



Does Regulatory and Supervisory Independence Affect Financial Stability?

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Motivation

- The independence of banking regulators and supervisors is considered crucial for financial stability (e.g., [Basel Core Principles](#) for effective bank supervision).
- However, compliance is low and political pressures on bank regulators and supervisors persist.
- **But does Regulatory and Supervisory Independence (RSI) actually deliver a more stable banking sector?**
- Empirical evidence on the link between RSI and financial stability is limited.



The Economist, April 2019

Contribution

- We investigate if RSI is associated with a more stable banking sector.
- We introduce a new index of RSI that is more focused on political independence and simpler to replicate than existing indicators.
- Using data on 2,500 banks in 98 countries during 1999-2019, we provide evidence on the benefits of RSI for financial stability.
- This work is the first to look at the relationship between RSI and financial stability at bank level.

There is some existing evidence

Theory

- Time inconsistency of governments
- Political decision-making can delay actions (intentionally or not)
- Political pressures can weaken regulation
- In addition, financial instability has more visible costs than price instability

Empirics

- Positive relationship between central bank independence and financial stability (Doumpos et al. 2015; Klomp and De Haan 2009);
- Aggregate NPLs-to-GDP (%) are lower where supervisors are more independent (Dincer and Eichengreen 2012);
- Supervisory independence enhances bank efficiency (Barth et al. 2013) and accounting practices (Garcia-Osma et al. 2019) but has no effect on profitability (Barth et al. 2003).

[More details](#)

Why a new index of Regulatory and Supervisory Independence? (1/2)

Our index improves on existing measures in five aspects:

1. More precise focus on the *political independence* of bank regulators/supervisors.
2. It looks at three aspects of independence: institutional, regulatory and budgetary.
3. It distinguishes RSI from central bank independence.
4. It varies over time (other indexes are time invariant).
5. It is easy to reproduce and compute for other countries.

Why a new index of Regulatory and Supervisory Independence? (2/2)

- Indexes of central bank independence (Doumpos et al. 2015; Klomp and De Haan 2009) are not sufficient as:
 1. not all central banks are in charge of supervision;
 2. these indexes focus on the monetary policy functions.
- There are three indexes of RSI: Barth, Caprio & Levine (BCL), Dincer and Eichengreen (DE) and Donze (SD). Each index has some limitations.
- BCL: focuses on supervisors' accountability and legal liability → this is not political independence.
- DE: unclear definition of dependence from [MoF](#) + partly relies on central bank independence indexes.
- SD: time-invariant and difficult to reproduce.

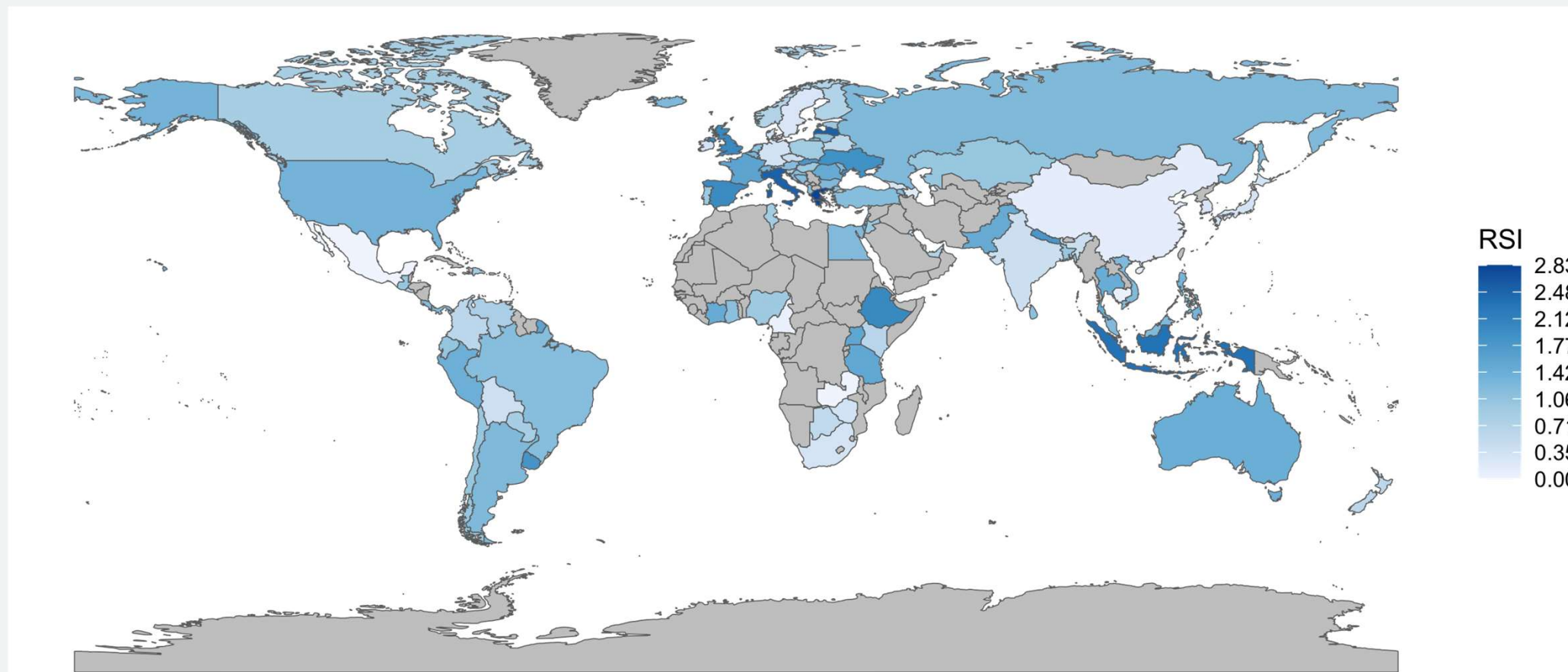
Measuring Regulatory and Supervisory Independence

