

Proposed Research Project
Presented for conversion to the Masters of Public Policy Thesis
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“An ounce of prevention is worth a pound of cure”

– Benjamin Franklin

Working Title: The Contemporary Effects of EU Member-State Macro-Prudential
Regulatory Responses on Financial Sector Systemic Risk:
Evidence from the NYU Volatility Institute

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GitHub Repository: https://github.com/laurencehendry/SRISK_Thesis

1. Introduction

As a report on the conclusions from the recent 2015 Financial Stability Conference attests “macro-prudential policy provides the most appropriate tools for staving off financial stability risks in the specific areas they arise” (Aehling, 2015, 1). Sustainable growth in the financial sector since the European Sovereign Debt Crisis, it is argued, is best achieved by ceasing with a ‘muddling through’ approach to the fragile banking system and instituting a “comprehensive pan-european institutional and legal framework to address future crisis challenges” (Aehling, 2015, 13). According to Admati and Hellwig, central to this initiative is the “correction of distortions in the funding mix of banks” (Admati & Hellwig, 2013, 146) with Basel III a major step in the positive direction. However, this ambition to design and implement such macro-prudential policy, to judge its effectiveness over time, and to exercise parsimony in the selection of model controls poses a serious challenge to empirical researchers and policymakers in the field.

The goal of our thesis is to rise to this challenge by employing qualitative and quantitative methods to identify and measure the effect of recent national macro-prudential initiatives for different European banking sectors on corresponding systemic risk levels over time.

Note on Macroprudential Policy Progress in the Eurozone

The Global Financial Crisis (GFC) revealed at least two striking features of the European financial system. Firstly, the impact of a downturn in the financial sector on the real economy can be devastating. Secondly, the GFC revealed necessary oversight mechanisms and institutional set-ups across Europe to be either completely absent or dramatically insufficient and non-harmonised across member states. This holds true for the financial system in general, and for the banking sector in particular. Banking institutions were the crucial element for the failure of stability due to their inherent systemic risk: The failure of just one institute can spread negative repercussions throughout the industry.

Throughout and since the aftermath of the GFC it became clear that existing mechanisms regarding the banking sector and inherent systemic risks would need to be reformed. And other mechanisms - such as the macro-prudential dimension - still needed to be created. Financial stability in this sense could not be guaranteed by the working tools that were implemented in the Union up to the GFC: Monetary policy and micro-prudential policy.

With the implementation of Basel III the European Union made a significant step towards a more harmonised approach to oversee the financial system in general and the banking sector specifically. And the EU made a significant step to introduce an efficient and harmonised way for macro-prudential oversight, as well. The EU implemented Basel III in a twofold way: Through the Capital Requirements Directive IV (CRD IV) which needed to be transposed into national law. And the Capital Requirements Regulation (CRR) which directly became applicable in all member states. In combination with the

mandate for national macro-prudential authorities (as recommended by the European Systemic Risk Board Board with ESRB/2011/3) CRD IV and CRR were designed to ultimately foster the resilience of the banking sector and the financial system within Europe. With the commencement of the Single Supervisory Mechanism in 2014, further macroprudential powers were provided to the European Central Bank (ECB), as well as amongst Eurozone national authorities, to monitor the financial stability of banks in participating states.

2. Research Question and Hypotheses

The following hypotheses are all sub-categories of our overarching research question:

How and to what extent did systemic risk in European banking sectors change due to the introduction and implementation of national macro-prudential authorities and/or policies?

With our given datasets we are able to analyze the effect of various measures on the systemic risks of individual banks. In the following we focus on the two most promising approaches (and their corresponding hypotheses) to examine contemporary effects with the aim to address two dimensions. The first one focuses on a specific policy, the later one on the institutional set-up.

Systemic Risk Buffers (Hypothesis 1):

H₀: The announcement and/or implementation of national systemic risk buffers did not affect the systemic risks of addressed banks in the European Union.

