

How post-crisis regulation has affected bank CEO compensation

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Motivation

- One of the main activity of banks is selection and monitoring of risks: understanding banks' risk appetite is important
- Bank risk-taking incentives are shaped, among other factors, also by the compensation of the top managers; bank top managers/CEOs are paid with variable and complex compensation packages
- During the recent financial crisis bank CEO compensations have been blamed for tail risks. Has CEO compensation changed since then? Has bank regulation affected the way CEOs are paid?

Related literature

- Papers on CEO compensation and risk (mainly US, UK and financial crisis): Fahlenbrach and Stulz (2011), Gregg et al (2012) and Chesney, Stromberg, Wagner (2012), Cheng et al (2015)
- Papers controlling also for country heterogeneity and regulation (international banks): Huttenbrinck et al. (2014) and Cerasi and Oliviero (2015)
- Papers on corporate governance and risk (no CEO compensation): Laeven and Levine (2009), Gropp and Kohler (2010), Beltratti and Stulz (2012) and Ellul and Yerramilli (2013)
- Recent paper on regulation of bankers' pay: Kleyменова and Tuna (2016) event study on stock market reaction to changes in UK and EU regulation
- We lack a good understanding of the determinants of CEO compensation across countries and over time

Our paper

- We analyse the structure of CEO compensation within a sample of international banks before and after the introduction of FSB P&S
- We use the recent changes in the regulation on bankers' pay as an experiment setting to study cross-country heterogeneity.
- In particular we study the elasticity of CEO compensation to measures of short term profitability and risk for “treated” vs “not-treated” banks

Data

- Panel of 173 individual commercial and investment banks (top 10 in assets) for 36 countries from 2006 to 2014. Lack of public disclosure on CEO compensation reduces sample size
- For each bank we know:
 - CEO identity and compensation; the different elements of the compensation (source: Capital IQ - People Intelligence)
 - Balance sheet data and stock returns whenever the bank is listed (source: Capital IQ - Capital Structure)
 - Macro variables of the country where the bank has its headquarter (source: IFS from IMF)

Descriptive statistics of our sample

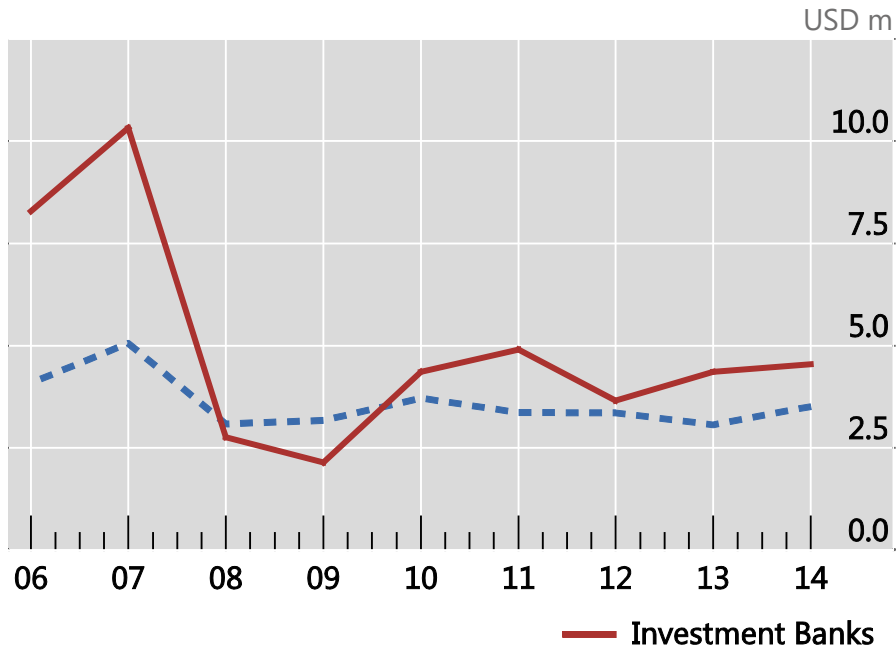
- Geographic location: 44% are European banks; the rest are banks from North America and Australia (about 21%) and Asia. Very few from Africa and none from South America
- 19 % are investment banks
- All listed banks
- Total Assets are on average 1.5 billion\$
- Tier 1 Capital ratio is on average 11.8%
- Performance indicators
 - Profitability: ROE and ROA
 - Risk measures: Stock return volatility (SRV)

