis.
- ☐ **Chapter V** presents the empirical evidence. The results are compared with the past research.
- ☐ **Chapter VI** summarizes the conclusion and outlines the achievements of the thesis goals.
- ☐ **Chapter VII** references

## 1. Introduction

- ❑ **Previous literature:** considered that M&As measured by event studies mostly do not create value, and in the few cases that value creation existed it was on the side of the acquired firm at the expense of the acquiring company.
- ❑ **Central theory defended in the present study:** combined M&As do create value in the European Banking industry. This study discusses the empirical findings combined with the macroeconomic, legal, and financial cyclical factors.
- ❑ **Current literature:** our results are in line with the latest studies made by policy makers and scientific researchers about European banking profitability and consolidation.
- ❑ **Further research topics:** will support further research topics and discussions in relation to the levels of consolidation in the banking system, the overall profitability, and the decrease of the likelihood of insolvency.

## 2. Theoretical background

### 2.1. Literature review

- ☐ M&A most research outcomes until 2008 neither gain or lose significantly on average.

### 2.2. Research gap

- ☐ **Gap:** no clear evidence of value creation to the combined entities.
- ☐ **Our research:**
  - A. Defends that further consolidation in Europe creates value.
  - B. M&A is the most feasible solution to mitigate the increasing number of European bankruptcy.
- ☐ **Impact:** Positive impact in the banking profitability, hence in people's lives.

### 3. Methodology and Hypothesis

- ☐ **The methodology:** we applied the methodology widely referred in the literature as “event study”.
- ☐ **The design:** built on the studies made by Teply, Starova, and Cernohorsky (2007).
- ☐ **The hypothesis:** this study has several hypotheses tested and observed using statistical time series
- ☐ **The observation “window”:** CAR of stock on announcement date, and weeks before and after the event.
- ☐ **The statistical benchmark:** DAX and BKX

### **3. Methodology and Hypothesis**

#### **Hypothesis I:**

HA: The European cross-border merger and acquisition in the banking industry announced during the period of 1985 and 2017 created wealth effects among the bidding banks.

#### **Hypothesis II:**

HA: The European cross-border merger and acquisition in the banking industry announced during the period of 1985 and 2017 created wealth effects among the acquired banks.

#### **Hypothesis III:**

HA: The European cross-border merger and acquisition in the banking industry announced during the period of 1985 and 2017 created wealth effects among the combined bidding and acquired banks.

#### **Hypothesis IV:**

HA: The European cross-border merger and acquisition in the banking industry announced during the period of 1985 and 2017 on average created more value to the targeted banks in Western Europe than in Eastern Europe.

### 3. Methodology

#### Determinants of value

$$\text{Value of an asset} = \sum_{t=1}^{t=n} \frac{E(CF)^t}{(1-r)^t} \quad (1)$$

$$\begin{aligned} &\text{Free Cash Flow to the Firm} \\ &= EBIT (1 - t)(1 - \text{Reinvestment Rate}) \end{aligned} \quad (2)$$

$$\text{Terminal Value} = \frac{EBIT_{n+1}(1-t)(1 - \frac{g_n}{ROC_n})}{(WACC_n - g_n)} \quad (3)$$

$$\begin{aligned} &EPS \\ &= \text{Net profit or loss attributable to ordinary shareholders during a period} \\ &/ \text{by the weighted average number of ordinary shares in issue during the period.} \end{aligned} \quad (4)$$

#### Event Study

The  $R_{it}$  is the return of stock of the bank  $i$  in the period  $t$

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (5)$$

The  $AR_{it}$  indicates the abnormal profitability of stock in the period  $t$

$$AR_{it} = R_{it} + \hat{\alpha} - \hat{\beta}_i R_{mt} \quad (6)$$

The  $\overline{AR}_t$  indicates the average abnormal stock profits at  $t$  period

$$\overline{AR}_t = \frac{\sum_{i=1}^N AR_{it}}{N} \quad (7)$$

Statistical significance, average by the estimated standard deviation

$$\frac{\overline{AR}_t}{\hat{s}(\overline{AR}_t)} \quad (8)$$

Sensitivity of  $\beta_i$  returns of the stock related to the variations of the overall market

$$\beta_i = \frac{cov(R_{it}, R_{mt})}{var(R_{mt})} \quad (9)$$



### 3. Methodology

#### Event Study

The sum of the difference between the expected returns and the actual returns

$$CAR = \sum_{i=T_1}^{t=0} \overline{AR}_t \quad (10)$$

Applied for longer event windows to correct a series of abnormal returns

$$SCAR_i(T_1, T_2) = \frac{CAR_i(T_1, T_2)}{SD_i} = \frac{CAR_{i-EW}}{SD_i} \quad (11)$$

$S_i$  represents the regression model standard error

$$SD_i = S_i \sqrt{k + \frac{k}{T} + \frac{\sum_{t=1}^k R_{mt} - k(\bar{R}_m)^2}{\sum_{t=1}^k (R_{mt} - \bar{R}_m)^2}} \quad (12)$$

#### By other authors

Brown and Warner (1985) applied the variance tests based on the maximum likelihood of the estimation window

$$\hat{\sigma}_{AAR}^2 = \frac{\sum_{\tau=t-235}^{t-30} (AAR_{\tau} - \overline{AAR})^2}{235-2} \quad (13)$$

$$\hat{S}(AAR_{\tau}) = \sqrt{\frac{1}{233} \sum_{\tau=t-255}^{t-30} (AAR_{\tau} - \overline{AAR})^2} \quad (14)$$

$$T_{BW} = \frac{AAR_{\tau}}{\hat{S}(AAR_{\tau})} \quad (15)$$

Cowan (1992), compares the period affected by the event with an unaffected

$$ZG = \frac{W - n\hat{p}}{n\hat{p}(1-\hat{p})^{\frac{1}{2}}} \quad (16)$$

### 3. Methodology

#### Accumulative returns

Weights of  $AR_{At}$  and  $AR_{Bt}$  are the total assets of the acquirer and the acquired banks

$$AR_{Ct} = \frac{TA_{At} \cdot AR_{At} + TA_{Bt} \cdot AR_{Bt}}{AR_{At} + AR_{Bt}} \quad (17)$$