Example

We cover **98 countries** during **1999-2019**.



Regulatory and Supervisory Independence is heterogeneously distributed across regions

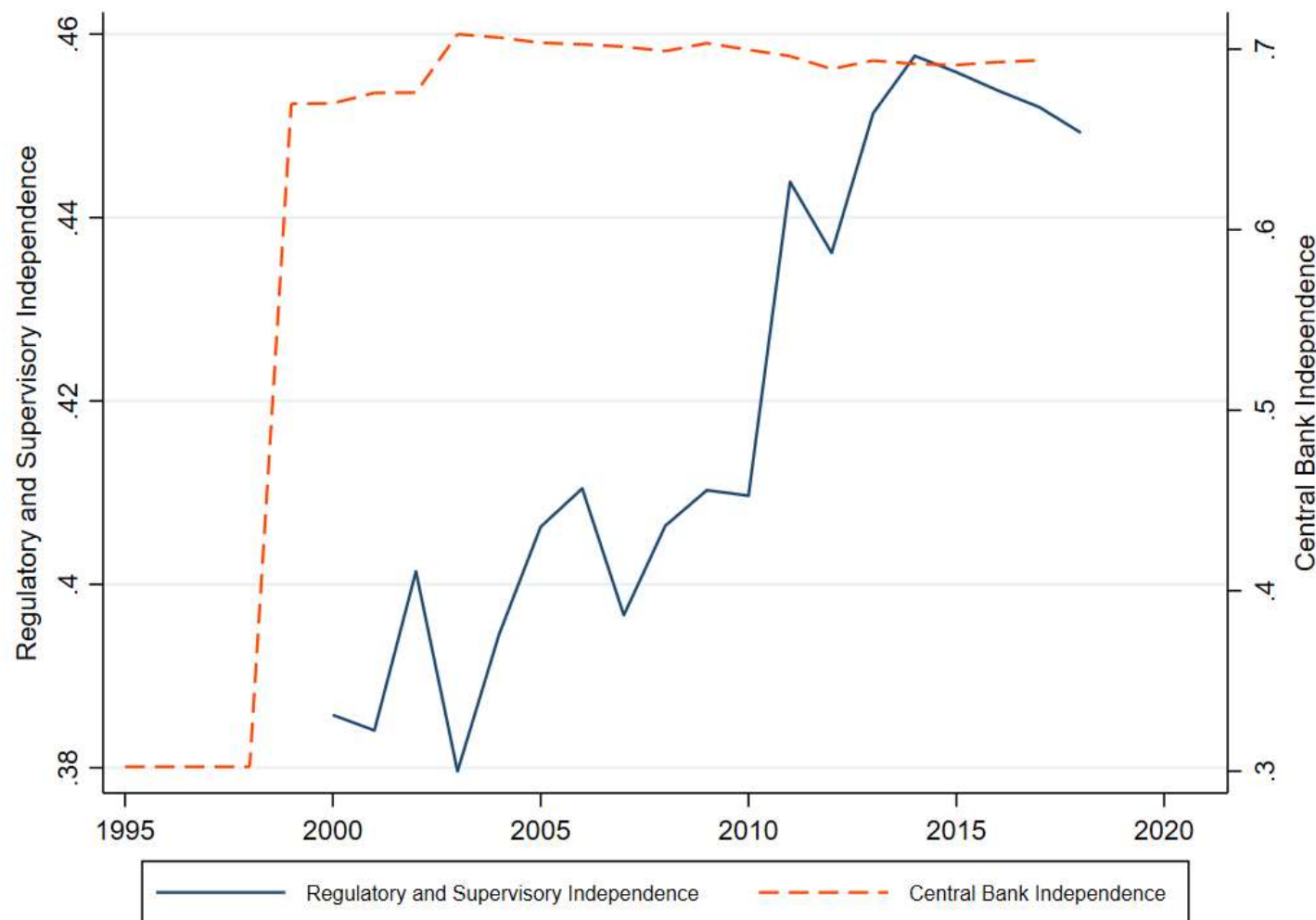


RSI and Central Bank Independence

N=98
1999-2019

CB independence is not supervisory independence

Increase in RSI was slower and more discontinuous.