H₁: The announcement and/or implementation of national systemic risk buffers did affect the systemic risks of addressed banks in the European Union.

Compliance with National Macro-Prudential Authorities (Hypothesis 2):

H₀: Different levels of compliance of national macro-prudential authorities to the recommendations of the European Systemic Risk Board did not affect systemic risks of Member State financial sectors within the reach of these authorities.

H₁: Different levels of compliance of national macro-prudential authorities to the recommendations of the European Systemic Risk Board did affect systemic risks of Member State financial sectors within the reach of these authorities.

NB. Our unit of observation for the first hypothesis is bank-level systemic risk. For our second hypothesis this changes to Member-State financial sector as a whole (please see methodology for elaboration).

3. Methodology and Variables

3.1 Dependent Variable - Systemic Risks

Our dependent variable is the respective SRISK of individual European banks and financial firms with daily time intervals. The variable, for which creator Robert F. Engle received the 2003 Nobel Prize in Economic Sciences, was accurate in identifying Fannie Mae, Freddie Mac, Morgan Stanley, Bear Stearns and the Lehman Brothers as top contributors to the GFC as early as 2005-Q1. We were provided with time series panel datasets recording the systemic risk of 414 banks across 32 European countries by the Volatility-Lab, a combined institute of the NYU Stern School of Business and the Center of Risk Management in Lausanne. Using the statistical and programming tool R we have successfully merged our data into one dataframe and are currently coding for the inclusion of our key independent variables, from which we will commence OLS regression and diagnostics.

The systemic risk of a European bank is calculated on a daily basis for the time period of the early 2000s until today. It is measured in absolute U.S. \$ and presents the amount of capital shortfall at a specific date for a specific bank that would need to be provided by a government bailout. The calculation is based on the following equation:

$$SRISK = k*DEBT - (1 - k)*EQUITY*(1 - LRMES)$$

Where k is the capital requirement (set to 5,5%), DEBT and EQUITY are the given debt and equity values of the bank in question and LRMES is the Long-Run Marginal Expected Shortfall, that is defined as the ‘sensitivity to a (hypothetical) 40% semiannual market decline’ (Volatility-Lab, 2015)(Center of Risk Management Lausanne, 2014).