#### Granger causality

Test applied to support a hypothesis and used to determine if a time series is useful in forecasting another (Granger, 1969).

$$\mathbb{P}[Y(t+1) \in A \mid \mathcal{L}(t)] \neq \mathbb{P}[Y(t+1) \in A \mid \mathcal{L}_{-x}(t)] \quad (18)$$

*Note: we applied one day lag considering that a M&A announcement has an immediate effect across the global stock markets.*

#### The null hypothesis

The null hypothesis is divided in the alternatives ( $H_0$ ) and ( $H_1$ ) as follows:

$$H_0: E(R_i | y_i) - (R_i) = E(\varepsilon_i | y_i) = 0 \quad \forall y_i \quad (19)$$

The hypothesis  $H_1$  indicates that it has no impact when the abnormal stock return  $i$  is different than zero.

$$H_1: E(R_i | y_i) - (R_i) = E(\varepsilon_i | y_i) \neq 0 \quad \forall y_i \quad (20)$$

## 4. Data Analysis

### Sample

- ☐ European banks that completed cross-border M&A transactions during the period between 1<sup>st</sup> of January 1985 and 31<sup>st</sup> of December 2017.

### Examination

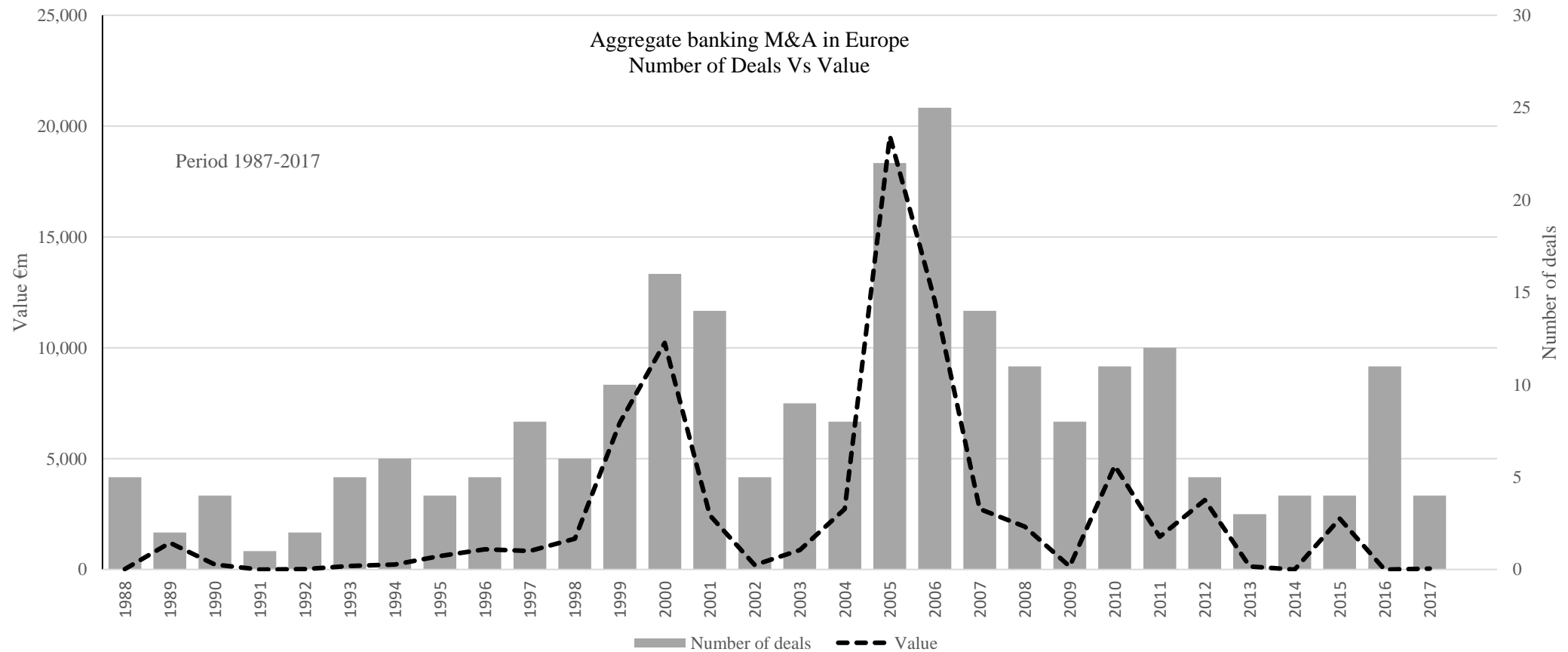
- ☐ Stock performance post and ex-ante M&A announcement, and the *CARs* after the transaction.

### Population

- ☐ The bidder and target banks are from Europe.
- ☐ The bidder and target banks are publicly traded.
- ☐ The transaction value is larger than 5€m.
- ☐ Only completed deals were considered.
- ☐ The maximum period between the announcement and completion of the deal is 365 days.
- ☐ The transactions considered were solely above the acquisition of 51% of shares.