Source: Fraccaroli et al. (2025) for RSI and Romelli (2022) for CBI. Note: For comparison, both indexes are scaled to be comprised between 0 and 1.

Empirical Strategy

We employ a hierarchical linear model:

Financial Stability indicators

- NPLs
- ROA's volatility
- Z-score

$$Y_{ict} = \alpha + \beta RSI_{ct-1} + \mathbf{X}'_{ict-1} \delta + \mathbf{W}'_{ct-1} \eta + \mu_t + \tau_t + \varphi_i + \varepsilon_{ict}$$

- RSI measures the degree of independence for regulators and supervisors
- \mathbf{X}' is a vector of bank-specific controls
- \mathbf{W}' is a vector of country-specific controls
- μ_t, φ_i, ρ_c are year-, bank- and country-specific effects
- ε_{ict} is the error term

Data and control variables

Bank-level

- Size (log assets)
- Efficiency (cost-to-income)
- Liquidity over assets
- Capitalization (equity over assets)

Macroeconomic

- GDP Growth
- GDP per capita
- Credit to GDP
- Inflation CPI

Regulatory Env.

- Deposit Insurance
- Regulatory Restrictions on Bank Activities

Culture

- Trust
- Hierarchy
- Individualism

Fitch Connect data on ~2,500 banks in 69 countries

Summary Stats

Main result: RSI associated with a fall in NPLs

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
RSI	-0.462*** (0.109)	-0.468*** (0.109)	-0.497*** (0.128)	-0.349*** (0.131)	-0.311** (0.147)	-0.448** (0.175)
Observations	19,141	19,141	17,312	16,312	12,682	10,038
Number of groups	69	69	69	66	58	43
Year FE	YES	YES	YES	YES	YES	YES
Assets control	NO	YES	YES	YES	YES	YES
Bank-level controls	NO	NO	YES	YES	YES	YES
Macro controls	NO	NO	NO	YES	YES	YES
Reg. controls	NO	NO	NO	NO	YES	YES
Culture controls	NO	NO	NO	NO	NO	YES
LR-test χ^2	12495.94***	12142.70***	11432.35***	10161.23***	7639.17***	5278.78***

Standard errors in parentheses

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

Alternative measure of financial stability: Z-score (distance from insolvency)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
RSI	0.070*** (0.016)	0.069*** (0.016)	0.368*** (0.030)	0.372*** (0.031)	0.411*** (0.033)	0.482*** (0.040)
Observations	40,428	40,428	19,711	18,599	14,315	10,417
Number of countries	71	71	69	66	58	43
Year FE	YES	YES	YES	YES	YES	YES
Assets control	NO	YES	YES	YES	YES	YES
Bank-level controls	NO	NO	YES	YES	YES	YES
Macro controls	NO	NO	NO	YES	YES	YES
Reg. controls	NO	NO	NO	NO	YES	YES
Culture controls	NO	NO	NO	NO	NO	YES

Standard errors in parentheses

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ROA volatility

Bank characteristics

Ones we looked at which were also not significant:
Size

Political connections

More market power

HH vs corporate lending

Increased RSI benefits
all types of banks

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
RSI	-0.502*** (0.140)	-0.498*** (0.139)	-0.523*** (0.159)	-0.365** (0.162)	-0.390** (0.181)	-0.486** (0.214)
RSI × State-Owned	0.244 (0.307)	0.187 (0.307)	0.035 (0.333)	-0.145 (0.338)	-0.207 (0.367)	-0.681 (0.418)
RSI × Foreign-Owned	0.041 (0.219)	0.025 (0.218)	0.075 (0.251)	0.115 (0.255)	0.364 (0.287)	0.398 (0.317)
State-Owned	1.625*** (0.619)	2.531*** (0.624)	2.147*** (0.655)	2.430*** (0.678)	2.444*** (0.749)	2.233*** (0.811)
Foreign-Owned	0.279 (0.511)	0.274 (0.509)	-0.186 (0.552)	-0.350 (0.571)	-0.781 (0.636)	-0.601 (0.688)
Observations	19,141	19,141	17,312	16,312	12,682	10,038
Number of countries	69	69	69	66	58	43
Year FE	YES	YES	YES	YES	YES	YES
Assets control	NO	YES	YES	YES	YES	YES
Bank-level controls	NO	NO	YES	YES	YES	YES
Macro controls	NO	NO	NO	YES	YES	YES
Reg. controls	NO	NO	NO	NO	YES	YES
Culture controls	NO	NO	NO	NO	NO	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Country characteristics: central bank being the supervisor.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
RSI	-0.368 (0.365)	-0.320 (0.363)	0.477 (0.415)	0.705* (0.410)	0.629 (0.454)	1.061** (0.524)
RSI × CB Supervision	-0.611 (0.388)	-0.725* (0.387)	-1.616*** (0.437)	-1.724*** (0.432)	-1.486*** (0.479)	-1.965*** (0.551)
CB Supervision	-0.065 (0.909)	0.058 (0.906)	2.492** (1.036)	3.101*** (1.022)	2.878** (1.134)	4.267*** (1.324)
Observations	16,113	16,113	14,488	13,514	10,610	8,783
Number of countries	40	40	40	38	37	30
Year FE	YES	YES	YES	YES	YES	YES
Assets control	NO	YES	YES	YES	YES	YES
Bank-level controls	NO	NO	YES	YES	YES	YES
Macro controls	NO	NO	NO	YES	YES	YES
Reg. controls	NO	NO	NO	NO	YES	YES
Culture controls	NO	NO	NO	NO	NO	YES

