Risk governance and risk-taking of public commercial banks of OECD

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Outline of the presentation

- Introduction
- Theory, literature and hypothesis development
- Research design
- Results

1. Introduction (1/2)

- Risk governance is still young especially in the banking industry
- Definition of risk governance varies from industry to industry
- Covers internal and external risk governance factors
- Risk governance bridges between corporate governance and risk management
- Extant literature mainly focuses Risk Committees (RC) and Chief Risk Officers (CRO)
- It is a process of identification, assessment, communication, implementation and supervision of the risk within the bank

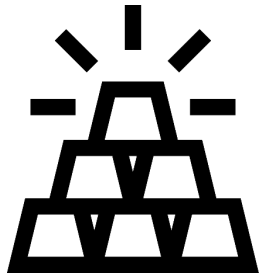
1. Introduction (2/2)

- Scant risk governance literature on the banking industry
- No study on the risk governance of public commercial banks of OECD
- Practical importance of internal risk governance
- Vital importance of banks in the economy
- Global Financial Crisis of 2007-08 (GFC) and Financial Crises in general
- Global influence of OECD banks

All above leads us to the research question of this paper:

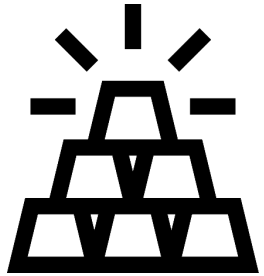
What is the impact of risk governance on the risk-taking of public commercial banks of OECD?

Theory, literature and hypothesis development (1/4)



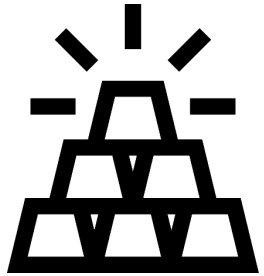
- Lack of risk communication between departments and directors
- Risk matters are clustered to the responsibilities of RC and CRO
- Corporate governance failures (Berger et al. 2016) and inefficient risk management (Poole 2007) caused researchers to think of better ways to supervise risk (Berger et al. 2021)
- Scientists from environmental sciences introduced risk governance to address natural hazards (van Asselt and Renn 2011; Heriard-Dubreuil 2001)
- researchers of social sciences to bridge the gap between corporate governance and risk management (Stein and Wiedemann 2016)

Theory, literature and hypothesis development (2/4)



- Diverse internal risk governance structure > key factors contribute to risk governance
- Effective risk governance > can measure desired risk
- “Risk is something which is quantifiable for known probabilistic outcome” [Frank H. Knight (1921). Risk, Uncertainty and Profit]
- Depending on the quality of risk communication within the bank risk can be measured for known outcomes

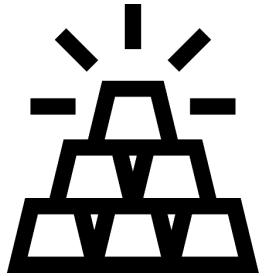
Theory, literature and hypothesis development (3/4)



- Most OECD banks established RC afterwards GFC and following the introduction of Dodd-Frank Act (2010) and Article 76 of Capital Requirements Directive 2013 by the European Banking Authority
- In addition to RC and CRO internal risk governance also considers Chief Financial Officer (Kim et al. 2011), directors' ownership (Battaglia and Gallo 2017), directors with PhD degrees and senior (age) directors (Berger et al. 2014) and independent directors (Aebi et al., 2012)
- These factors of the internal risk governance are associated with lower risk-taking

H1: *Risk governance is associated with banks' risk-taking*

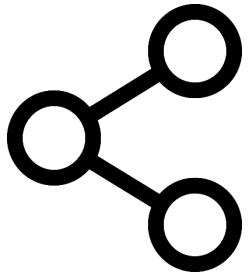
Theory, literature and hypothesis development (4/4)



- Risk governance is vital when it comes to financial turmoil, as it monitors and controls possible unsystematic risk and increases risk buffers against systematic risk
- Banks with risk governance in place were protected toward financial crisis contagion (Wright et al. 2018)
- Aljughaiman and Salama (2019) observed higher Z-score in the presence of risk governance

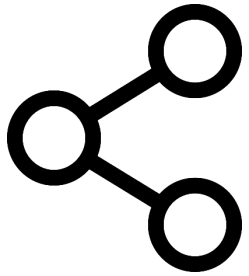
H2: *Association between risk governance intensity and banks' risk-taking is stronger during GFC*

Research design (1/4)