## 4. Data Analysis

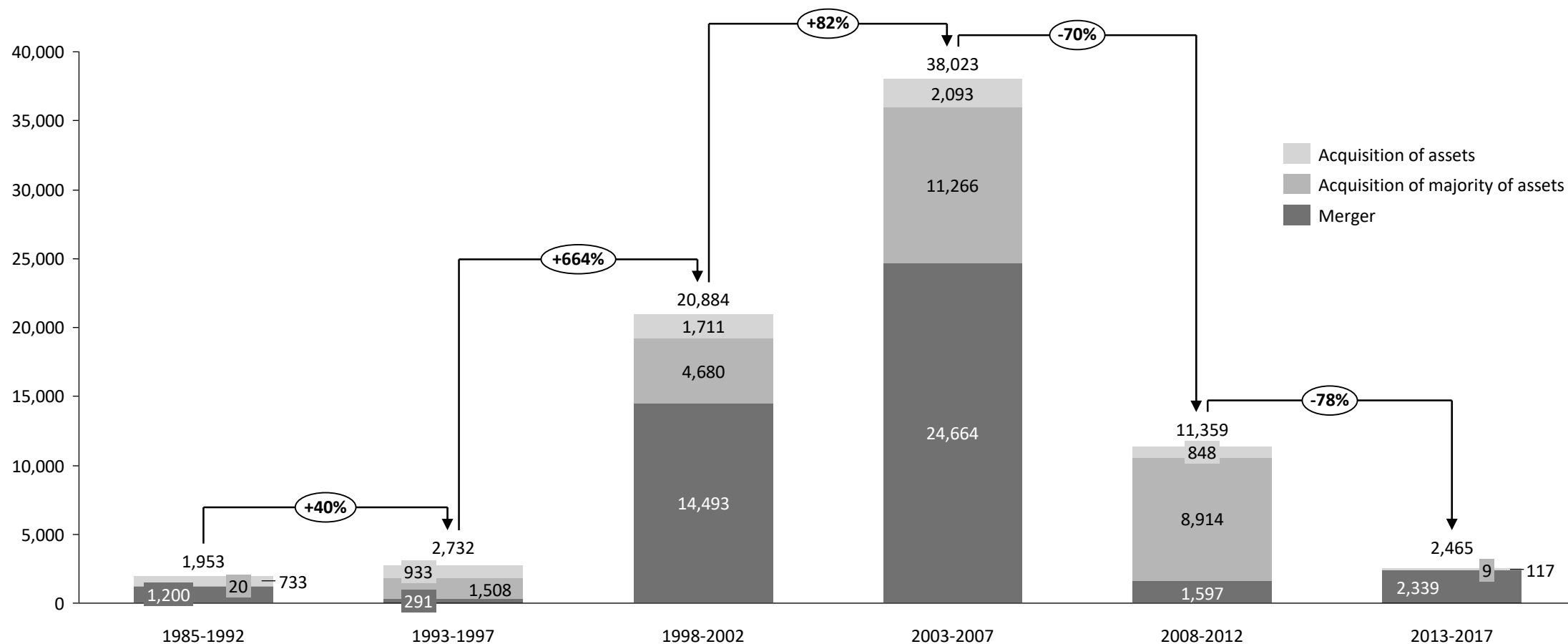
Figure 1: Transaction form & Deal status in Europe



Source: author calculation. Eikon Thomson Reuters M&A database

## 4. Data Analysis

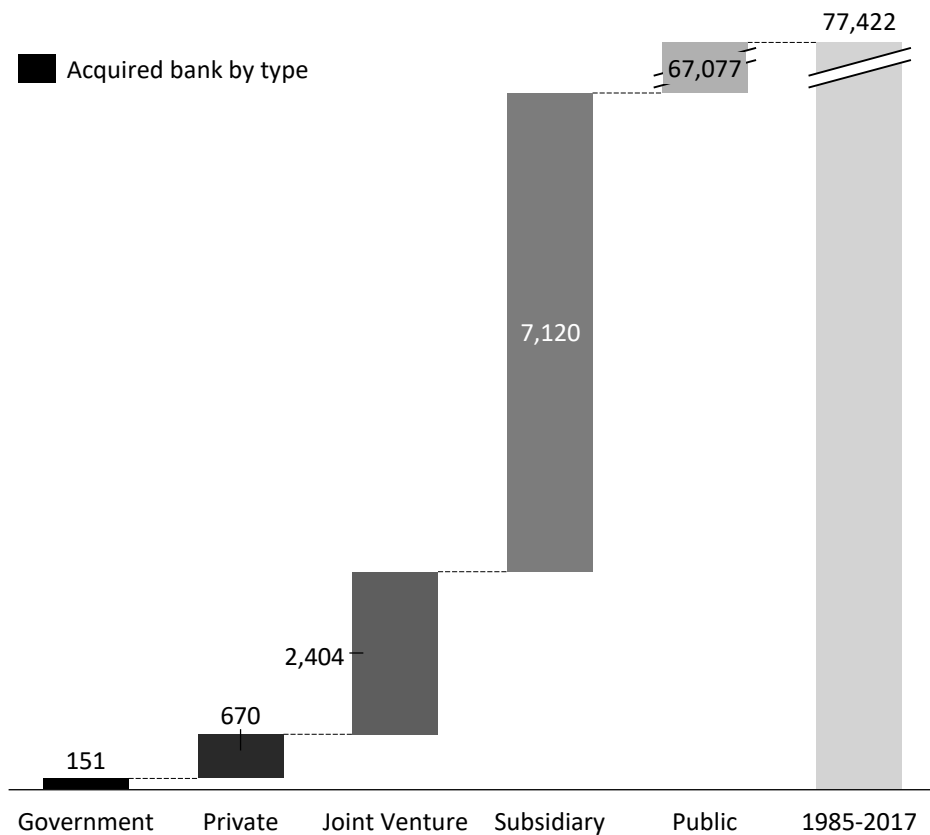
Figure 2: Transaction form in Europe during 1985 -2017