Higher NPLS

Independence is more effective

RSI and banking crashes

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
RSI	-0.848*** (0.234)	-0.820*** (0.233)	-0.469** (0.236)	-0.621*** (0.232)	-0.648** (0.262)	-1.487*** (0.302)
RSI × Bank equity crash	-0.363* (0.196)	-0.395** (0.195)	-1.006*** (0.182)	-0.445** (0.202)	-0.945*** (0.297)	-0.973** (0.432)
Bank equity crash	1.164*** (0.374)	1.214*** (0.372)	1.509*** (0.347)	0.365 (0.418)	1.436** (0.606)	3.203*** (0.940)
Observations	11,005	11,005	9,627	9,131	7,090	5,571
Number of countries	34	34	34	32	32	24
Year FE	YES	YES	YES	YES	YES	YES
Assets control	NO	YES	YES	YES	YES	YES
Bank-level controls	NO	NO	YES	YES	YES	YES
Macro controls	NO	NO	NO	YES	YES	YES
Reg. controls	NO	NO	NO	NO	YES	YES
Culture controls	NO	NO	NO	NO	NO	YES

Standard errors in parentheses

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

RSI mitigates some of
the effect of a banking
crash

Robustness: RSI interacted with different characteristics

Bank characteristics	Country-level characteristics	Supervisory Architecture	Systemic Crises
<ul style="list-style-type: none">• Size: X• Ownership: X• Political connections: X• Market power: X• Lending portfolio: X• Corporate governance: X	<ul style="list-style-type: none">• Advanced/EMDE: X• Institutional quality: X	<ul style="list-style-type: none">• Central Bank Supervision: RSI is <i>more</i> effective when supervision is under the central bank.• Supervisory Power: when supervisory powers are too high, RSI is <i>less</i> effective.	<ul style="list-style-type: none">• Bank equity crashes: RSI mitigates the impact of crises.• Systemic crises (Laeven and Valencia): RSI's coef. is negative but loses significance when interacted with crisis

X: no significant differences; RSI's coefficient remains negative and significant.

Conclusion and recap

- We introduce a new index that focuses on the political independence of bank regulators and supervisors, improving on previous measures.
- We find that higher regulatory and supervisory independence is associated with a more stable banking sector.
- These estimates are robust regardless of a bank's size, ownership, political connections, market power, loan portfolio, or corporate governance.
- The factors that weaken this relationship are: if the supervisor is the central bank, if supervisors have too many responsibilities.



Next steps

- These results underscore the importance of strengthening the independence of supervisors.
- While we note that governance can be effective, more research is needed to understand the interplay of institutional aspects in supervision (e.g., objectives, # of responsibilities...).
- And what drives reform (and not reforming)
- Why is compliance with this core principle so low?

Alternative Independence Measures (index by Barth et al. 2013; Adjusted Sample)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
BCL RSI	-0.142 (0.149)	-0.175 (0.149)	-0.146 (0.168)	-0.073 (0.170)	-0.342* (0.184)	-0.283 (0.183)
Observations	7,585	7,585	6,542	6,046	5,158	3,964
Number of countries	33	33	29	27	26	18
Number of groups	69	69	69	66	58	43
Year FE	YES	YES	YES	YES	YES	YES
Assets control	NO	YES	YES	YES	YES	YES
Bank-level controls	NO	NO	YES	YES	YES	YES
Macro controls	NO	NO	NO	YES	YES	YES
Reg. controls	NO	NO	NO	NO	YES	YES
Culture controls	NO	NO	NO	NO	NO	YES
Standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Alternative Financial Stability Measures: ROA volatility

VARIABLES	ROA 3		ROA 4	
	(1)	(2)	(3)	(4)
RSI	-0.063*** (0.016)	-0.468*** (0.038)	-0.029** (0.012)	-0.231*** (0.026)
Observations	44,345	11,598	43,161	11,490
Number of countries	71	43	71	43
Year FE	YES	YES	YES	YES
All controls	NO	YES	NO	YES