Descriptive statistics on CEO compensation

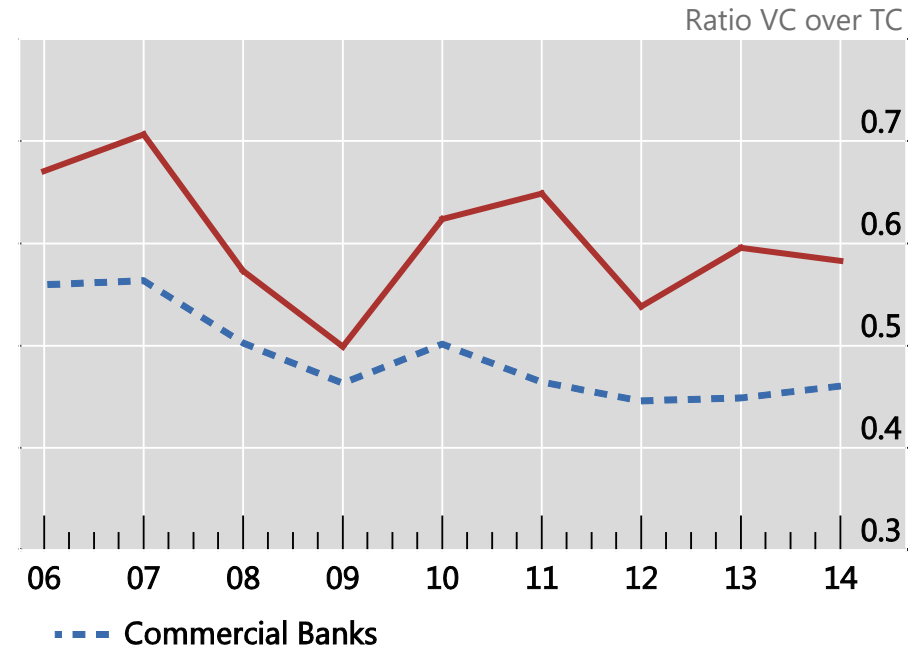
- Total Compensation is the sum of all cash + non-cash compensation in year t (including equity shares and stock options awarded in year t). Not for instance stock options awarded in year $t - 1$
- Average CEO annual Total Compensation is about 3 million\$ (it dropped from 4.89 to 2.84 million\$ after the crisis)
- Variable Compensation is defined as Total Compensation minus Fixed Salary
- Variable over Total Compensation is on average 47% (it dropped from 56% to 45% after the crisis)
- Fixed Salary is on average 1 million\$ (it dropped from 1.27 million\$ to 960.000\$ after the crisis)
- More than 50% of the banks do not award any stock option to their CEOs

Compensation: level and composition

Total Compensation



Variable Compensation over Total Compensation



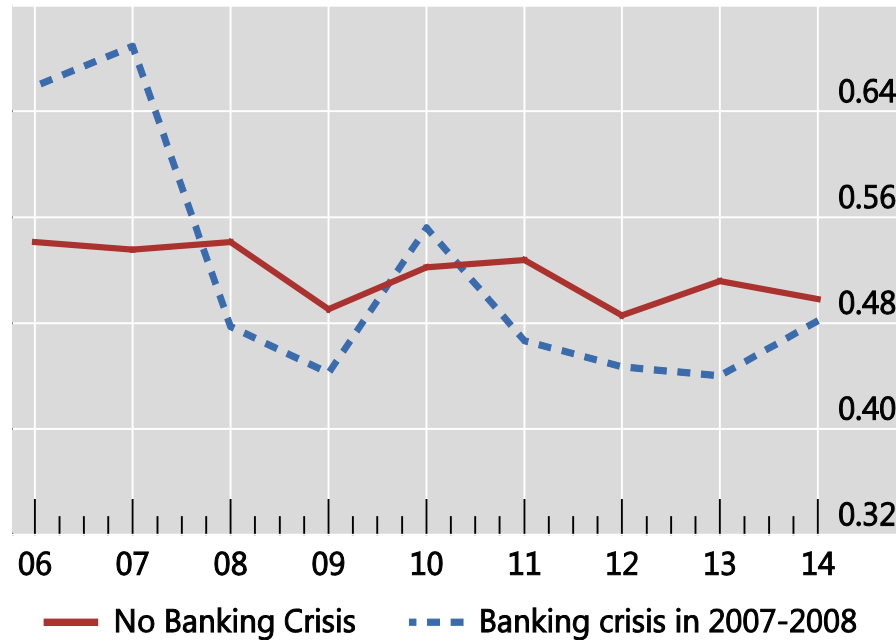
Source: S&P Capital IQ.