Source: author calculation. Eikon Thomson Reuters M&A database

## 4. Data Analysis

Figure 3: Breakdown of acquired bank by type during 1985-2017



Source: author calculation. Eikon Thomson Reuters M&A database

Table 1: Number of deals per each advising bank

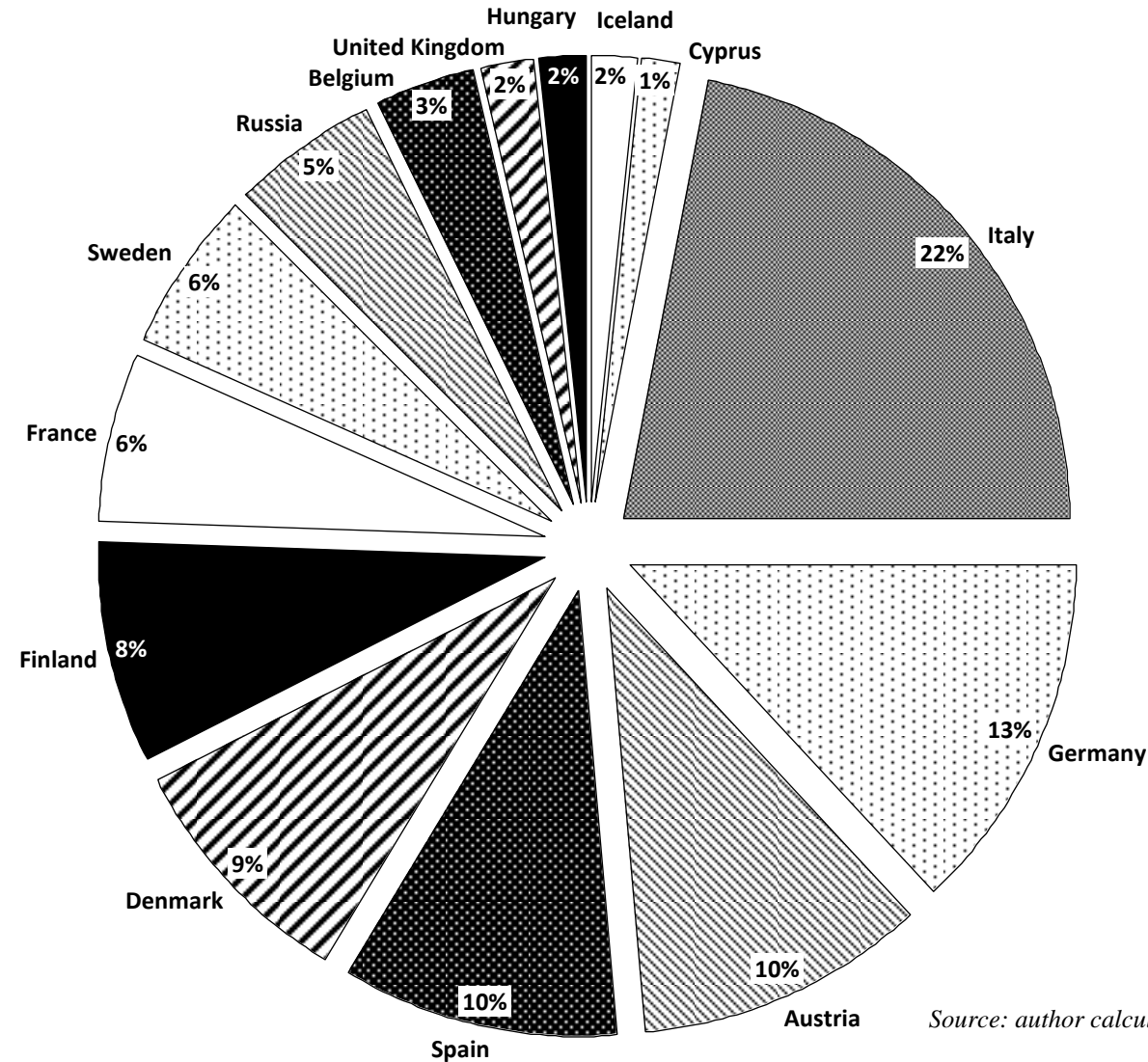
Financial advisors: Acquirer Vs Target 1985-2017			
Deals	Acquirer	Deals	Target
3	Lazard AB	3	Deutsche Bank
2	Goldman Sachs & Co	3	JP Morgan & Co Inc
2	KPMG	2	Citi
2	Morgan Stanley	2	Goldman Sachs & Co
1	Bank of America	2	Lehman Brothers
1	Merrill Lynch	2	International
1	Danske Bank	1	AIB Corporate Finance
1	JP Morgan & Co Inc	1	Bank of America
1	Merrill Lynch & Co	1	Merrill Lynch
1	Inc	1	Lazard
1	MNB Maizels	1	Morgan Stanley
1	Nomura Securities Co	1	Rothschild & Co
1	Ltd	1	UBS Investment Bank
1	Santander Global		
1	Corporate Banking		