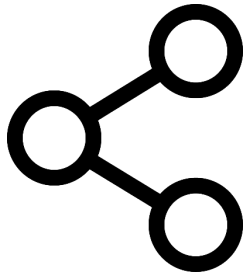
- Research Period: 2000 to 2019
- Research Countries: 36 member and 1 candidate countries of OECD
- **Data collection:** BankFocus database
- All listed and active public commercial banks
- Total number of included banks: 554
- Data availability rises gradually from 2000 to 2019

Research design (2/4)



- **Methodology:** General Linear Model (GLM)
- Software: SAS
- Four Models: Models 1 and 2 (Hypothesis 1), Models 3 and 4 (Hypothesis 2)
- Dependent variables: LEV, σ (ROA), EAR, and Z-Score
- Independent variables: are categorized into four
- First category: core internal risk governance = RC, CRO and CFO
- Second category: immediate support layer to risk governance = DO, TITLE, AGE and BI
- GFC is added in models 3 and 4 to test the intensity of risk governance during the GFC
- Control variables: CEOAD, BS, TA and TD

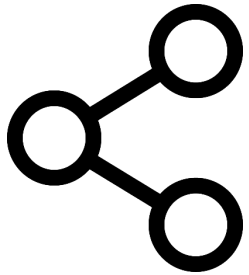
Research design (3/4)



Research variables, measurements, reference, and data source

Research Variables	Measurements	Reference	Data Source
Depenedent			
LEV	Total Liabilities/Total Assets	Faccio et al. (2016)	BankFocus
σ(ROA)	Standard Deviation of Return on Assets, ROA = Net Income/Total Assets	Laeven and Levine (2009)	BankFocus
EAR	Equity Asset Ratio	Bhagat et al. (2015)	BankFocus
Z-index	Natural logarithm of (ROA+EAR)/σ(ROA)	Faccio et al. (2016) and Aljughaiman and Salama (2019)	BankFocus
Independent			
RC	Binary variable: if bank has Risk Committee (1) and if not (0)	Minton et al. (2011)	BankFocus
CRO	Binary variable: if bank has Chief Risk Officer (1) and if not (0)	Aebi et al. (2012) and Minton et al. (2014)	BankFocus
CFO	Binary variable: if bank has Chief Financial Officer (1) and if not (0)	Kim et al. (2011) and Bergeron et al. (2010)	BankFocus
DO	Binary variable: if director has ownership in a bank (1) and if not (0)	Battaglia and Gallo (2017)	BankFocus
TITLE	Binary variable: if director holds PhD degree (1) and if not (0)	Berger et al. (2014)	BankFocus
AGE	Binary variable: if director's age is between 66-75 (1) and if not (0)	Berger et al. (2014)	BankFocus
BI	Binary variable: if Director is independent Independent directors	Adams and Ferreira (2009) and Aebi et al. (2012)	BankFocus
GFC	Binary variable: if it is Global Financial Crisis of 2007-08 (1) and if not (0)		
Control			BankFocus
CEOAD	Binary variable: if Chief Executive Officer has an additional position (1) and if not (0)	Adams et al. (2005) and Aebi et al. (2012)	BankFocus
BS	Natural logarithm of the total number of directors on board	Adams and Ferreira (2009) and Cornett et al. (2008)	BankFocus
TA	Natural logarithm of the Total Assets	Carter et al. (2010) and Cornett et al. (2008)	BankFocus
TD	Natural logarithm of the Total Deposits	Minton et al. (2014)	BankFocus

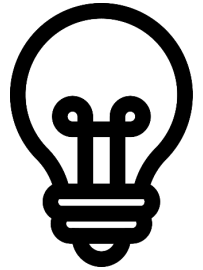
Research design (4/4)



Econometric model

$$Risk_{b,t} = \alpha_0 + \beta_1 Risk\ Governance\ I_{b,t} + \beta_2 Risk\ Governance\ II_{b,t} + \beta_3 GFC_{b,t} + \beta_4 Bank\ controls_{b,t} + \beta_5 YEAR_{b,t} + \beta_6 COUNTRY_{b,t} + \varepsilon_{b,t}$$

Results (1/3)