Total annual Compensation drops from an average of 6 million\$ before the crisis to 3 million\$ after the financial crisis. This drop has been larger for investment banks

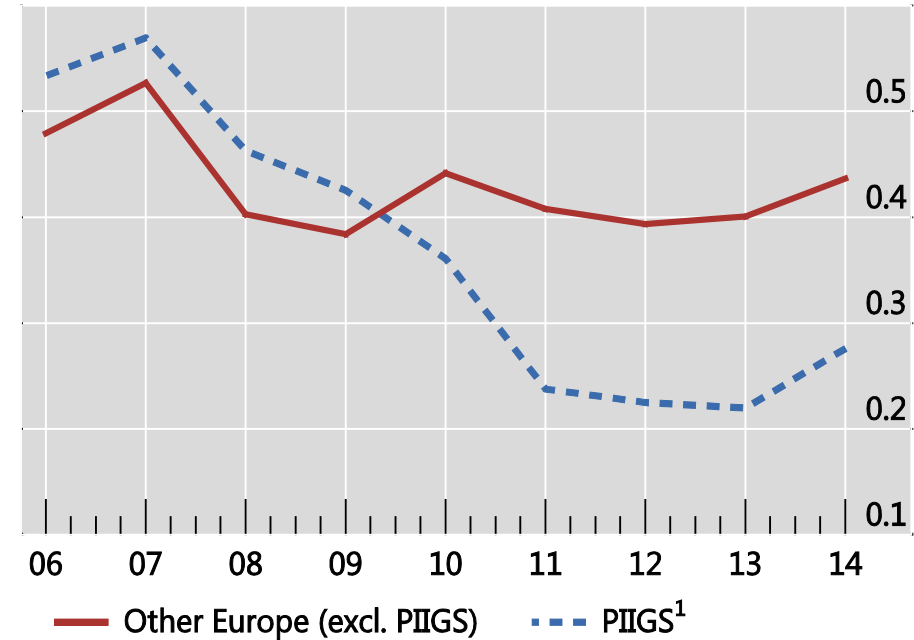
Variable over Total Compensation falls for both commercial and investment banks

Compensation structure differences among countries hit by GFC

Variable over Total Compensation and Banking Crisis



Variable over Total compensation and Sovereign Crisis



¹ Portugal, Ireland, Italy, Greece and Spain.

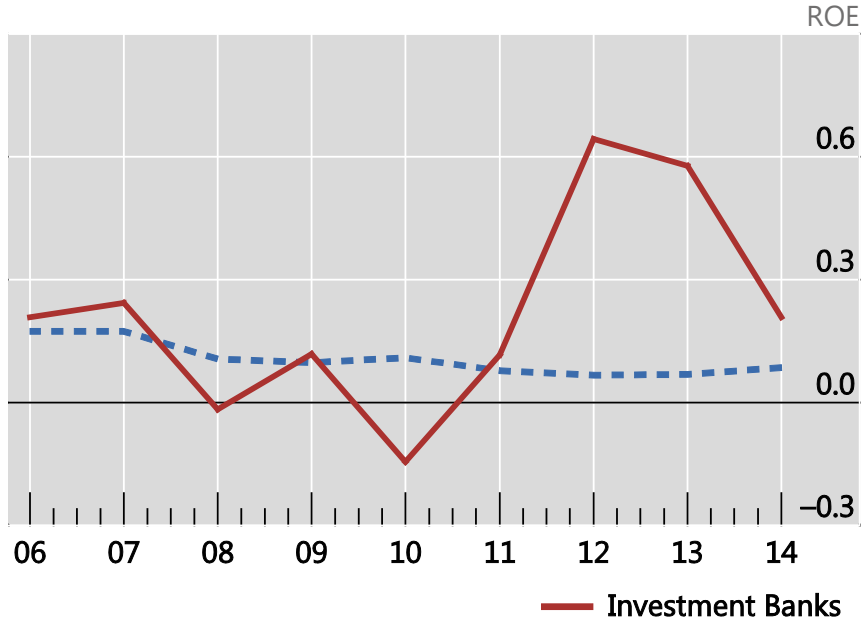
Source: S&P Capital IQ.