Source: author calculation. Eikon Thomson Reuters M&A database

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### 4. Data Analysis

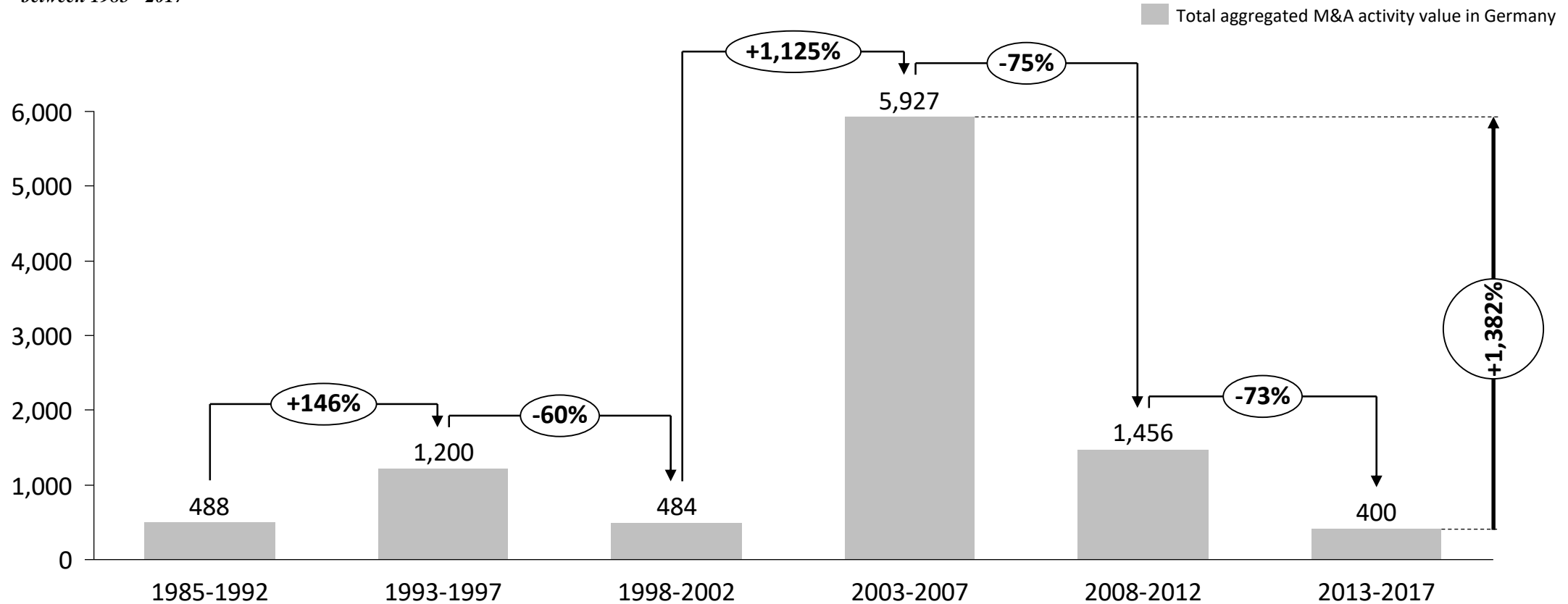
*Figure 4: Ranking of countries per aggregated transaction % during the period of 1985-2017*



Source: author calculation. Eikon Thomson Reuters M&A database

## 4. Data Analysis

Figure 5: Total M&A aggregated value in Germany  
between 1985 - 2017



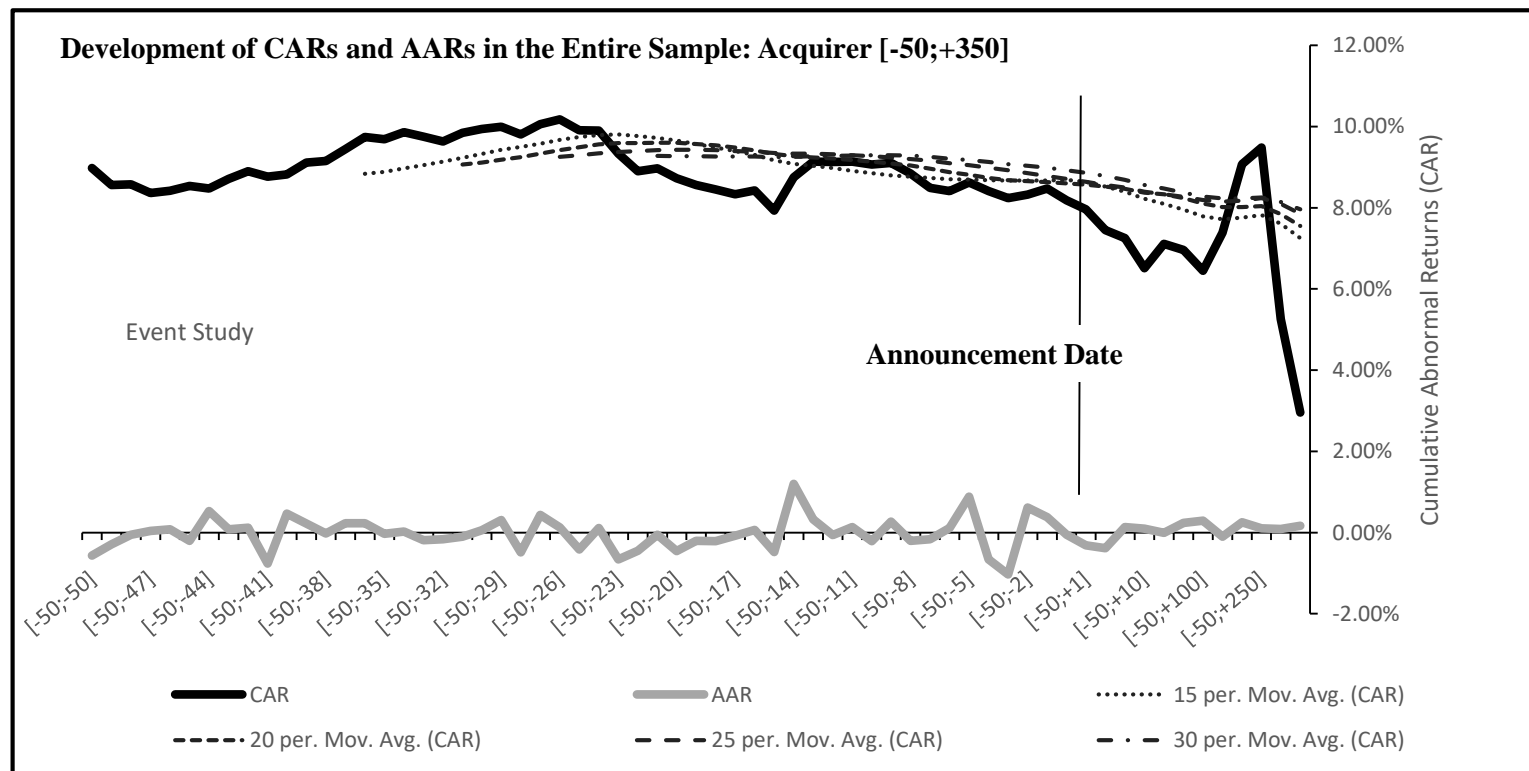
Source: author calculation. Eikon Thomson Reuters M&A database