Standard errors in parentheses

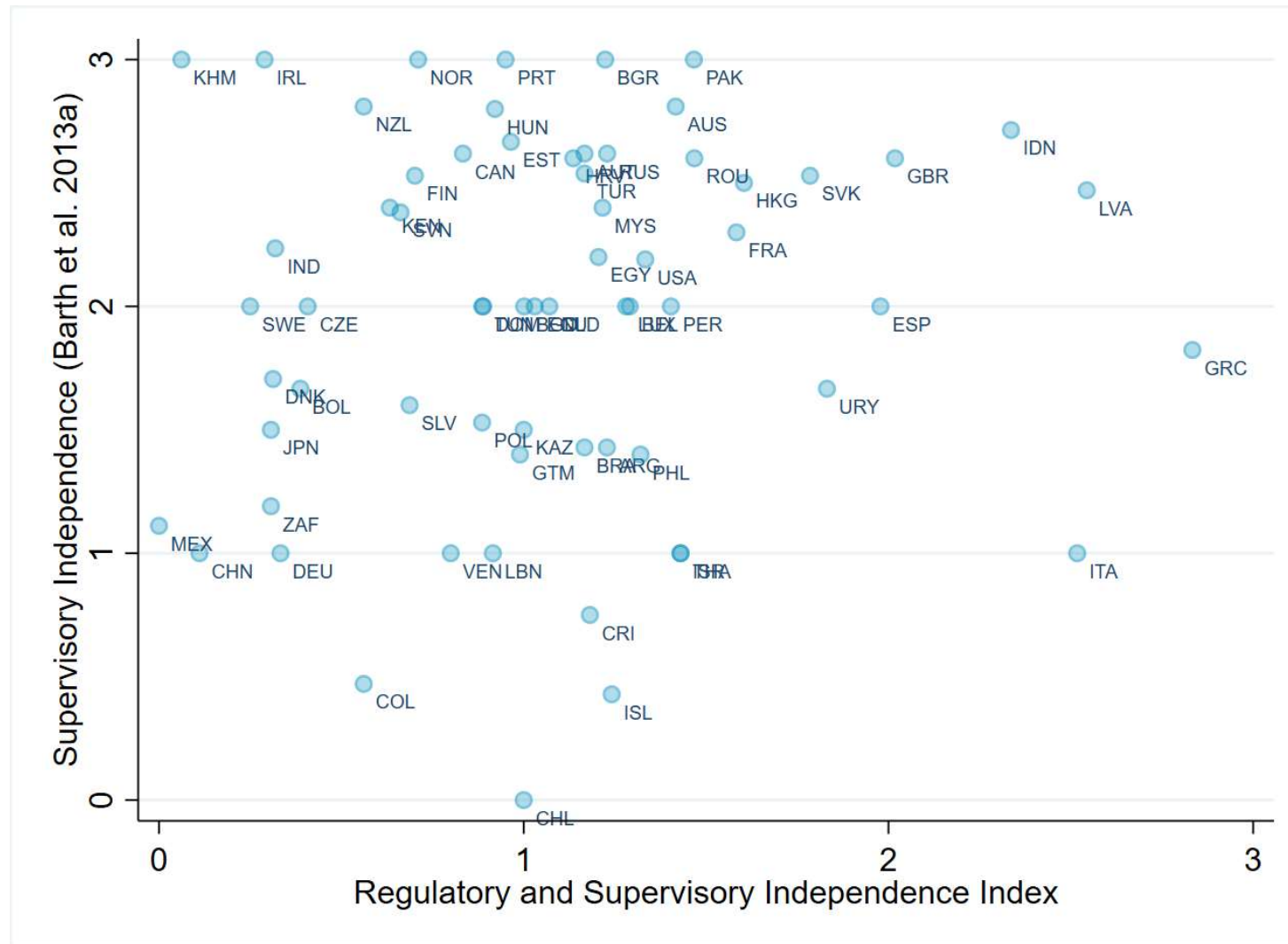
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