Larger drop for banks in countries hit by the global financial crisis

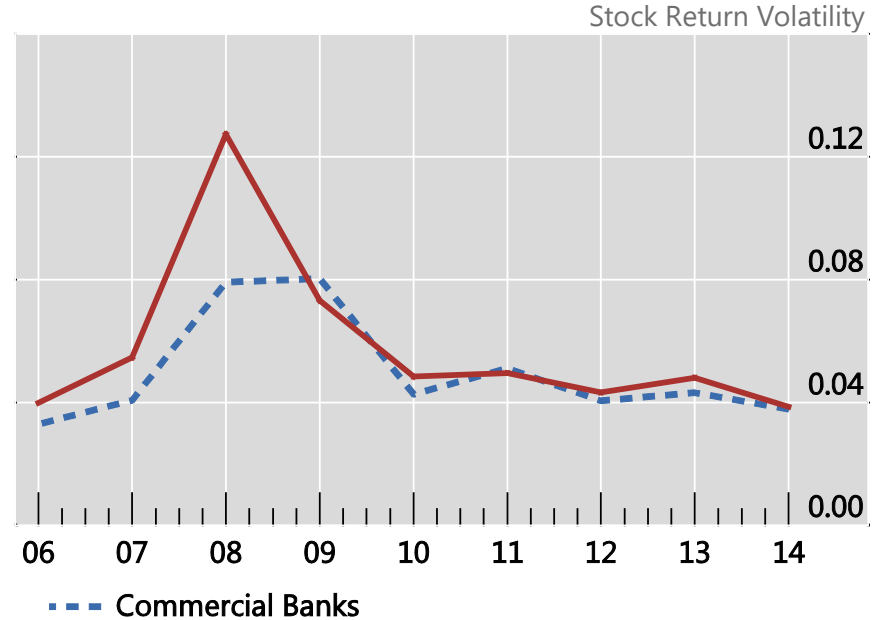
The variable compensation of PIIGS fell both after the Lehman default and during the sovereign debt crisis

Banks' performance: profitability and risk

Performance: Return on Equity



Risk: Stock Return Volatility¹



¹ One standard deviation of stock prices on a weekly basis.

Source: S&P Capital IQ.

Investment banks' profits are more volatile than those of commercial banks

During the financial crisis, risk increased for both investment and commercial banks, declining after the crisis

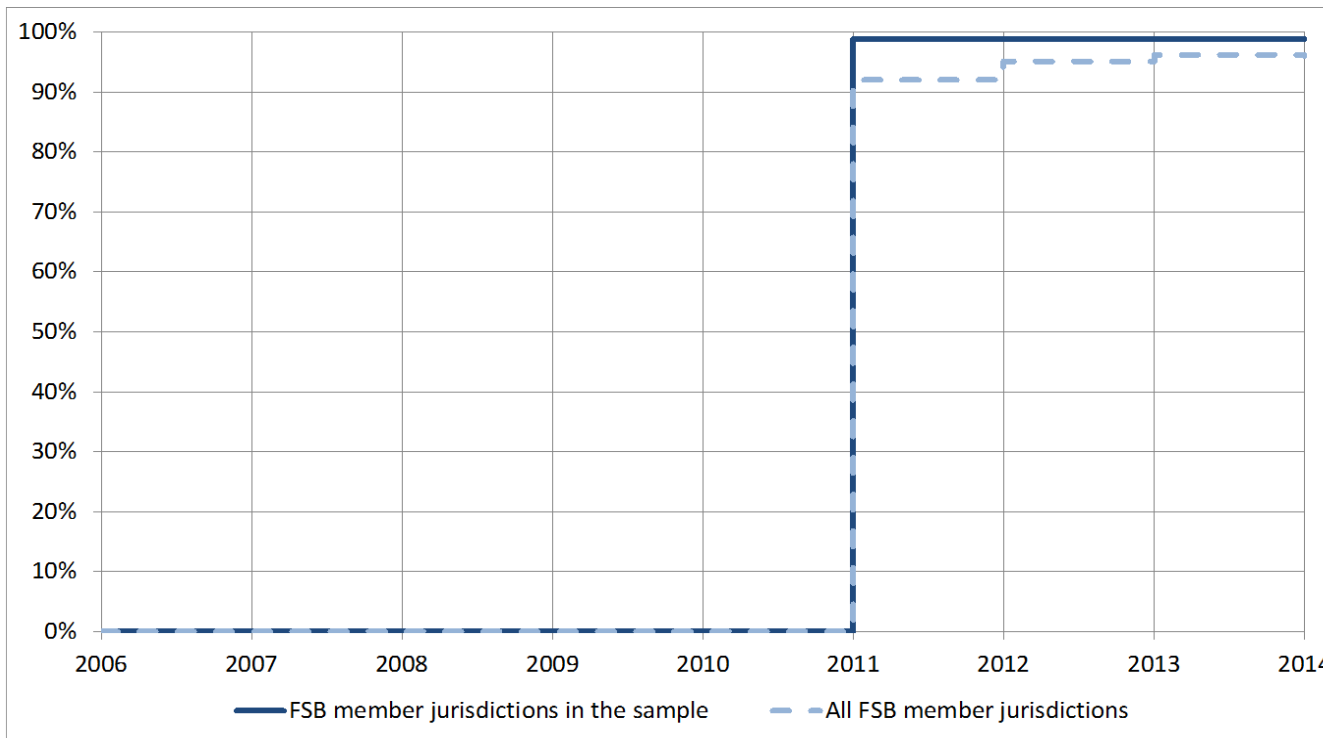
Principles and Standards for Sound Compensation (P&S)