## 5. Empirical results

### Wealth Effects to the Acquirers

**Figure 6:** Summary with previous empirical findings to the M&A bidding banks

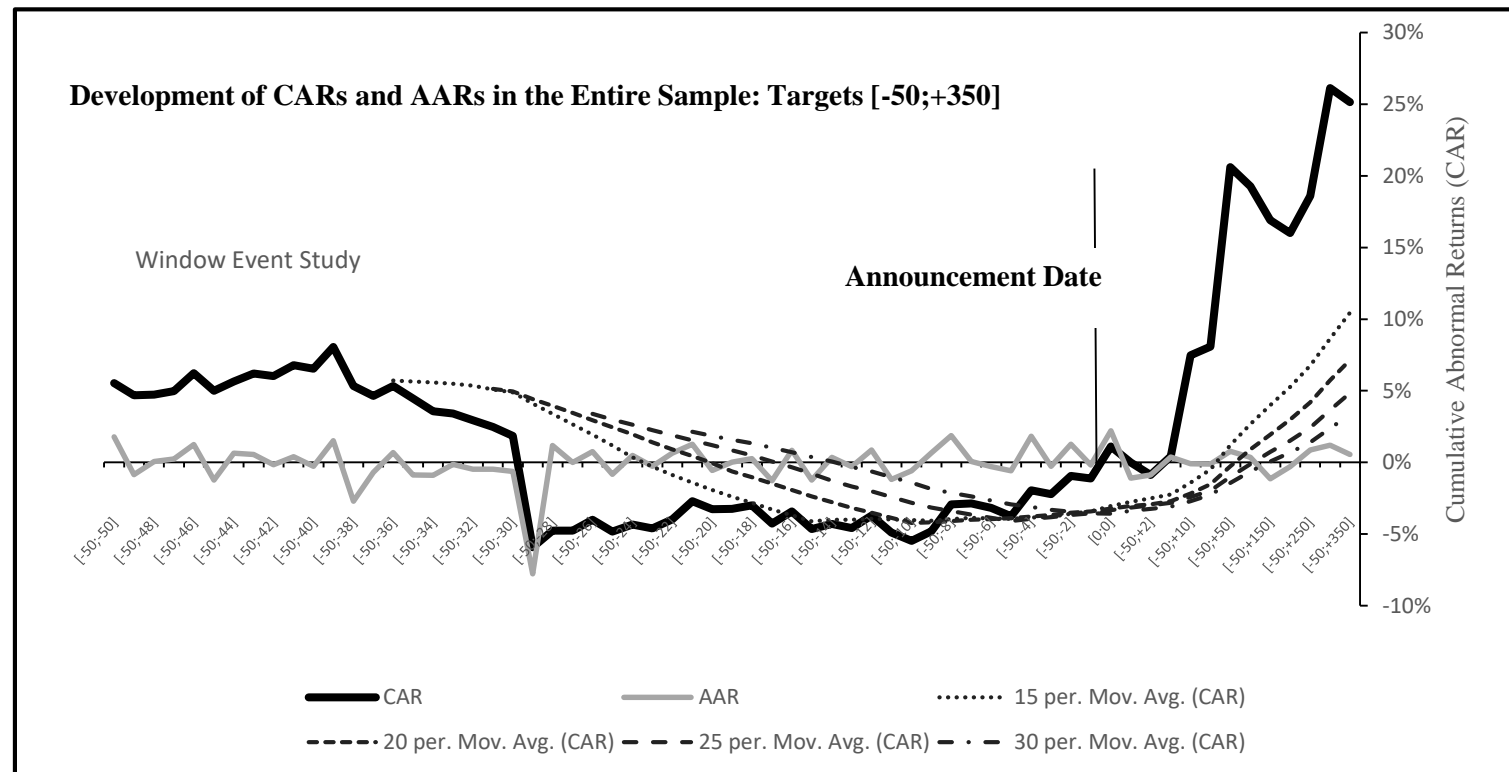


Source: author calculation. Eikon Thomson Reuters M&A database

## 5. Empirical results

### Wealth Effects to the Targets

**Figure 7:** Summary with previous empirical findings to the M&A target banks

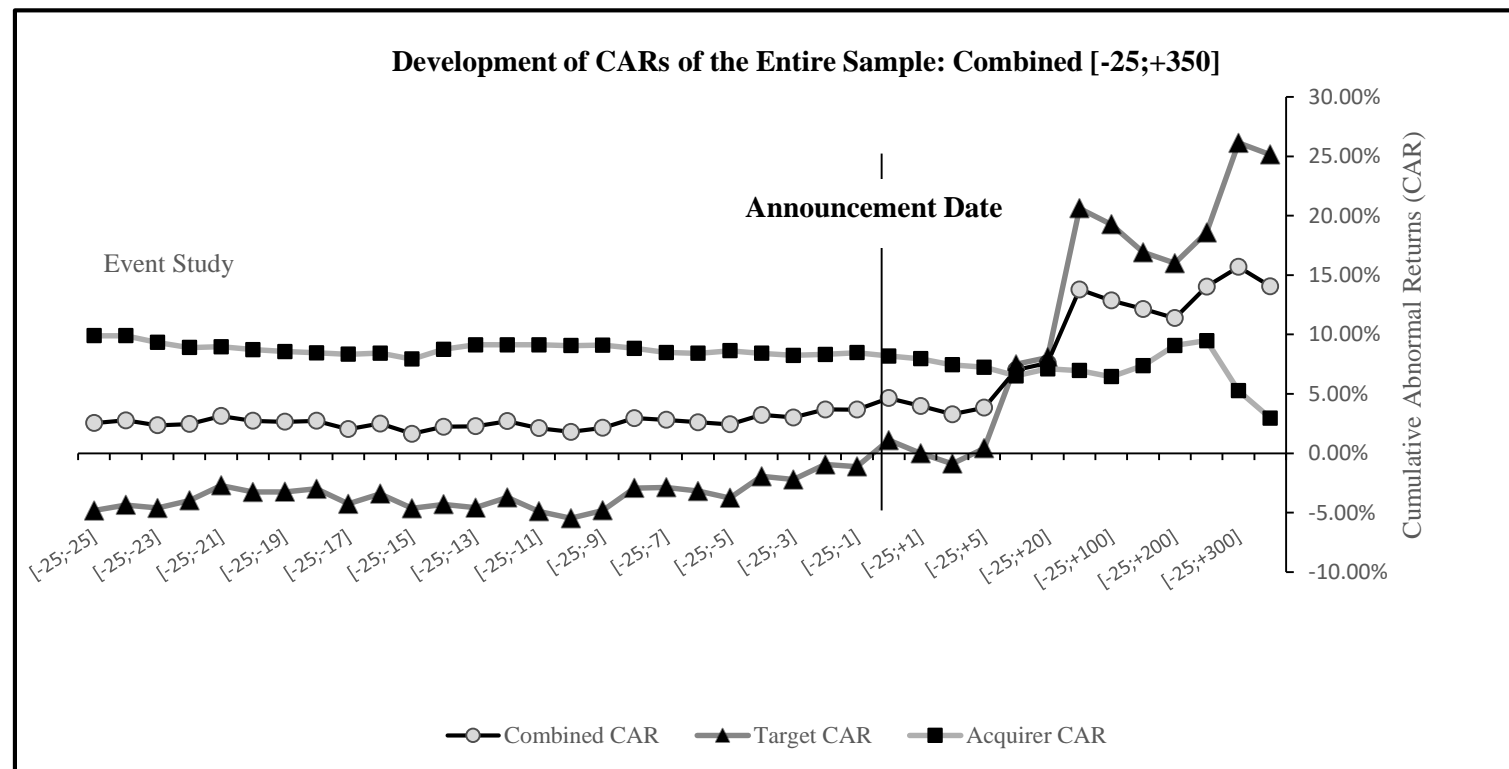


Source: author calculation. Eikon Thomson Reuters M&A database

## 5. Empirical results

### Wealth Effects to the combined Target and Acquirer

*Figure 8:* Summary with previous empirical findings to the M&A combined banks

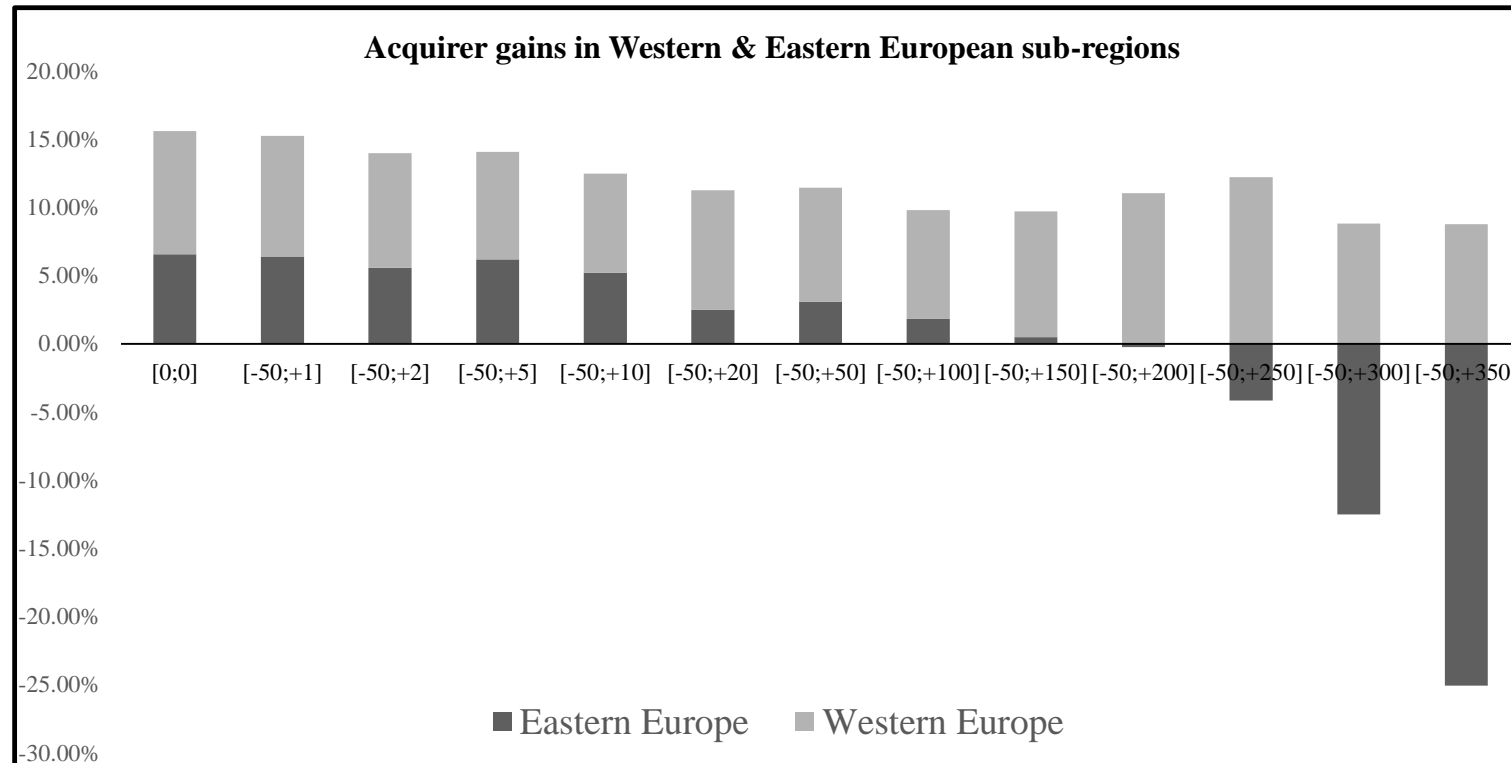


Source: author calculation. Eikon Thomson Reuters M&A database

## 5. Empirical results

### Wealth Effects to the Acquirer in Western & Eastern Europe

*Figure 9:* Summary with previous empirical findings to the M&A combined banks



Source: author calculation. Eikon Thomson Reuters M&A database

## 6. Conclusion

### ☐ The bidder

- The European cross-border merger and acquisitions in the banking industry announced during the period of 1985 and 2017 have not created wealth effects among the bidding banks.

### ☐ The target

- The European cross-border merger and acquisition in the banking industry announced during the period of 1985 and 2017 created wealth effects among the acquired banks.

### ☐ The combined entities

- The European cross-border merger and acquisition in the banking industry announced during the period of 1985 and 2017 created wealth effects among the combined bidding and acquired banks.