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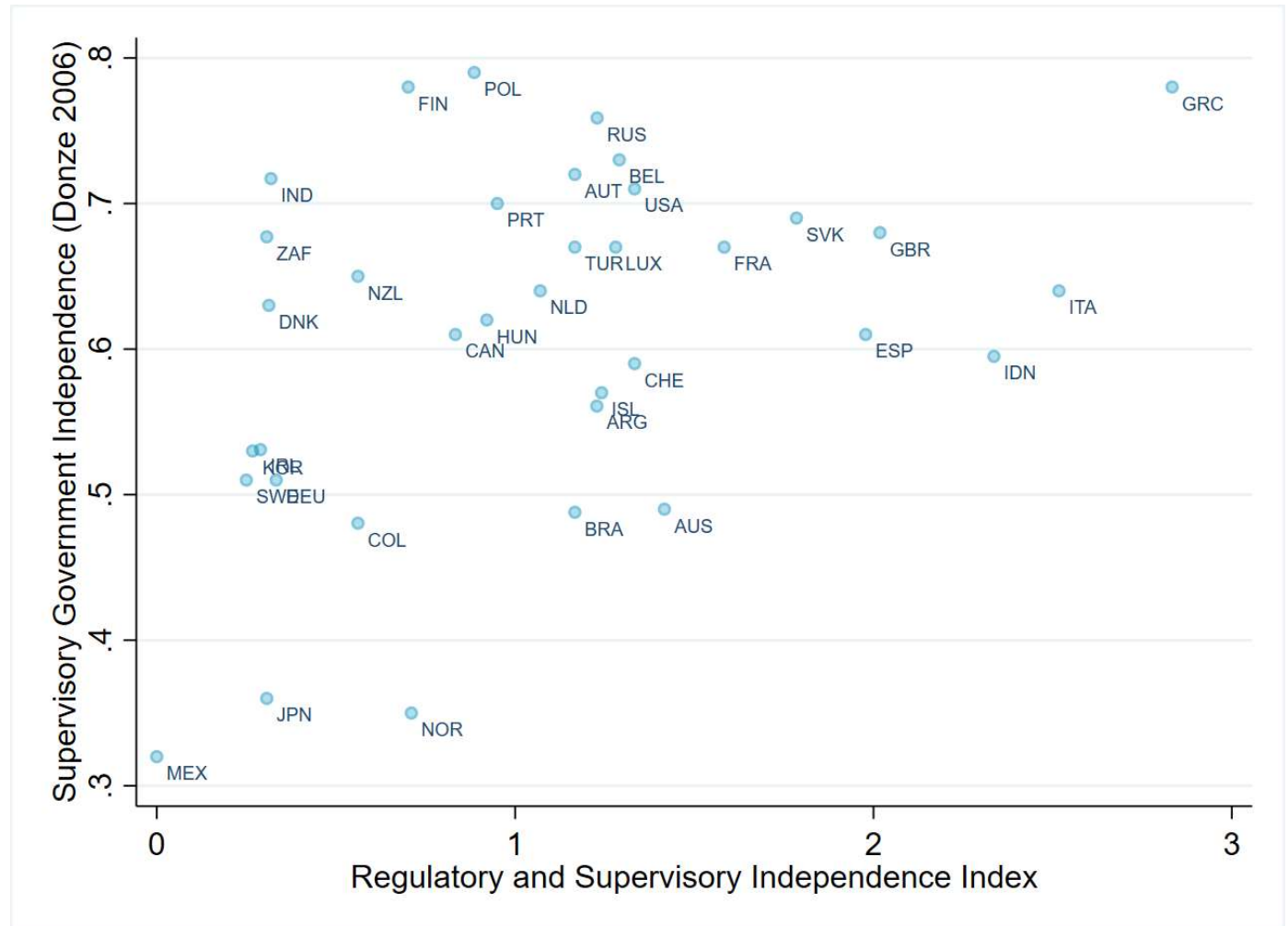
Robustness Tests

Specification	Coefficient of RSI
Full sample	Negative and significant
Replacing NPLs with alternative indicators of financial stability : financial volatility ($\log(\sigma(\text{ROA}))$) and bank insolvency (Z-score)	Negative and significant for Financial Volatility; Positive and significant for Z-scores (larger distance from insolvency)
Splitting sample by country-average bank size	Negative and significant for both banks above and below the average size of a country; Smaller banks have a larger coefficient.
Replacing RSI Reforms with CBI reforms	The coefficient for reforms in CBI is negative but <i>not</i> significant
Replacing RSI with other RSI indexes	The coefficients are positive but not significant, nor they are for reforms computed with those indexes
Instrumental Variable	Negative and significant
Excluding US , Indonesian and Greek banks	Negative and significant