- After the GFC, call from public opinion to regulate bankers' pay (echoed by G20 in 2009). In 2011 the FSB promoted new principles for Sound Compensation.
- This new regulation was adopted not only by banks in FSB countries but also by banks in EU countries (through the CRD IV)
 - The rewards of all Material Risk Takers (also CEO) must be more connected to long-term performance than to short-term objectives.
 - Pay for long-term performance introducing deferrals in compensation (ex-post).
 - Design MRTs compensation in relation to measures of risks (ex-ante).
 - Only for EU banks: cap on the maximum Variable over Total compensation (VC 50% of TC).

Testable implications derived from the applications of P&S

- **Hypothesis 1:** *Has the percentage of the variable over total compensation of CEOs changed as a consequence of the implementation of the P&S?*
- **Hypothesis 2:** *Do we observe heterogeneity in the impact of the P&S on our sample of banks?*
- **Hypothesis 3:** *Has the sensitivity of the variable compensation with respect to short-term performance changed after the implementation of the P&S policy?*
- **Hypothesis 4:** *Has the sensitivity of the variable compensation with respect to risk measures increased after the P&S?*
- **Hypothesis 5:** *Do we observe a greater CEOs' turnover after the P&S?*

Regulatory intensity index



The figure shows the index for the total group of FSB member jurisdictions (dashed) and the FSB member jurisdictions in our sample (solid line). FSB member jurisdictions not in the sample are Argentina, Brazil, Indonesia, Korea, Mexico, Russia, Saudi Arabia and Turkey. If a principle or standard was translated into national law, the index takes the value of 1, otherwise it takes the value of 0. If initiatives are under consideration/preparation, the value of 0.5 was assigned to the index. The index was calculated using public information.

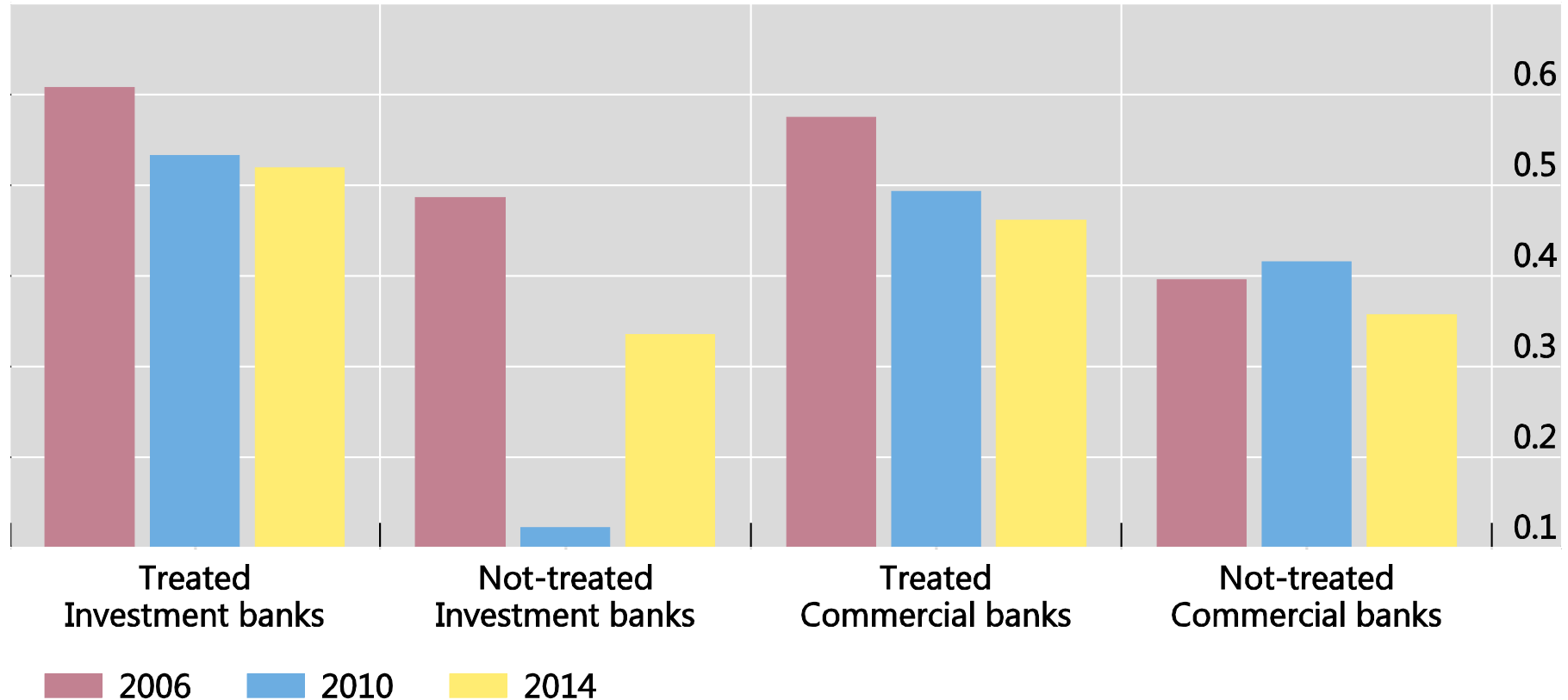
Source: Financial Stability Board (annual reports, several years)