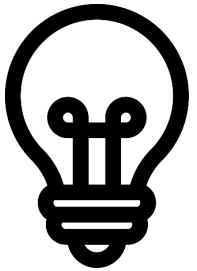


Descriptive statistics

Million EUR

Variable	N	Mean	Std Dev	Median	Minimum	Maximum
LEV	12634	0.90	0.07	0.93	0.00	1.05
σ (ROA)	12722	0.35	0.00	0.35	0.34	0.35
EAR	12634	9.38	6.70	7.04	-5.42	100
Z-score	12618	3.15	0.52	3.02	0.79	5.67
RC	18697	0.02	0.13	0.00	0.00	1.00
CRO	18697	0.00	0.06	0.00	0.00	1.00
CFO	18697	0.01	0.11	0.00	0.00	1.00
DO	18697	0.02	0.12	0.00	0.00	1.00
TITLE	18697	0.03	0.18	0.00	0.00	1.00
AGE	18697	0.07	0.26	0.00	0.00	1.00
BI	18697	0.05	0.21	0.00	0.00	1.00
CEOAD	18697	0.04	0.19	0.00	0.00	1.00
BS	18697	5.99	1.85	5.65	1.10	8.07
TA	12634	11.20	2.41	10.64	0.46	21.30
TD	12153	10.93	2.32	10.29	1.12	21.24

Results (2/3)



Correlations (Pearson and Polychoric)

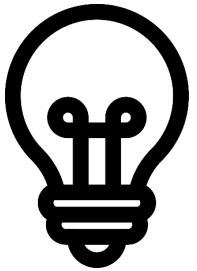
	LEV	σ (ROA)	EAR	Z-score	RC	CRO	CFO	DO	TITLE	AGE	BI	CEOAD	BS	TA	TD
LEV	1														
σ (ROA)	0.35075***	1													
EAR	-0.99775***	-0.35307***	1												
Z-score	-0.84375***	-0.38416***	0.84971***	1											
RC					1										
CRO					0.12696	1									
CFO					-0.05281	0.18269*	1								
DO					0.42138***	-0.83456	0.10969*	1							
TITLE					0.28636***	0.40141***	-0.13961*	0.15001***	1						
AGE					0.33674***	-0.84961***	-0.16005***	0.33226***	0.15603***	1					
BI					0.53845***	-0.89967***	0.11461**	0.34218***	0.46924***	0.38774***	1				
CEOAD					0.13999***	0.24786***	0.36987***	0.42366***	0.09777***	0.23123***	0.5709***	1			
BS	-0.32886***	-0.27567***	0.32243***	0.42992***									1		
TA	0.40036***	0.16202***	-0.40103***	-0.43699***									-0.06874***	1	
TD	0.42874***	0.14087***	-0.42682***	-0.41983***									-0.08224***	0.99675***	1

Results (3/3)

GLM multivariate regression results

	Dependent Variables			
Independent Variables	LEV (1)	σ (ROA) (2)	EAR (3)	Z-score (4)
Constant	0.7663***	34.5191***	15.5416***	3.6866***
	(0.0117)	(0.0062)	(1.2153)	(0.1329)
RC	-0.0039	0.0029***	0.3613	0.0489*
	(0.0028)	(0.0015)	(0.2781)	(0.0304)
CRO	0.0123***	0.0038*	-1.2476***	-0.1525***
	(0.0043)	(0.0023)	(0.4317)	(0.0472)
CFO	0.0036	0.0058***	-0.3984	-0.0444*
	(0.0025)	(0.0013)	(0.2529)	(0.0277)
DO	0.0043	-0.0015	-0.4375	-0.0239
	(0.0028)	(0.0015)	(0.2810)	(0.0307)
TITLE	-0.0007	0.0023***	0.0655	0.0005
	(0.0017)	(0.0009)	(0.1667)	(0.0182)
AGE	-0.0008	0.0017***	0.0920	0.0304***
	(0.0010)	(0.0006)	(0.1052)	(0.0115)
BI	0.0047***	-0.0021***	-0.4511***	-0.0422***
	(0.0015)	(0.0008)	(0.1485)	(0.0162)
GFC			7.9577***	0.8923***
			(0.6113)	(0.0669)
CEOAD	-0.0005	0.0033***	0.0344	0.0007
	(0.0016)	(0.0008)	(0.1620)	(0.0177)
BS	-0.0005	-0.0074***	0.0564	-0.0016
	(0.0005)	(0.0003)	(0.0499)	(0.0055)
TA	-0.0831***	0.0015	8.2960***	0.6732***
	(0.0019)	(0.0010)	(0.1864)	(0.0204)
TD	0.0976***	0.0022**	-9.7545***	-0.8107***
	(0.0019)	(0.0010)	(0.1947)	(0.0213)
Fixed Effects				
Country	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
n	8979	8979	8979	8979
Adjusted R^2	0.7528	0.4449	0.7596	0.7571
F-stat.	595.21***	157.44***	617.69***	609.23***

*** indicates 1% level of significance, ** indicates 5 % level of significance, and * indicates 10 % level of significance.



H1 = √

H2 = ?

Thank you!