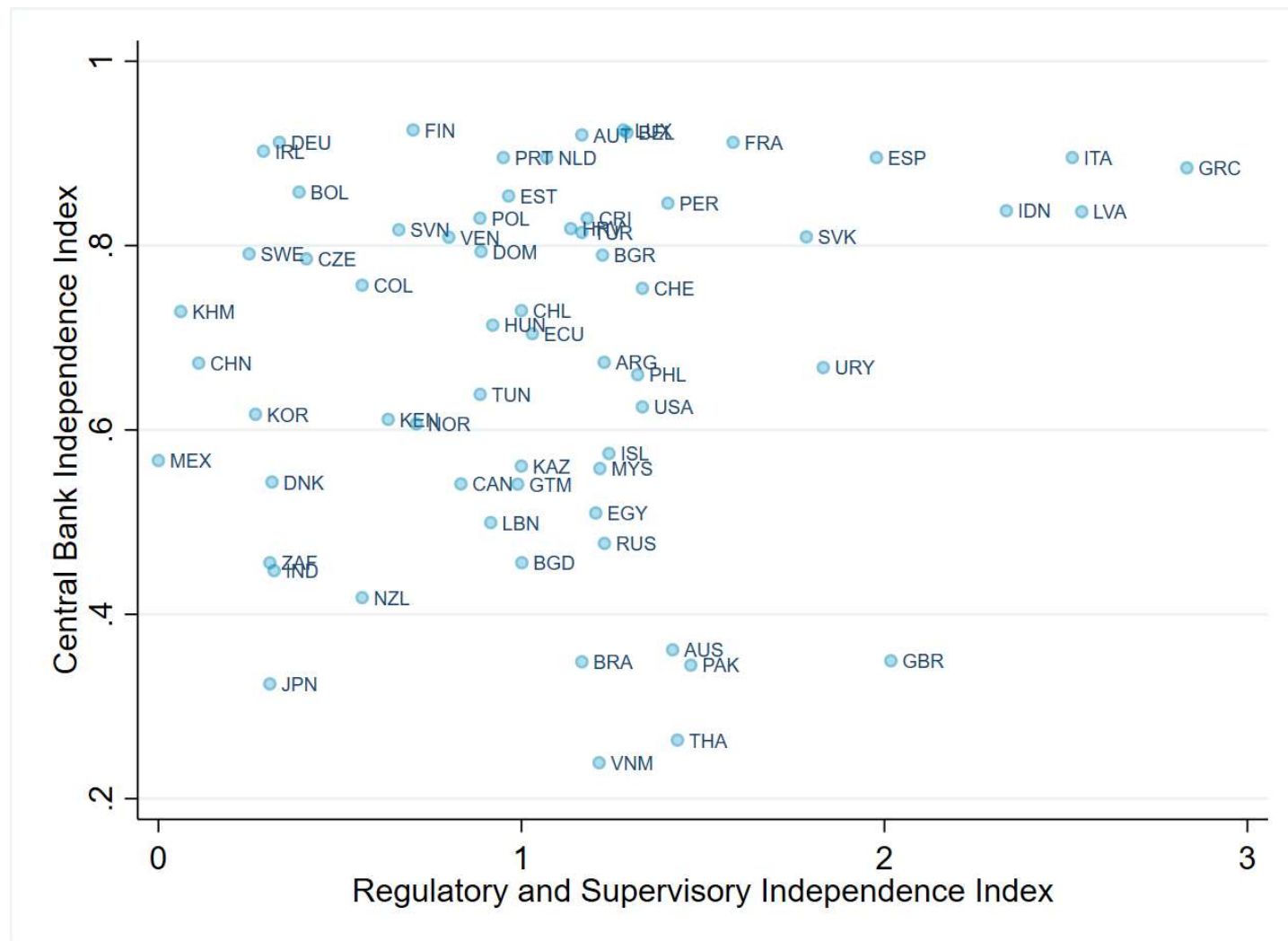
Correlation between RSI and BCL's index of supervisory independence



Correlation between RSI and Donze's index of supervisory independence



Correlation between RSI and Central Bank Independence index



Example of RSI Index: the United Kingdom

Regulator-Supervisor		Institutional			Regulatory	Budgetary	RSI Index
		Appointment	Removal	Term			
1999-2001	Bank of England	0	0	0.5	1	0	1.17
2002-2012	Financial Services Authority	0	0	0	1	1	2
2013-2019	Prudential Regulatory Authority (Bank of England)	0	0	1	1	1	2.33

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	Mean	Std. Dev.	Min	Max	N
RSI	1.129	.814	0	2.833	51,570
NPLs	6.169	10.384	0	100	25,035
Log(Assets)	7.393	2.241	2.236	15.392	83,961
Cost to Income Ratio	60.964	18.906	0	100	31,870
Liquidity / Total Assets	23.352	20.659	0	100	83,594
Equity / Total Assets	12.692	46.353	0	100	83,972
GDP Growth	2.419	3.507	-23.823	34.500	62,756
GDP per capita	1.698	3.443	-24.181	33.030	62,756
Credit to GDP	82.414	45.382	.186	304.575	58,631
Inflation CPI	3.523	7.900	-8.525	557.202	61,369
Deposit Insurance	.172	.377	0	1	53,055
Regulatory Restrictions	6.435	2.110	3	12	51,081
Trust	.929	.061	0	.999	50,201
Hierarchy	.284	.420	0	.999	50,201
Individualism	.702	.102	0	.987	50,201
CBI	.691	.217	.3025	.929	46,698
BCL Indep.	1.916	.828	0	3	43,386
DS Indep.	.601	.115	.32	.79	42,798
ROA 3 (log)	-2.436	2.008	-13.796	8.019	61,889
ROA 4 (log)	-1.824	1.760	-13.796	7.960	57,628
Z-score (log)	4.880	1.744	-3.441	15.175	56,357
Policy Contagion (IV)	5.967	8.327	0	2.328	49,210
Ethnic Fract. (IV)	.341	.219	.015	.884	38,906
State-Owned	.095	.293	0	1	84,001
Politician Bank	.042	.201	0	1	35,498
Governance Pillar	133.069	389.248	3	3,014	828
Corp Loans	.461	.498	0	1	38,564
Advanced	.560	.496	0	1	84,001
Institutional Quality	.676	.468	0	1	63,542
Supervisory Power	10.675	2.427	4	14	53,879
Crisis	.084	.277	0	1	84,001
Bank Equity Crash	.110	.313	0	1	39,353