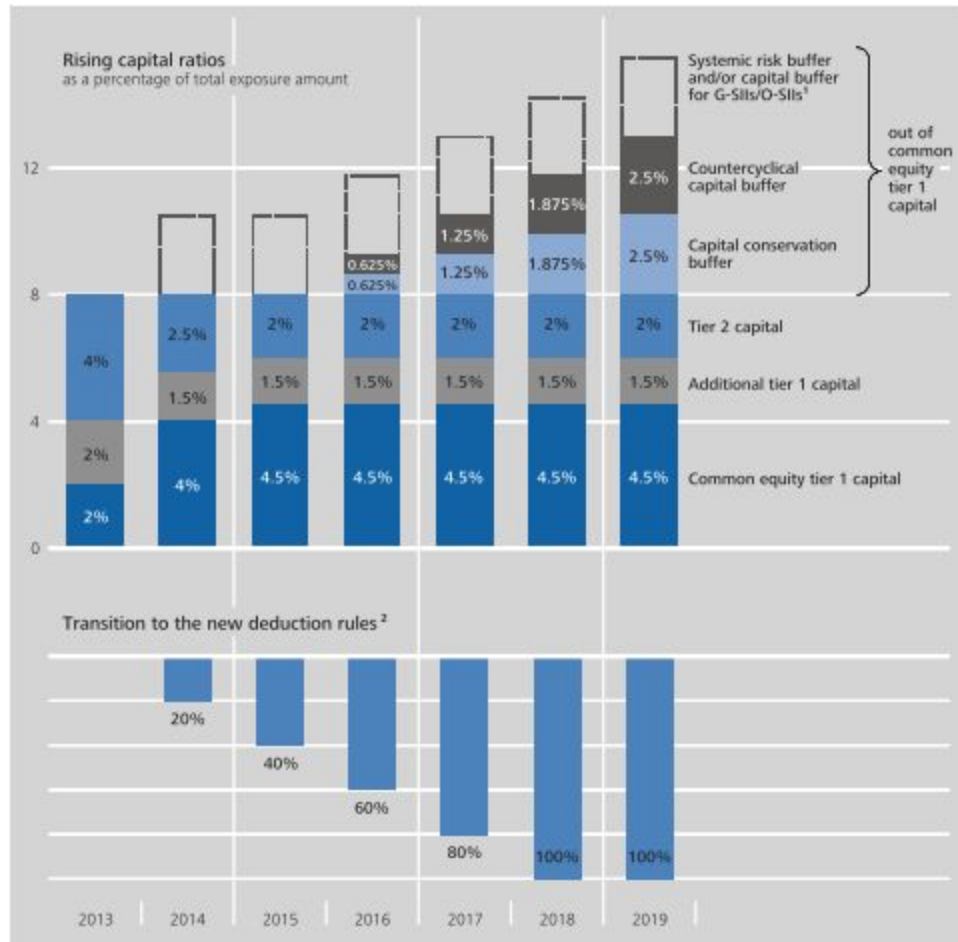
3.2 Key Independent Variables

3.2.1 Hypothesis: Systemic Risk Buffers

Under the CRR/CRD IV member states are enabled to introduce systemic risk buffers via their national macro-prudential authorities for an individual bank, a group of banks or all banks within their jurisdiction. While the capital conservation and the countercyclical buffer (see Table 1) are mandatory from 2016 onwards, systemic risk buffers are not mandatory (Bundesbank, 2013, 62f.).

Table 1: Transitional Provisions for Capital Ratios and Capital Buffers, Deductions and Components of

Capital (Bundesbank, 2013, 60)



Controlling for other independent variables (to be confirmed) we can determine the effect of the announcement (in case of Norway also for implementation): If banks adapt in expectation of the mandatory buffer, their according systemic risk should decrease. We will apply an OLS regression. Model selection (viz. Fixed-Effects and Random-Effects models) for the research on Hypothesis 1 are to be confirmed. Our model will have the following form:

$$y(\text{SRisk})_{i,t} = \alpha_{i,t} + \beta 1_{i,t} (\text{Systemic Risk Buffer}) + \dots + \beta x_{i,t} (\text{IV}_x) + \varepsilon_{i,t}$$

Where i is the individual bank and t is the point of time t , α is the constant, $\beta 1$ is the according buffer for bank i at t , βx is representing other control variables and ε is the error term.

Table 2 presents member states that we can consider for our analysis. A control group (i.e. member states where no systemic risk buffers were announced/implemented and no previous, similar law was in force) still needs to be confirmed.

Table 2: EU member states that announced and/or implemented systemic risk buffers (ESRB, 2015, 21)

Country	Systemic Risk buffer	Announcement	Implementation
Denmark	Five rates (from 1% to 3%) for six Other-Systemically Important Institutions (O-SIIs)	to be determined	between 2015 and 2019
Norway	3% for all banks	to be determined	July 2013
Sweden	3% for four largest banks	to be determined	January 2015
Netherlands	3% for three largest banks, 1% for SNS	April 2014	between 2016 and 2019
Austria	3% for three largest banks (Erste Group, Raiffeisen Zentralbank, UniCredit, Bank Austria)	June 2015	until mid 2017

3.2.2 Compliance of National Macro-Prudential Authorities

In 2011 the European Systemic Risk Board (ESRB) gave a recommendation (ESRB/2011/3) to the member states on how to structure and implement a national macro-prudential authority. Based on the original recommendation, the ESRB created a report that analyses the level of compliance of all member states at the end of February 2014 (ESRBc, June 2014). Table 3 presents the result of this report.