Treatment analysis

- Treatment analysis to measure the impact of the PS policy: divide the sample between Treated and not-treated banks
- Treated banks are those headquartered in FSB countries and in EU countries that adopted it through the CRD IV (then, became mandatory)
- Percentage of treated banks in our sample is 74% (and 22% of the treated are investment banks).

Is there a structural change in the variable compensation share as a consequence of the implementation of the P&S?

(Variable compensation over total compensation)



Average values for the share of variable compensation in the three years 2006, 2010 and 2014 for treated vs. other banks (Investment vs. Commercial banks).

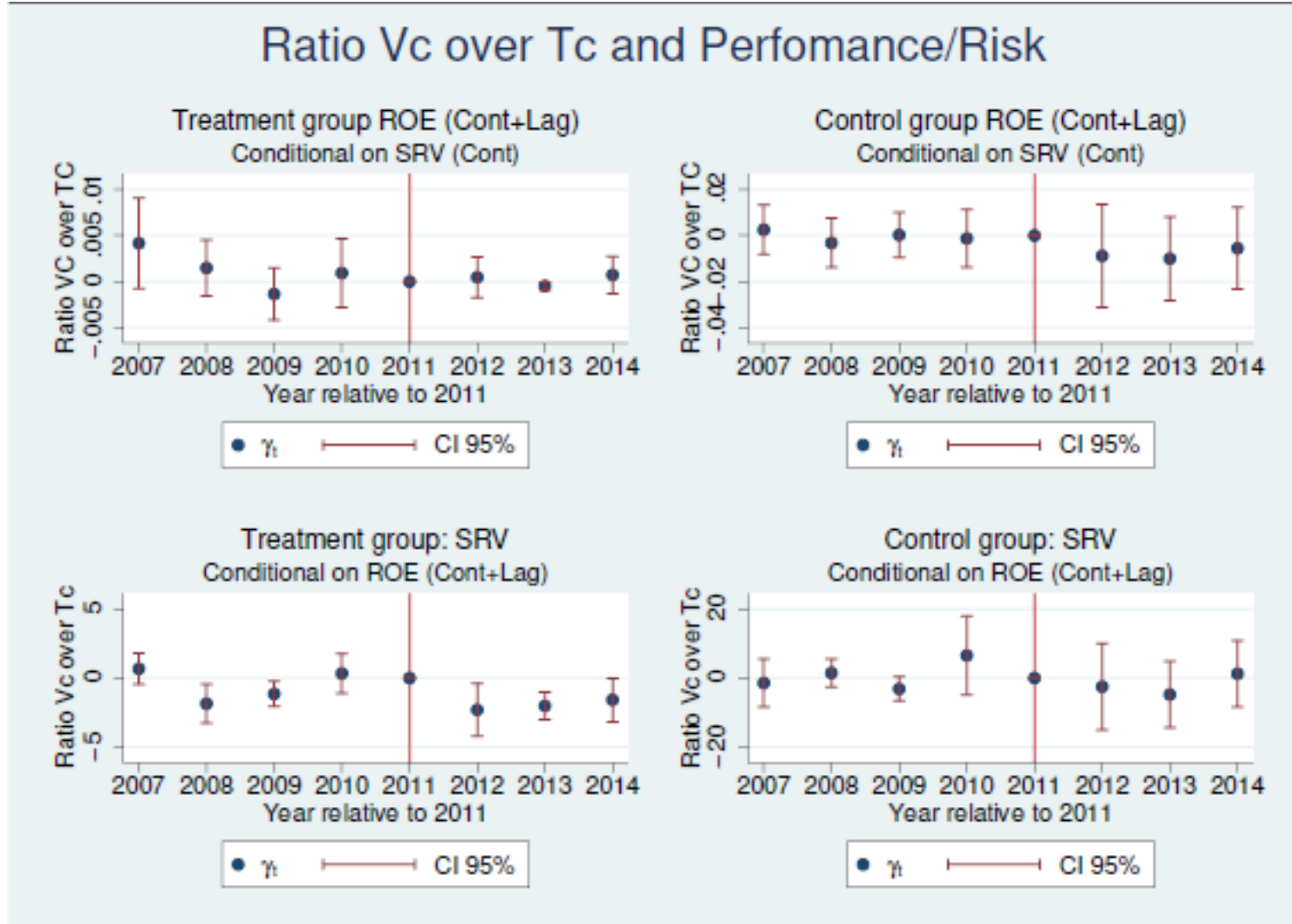
Source: S&P Capital IQ.