### ☐ The geographic region

- The European cross-border merger and acquisition in the banking industry announced during the period of 1985 and 2017 on average created more value to the targeted banks in Western Europe than in Eastern Europe.

### ☐ From a regulatory European perspective, we recommend:

- The establishment of a single European financial entity to promote cross-border banking M&As, the harmonization of the tax framework, the creation of a faster and easier process for approval of cross-border M&As

## 6. Conclusion

*Table 2: Comparison of cumulative abnormal returns (CARs), the statistical significance, and the results from previous studies*

Banking Mergers & Acquisitions		Year	Period	window	CAR (%)	(n=)	t-stats
Study							
Previous studies to the bidding banks	Dodd	(1980)	1979-1977	[0, -1]	-1.0%	60	-2.98***
	Asquith	(1983)	1962-1976	[0, -1]	0.2%	196	0.78*
	Eckbo	(1983)	1963-1978	[0, -1]	0.1%	102	-0.12*
	Desai & Stover	(1985)	1976-1982	[0, -1]	0.9%	18	2.18***
	Baradwaj, D. & Fraser	(1990)	1973-1987	[0, -1]	-0.4%	159	2.38***
	Fatemi & Furtado	(1987)	1974-1979	[0, -1]	2.1%	117	0.75*
	Doukas & Travlos	(1988)	1975-1983	[0, 0]	0.1%	301	0.84*
	Andrade, M., Stafford	(2001)	1973-1998	[-1, +1]	-0.7%	3688	n.a.
	Jaber	(2004)	1962-2001	[-1, +1]	-0.9%	25	-1.79**
	Teply, S., Cernohorsky	(2008)	1998-2007	[0, 0]	-1.3%	52	5.58***
	Diaw	(2014)	1990-1999	[0, 0]	-0.2%	45	-0.68*
	<b>Moreira</b>	<b>(2018)</b>	<b>1985-2017</b>	<b>[0, 0]</b>	<b>-0.1%</b>	<b>75</b>	<b>-0.38*</b>