Table 3: Level of Compliance of National Macro-Prudential Authorities (ESRBc, June 2014, 9)

Country	Recommendations					Overall
	A	B	C	D	E	
Austria	FC	LC	LC	FC	LC	LC
Belgium*	LC	PC	LC	LC	FC	LC
Bulgaria	LC	LC	LC	PC	PC	LC
Croatia	FC	FC	FC	FC	FC	FC
Cyprus	LC	PC	LC	LC	FC	LC
Czech Republic	LC	FC	FC	FC	FC	FC
Denmark	LC	LC	LC	LC	FC	LC
Estonia*	LC	PC	LC	LC	FC	LC
Finland	MN	MN	MN	LC	FC	PC
France	LC	LC	LC	FC	LC	LC
Germany	LC	FC	FC	FC	LC	FC
Greece	FC	FC	LC	PC	FC	LC
Hungary	FC	FC	FC	LC	FC	FC
Ireland	LC	LC	LC	PC	LC	LC
Italy	PC	PC	PC	PC	PC	PC
Latvia	LC	LC	LC	LC	FC	LC
Lithuania	LC	LC	LC	LC	FC	LC
Luxembourg	LC	PC	LC	LC	PC	LC
Malta	FC	FC	FC	PC	FC	LC
Netherlands	PC	PC	LC	LC	LC	LC
Norway	LC	PC	LC	MN	PC	PC
Poland	MN	PC	PC	MN	PC	PC
Portugal	FC	FC	FC	LC	FC	LC
Romania	LC	LC	LC	LC	LC	LC
Slovakia	LC	LC	LC	FC	FC	FC
Slovenia	FC	FC	FC	FC	FC	FC
Spain	PC	MN	PC	PC	FC	PC
Sweden	LC	LC	LC	FC	FC	LC
United Kingdom	FC	LC	FC	FC	FC	FC

We will use the results of the report to determine whether a high level of compliance was associated with a correspondingly high reduction of risk, weighted to bank size, in February 2014:

$$y(\text{SRisk})_i = \alpha_i + \beta 1_i (\text{Level of Compliance of Authority, Categorical}) + \dots + \beta x_i (\text{IV}_x) + \varepsilon_i$$

Where i is the individual bank, α is the constant and $\beta 1$ is the corresponding level of compliance of the macro-prudential authority under which bank i is controlled. βx represents other control variables and ε is the error term.

4. Relevance to Policymakers

This work will be shared with advisors at the Deutsche Institut fuer Wirtschaftswissenschaft and the NYU Stern Business School Volatility Lab. It will also be disseminated amongst participating interviewees and acquaintances made at the 2015 Financial Stability Conference (3rd Joint Conference on EU Regulatory Reforms).

5. Division of labour

Laurence:

- ❖ R:
 - Preparation and cleaning of dataframe
 - Web-scraping, preparation and cleaning of independent variables
 - Updating online Github repository with project progress
- ❖ Readings on fiscal governance within the European Union
- ❖ Host and prepare for min.2 interviews

Lukas:

- ❖ Research on control groups for the independent variable of the systemic risk buffer
- ❖ Preparation and finalisation of a literature review
- ❖ Host and prepare for min.2 interviews

6. Schedule

Oct/Nov 2015

Find practice partners and establish dialogues
Assert research direction through orientation meetings with academics and professionals
Assemble and clean dataset with controls

Dec 2015

Host interviews with relevant professionals
Finalise a literature review
Run first models on dataset and diagnostics

Jan 2016

Host interviews with relevant professionals
Run sophisticated models
Writing

Feb/Mar 2016

Writing

Literature:

Admati, Anat and Hellwig, Martin, (2013): The Bankers' New Clothes: What's Wrong with Banking and What to Do about It, vol. 1, 1 ed., Princeton University Press.

Aehling, Martin (2015): How to design the future EU Financial System ? Resolution Framework, Crisis Prevention and Capital Markets Union, Financial Risk and Stability Network.

Altunbas, Y., Marqués-Ibáñez, D., & Manganelli, S. (2011): Bank risk during the financial crisis: do business models matter? Working Paper Series, 1–53.

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