Are “treated” banks different? Test for sorting bias

Dependent variable:	Treated _t (0/1)				
	(1)	(2)	(3)	(4)	(5)
CEO-specific characteristics					
Age of the CEO _t	-0.0700 (0.0904)			0.0263 (0.106)	0.0348 (0.119)
Sex of the CEO _t	-1.686 (2.576)			-1.850 (2.751)	-1.430 (2.207)
Bank-specific characteristics					
ROE _t		1.770 (7.459)		-0.0559 (7.337)	
ROA _t			0.897 (31.08)		0.709 (55.68)
Risk _t		16.20 (33.75)	10.61 (22.33)	15.85 (42.11)	18.61 (39.68)
Diversification Ratio _t		-0.0872 (1.593)	0.000990 (1.563)	-0.115 (2.555)	-0.294 (1.567)
Leverage Ratio _t (E/A)		2.644 (5.280)	2.789 (9.593)	2.475 (8.648)	1.713 (10.63)
Observations	1,199	956	956	864	864

Notes: The table shows the results of a test for dynamic sorting using different specifications. The test framework is a binary logit model using the treatment status of a bank (treated=1, not treated=0) as the dependent variable. The sample is restricted to observations before the treatment took place in 2012. The significance of a parameter indicates that banks are not randomly treated. Standard errors clustered at the bank level in parentheses. * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$.

Evolution of correlations over time



Sensitivity of variable over total compensation to profitability (controlling for risk)

		pre	post	Δ
All	Not treated	0.310 (0.330)	-0.584 (0.753)	-0.895 (0.692)
	Treated	0.543*** (0.0983)	0.291*** (0.0965)	-0.252** (0.119)
Commercial Banks	Not treated	0.341 (0.407)	-0.465 (0.606)	-0.806* (0.437)
	Treated	0.667*** (0.122)	0.370*** (0.125)	-0.297** (0.150)
Investment Banks	Not treated	0.208 (0.428)	-0.985 (2.553)	-1.193 (2.605)
	Treated	0.126 (0.107)	0.0252 (0.0243)	-0.100 (0.106)
Observations		1,197	1,197	1,197

Notes: Among the explanatory variables we consider the contemporaneous values for risk and profitability and include one-period lagged value for the latter. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$.

Sensitivity of variable over total compensation to risk (controlling for bank profitability)

		pre	post	Δ
All	Not treated	1.516*	0.423	-1.093
		(0.812)	(3.048)	(2.979)
	Treated	-0.407	-2.893***	-2.486***
		(0.309)	(0.515)	(0.540)
Commercial Banks	Not treated	1.893**	1.243	-0.649
		(0.919)	(2.091)	(1.845)
	Treated	-0.609**	-2.107***	-1.498***
		(0.267)	(0.589)	(0.579)
Investment Banks	Not treated	0.251	-2.330	-2.580
		(1.590)	(11.28)	(11.40)
	Treated	0.270	-5.530***	-5.801***
		(0.850)	(1.044)	(1.280)
Observations		1,197	1,197	1,197

Notes: Among the explanatory variables we consider the contemporaneous values for risk and profitability and include one-period lagged value for the latter. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$.