Previous studies to the target banks	Dodd	(1980)	1979-1977	[0,-1]	13.4%	71	6.2***
	Asquith	(1983)	1962-1976	[0,-1]	6.2%	211	23.0***
	Eckbo	(1983)	1963-1978	[0,-1]	6.2%	57	9.97***
	Andrade, M., Stafford	(2001)	1973-1979	[-1, +1]	16.0%	598	n.a.
	Andrade, M., Stafford	(2001)	1980-1989	[-1, +1]	16.0%	1226	n.a.
	Andrade, M., Stafford	(2001)	1990-1998	[-1, +1]	15.9%	1864	n.a.
	Andrade, M., Stafford	(2001)	1973-1998	[-1, +1]	16.0%	3688	n.a.
	Jaber	(2004)	1962-2001	[-1, +1]	21.7%	17	19.2***
	Teply, Cernohorsky	(2008)	1998-2007	[-1, +1]	12.6%	55	24.5***
	Diaw	(2014)	1990-199	[0,-1]	12.0%	45	2.4***
	<b>Moreira</b>	<b>(2018)</b>	<b>1985-2017</b>	<b>[-1, +1]</b>	<b>2.0%</b>	<b>74</b>	<b>2.0***</b>
Previous studies with combined banks	Cybo-Ottone and Murgia	(2000)	1988-1997	[-1, +1]	12.6%	126	2.81***
	Beitel and Schiereck	(2001)	1985-2000	[-1, +1]	1.4%	98	5.53***
	Andrade, M., Stafford	(2001)	1973-1979	[-1, +1]	1.5%	598	n.a.
	Andrade, M., Stafford	(2001)	1980-1989	[-1, +1]	2.6%	1226	n.a.*
	Andrade, M., Stafford	(2001)	1990-1998	[-1, +1]	1.4%	1864	n.a.*
	Andrade, M., Stafford	(2001)	1973-1998	[-1, +1]	1.8%	3688	n.a.*
	Teply, Cernohorsky	(2008)	1998-2007	[-1, +1]	0.6%	55	1.49**
	Diaw	(2014)	1990-1999	[0,-1]	0.64%	45	2.45***
	<b>Moreira</b>	<b>(2018)</b>	<b>1985-2017</b>	<b>[-1, +1]</b>	<b>4.64%</b>	<b>74</b>	<b>1.51**</b>

\* significant at 10% level, \*\* significant at 5% level, \*\*\* significant at 1% level

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Note: please consult the Thesis to access the whole Chapter 7. with the complete reference list.

# Q&A