The role of the risk managing function: Controlling for the presence of a Chief Risk Officer (1)

Dependent variable:		Variable over Total Compensation		
		pre	post	Δ
Profitability				
All	Not treated	0.411 (0.399)	0.144 (0.613)	-0.267 (0.456)
	Treated	0.271*** (0.0827)	0.0505 (0.0548)	-0.220** (0.0863)
No CRO	Not treated	0.560 (0.745)	0.638 (1.038)	0.0776 (0.662)
	Treated	0.408*** (0.126)	0.101 (0.108)	-0.308** (0.136)
CRO exists	Not treated	0.261 (0.273)	-0.355 (0.638)	-0.616 (0.620)
	Treated	0.132 (0.0993)	-0.000136 (0.0166)	-0.132 (0.100)
Observations		1197	1197	1197

Notes: Among the explanatory variables we consider the contemporaneous values for risk and profitability and include one-period lagged value for the latter. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$.

The role of the risk managing function: Controlling for the presence of a Chief Risk Officer (2)

Dependent variable:		Variable over Total Compensation		
		pre	post	Δ
Risk				
All	Not treated	3.326*** (1.261)	0.570 (2.500)	-2.756 (2.280)
	Treated	-0.390 (0.268)	-3.047*** (0.517)	-2.657*** (0.517)
No CRO	Not treated	6.499*** (2.319)	-0.119 (3.980)	-6.618* (3.388)
	Treated	0.923** (0.406)	-2.174** (0.892)	-3.097*** (0.879)
CRO exists	Not treated	0.119 (0.815)	1.267 (2.993)	1.148 (3.040)
	Treated	-1.718*** (0.285)	-3.929*** (0.503)	-2.211*** (0.535)
Observations		1197	1197	1197

Notes: Among the explanatory variables we consider the contemporaneous values for risk and profitability and include one-period lagged value for the latter. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$.

Impact on CEO turnover: Logit model

Dependent variable:	CEOentry _t (0/1)					
	(1)	(2)	(3)	(4)	(5)	(6)
Post	-0.335** (0.148)	-0.163 (0.361)	0.674 (0.555)	-0.383** (0.167)	-0.225 (0.406)	0.519 (0.570)
Treated		0.294 (0.211)	0.272 (0.399)			
Post × Treated		-0.204 (0.396)	-0.897 (0.602)		-0.189 (0.445)	-0.991 (0.622)
ΔTotal compensation _{t-1}			0.0527 (0.0860)			0.0686 (0.0796)
ROE _{t-1}			-0.333 (0.656)			-0.279 (0.419)
Risk _{t-1}			4.225 (3.380)			-1.299 (3.968)
Log total assets _{t-1}			0.127** (0.0567)			0.564 (0.348)
Constant	-1.761*** (0.0758)	-2.006*** (0.194)	-4.086*** (0.778)			
Bank FE	No	No	No	Yes	Yes	Yes
Observations	2,021	2,021	989	1,361	1,361	685

Notes: The table shows the result of a logit model with CEO entry (Value of 1 if a new CEO enters the bank in year t , 0 otherwise) as the dependent variable. Standard errors clustered at the bank level in parentheses. * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$.

Robustness checks

- Ignoring bank business models:
 - no sample split between commercial and investment banks
- Global financial crisis and sovereign debt crisis:
 - countries that experienced a financial crisis vs countries that did not
 - dummy for PIIGS
- Timing of the regulatory change
 - EU countries have adopted the P&S policy as part of the CRD IV in 2014

Conclusions

- This paper assesses whether compensation practices for bank Chief Executive Officers (CEOs) changed after the Financial Stability Board (FSB) issued post-crisis guidelines on sound compensation
- Banks in jurisdictions which implemented the FSB's Principles and Standards of Sound Compensation in national legislation changed their compensation policies more than other banks
- Compensation in those jurisdictions is less linked to short-term profits and more linked to risks, with CEOs at riskier banks receiving less variable compensation than those at less-risky peers
- This was particularly true of investment banks and of banks which previously had weaker risk management, for example those that previously lacked a Chief Risk Officer