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Variable	Definition
NPLs/Total Gross Loans	Non-performing loans, net of guaranteed loans, as a % before reserves
Total Gross Loans	Loans and finance leases held for investment or held for sale, net of unearned discount and gross of loss reserves. Does not include accrued interest on loans.
SSM Country Level	Dummy at country level which equals 1 when a country is member of the Single Supervisory Mechanism, 0 otherwise.
Bank Size (log)	All bank assets owned by the company, as carried on the balance sheet and defined under the indicated accounting principles. This variable is transformed in logarithmic form.
Efficiency Ratio	Non-interest expense before foreclosed property expense, amortization of intangibles and goodwill of impairments as a percentage of net interest income and noninterest revenues.
Cost-to-Income	Operating expenses as a percent of operating income.
Loans Growth	Logarithmic difference of total gross loans at time t and total gross loans at time t-1.
GDP Growth (annual %)	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars.
Inflation, GDP deflator (annual %)	Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.

Institutional Independence

Appointment: *Which authority(-ies) is in charge of appointing the head of the supervisory authority?* The following values were assigned:

- 0 if the appointment was done by the executive (government, prime minister, ministry of finance...)
- 0.25 if the appointment was done by the parliament
- 0.5 if the appointment involved more than one political body (mixed political arrangement)
- 0.75 if the appointment involved both political bodies and independence agencies or if it was done by the head of state without the involvement of the government (e.g. King)
- 1 if the appointment was in the hands of one or more independent agencies with no involvement of political bodies

Removal: *Which authority(-ies) is in charge of removing the head of the supervisory authority?* The same scale for the appointment variable applies.

Term: *How long is the term of the head of the supervisory authority (in years)?* The following values were assigned:

- 0 if years ≤ 3
- 0.25 if the term is 4 years
- 0.5 if the term is 5 years
- 0.75 if the term is 6 years
- 1 if the term is longer than 6 years

Regulatory and Budgetary Independence

Regulatory Independence: *Does the supervisory agency need to obtain approval from the government in order to issue binding secondary regulations for the banking sector?*

=0 if Yes (Less independence)

=1 if No (More independence)

Budgetary Independence: *Does the supervisory agency need to obtain approval from the government in order to determine its budget?*

=0 if Yes (Less independence)

=1 if No (More independence)

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Some examples of RSI: Greece

Supervisor: National Bank of Greece.

Appointment and Term Length

[Art 29](#): The Governor and the Deputy Governors shall be appointed for a **six-year** term by a **Presidential Decree** on a proposal of the Council of Ministers, following a **proposal by the General Council of the Bank**.

Removal

Art 24: The Governor, Deputy Governors and any of the members of the General Council may be relieved from office **by the General Meeting of Shareholders** if they are no longer capable of performing their duties or are guilty of serious misconduct, especially if they have violated the present Statute, disclosed confidential information about the affairs of the Bank or abused their position for their own benefit or for business purposes.

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Some examples of RSI: Germany

Supervisor: BaFin, agency under the supervision of the Federal Ministry of Finance.

[Act on the Federal Financial Supervisory Authority](#) §9 – Legal status of the members of the Executive Board

Appointment

“The members of the Board of Directors [...] are **appointed by the Federal President on a proposal from the Federal Government**. The members of the Executive Board are appointed for a term of **eight years**, exceptionally for a shorter period, but **at least five years**. Reappointment is allowed”.

Removal

“The **Federal President dismisses a member of the Executive Board at his request** or on a **decision of the Federal Government** for good cause. Before the decision of the Federal Government, the member of the Executive Board shall be given the opportunity to comment”.

The limitation of considering an agency as part of a Ministry

There are different ways in which a supervising agency can be considered as “part of a Ministry”, making the categorization confusing:

- “Under the supervision of the Ministry of Finance” (German BaFin, Dutch DNB)
- “Under the auspices of the Minister” (Icelandic FSA)
- Superintendency (Colombian SF, Chilean SBIF)
- Ministry department (Japan and Korea before the Asian crisis)
- External organ of the Prime Minister Office (Japanese FSA)

Core Principles for Effective Banking Supervision

[Basel Core Principles](#)

Supervisory powers, responsibilities and functions

Principle 2 – Independence, accountability, resourcing and legal protection for supervisors: **The supervisor possesses operational independence**, transparent processes, sound governance and adequate resources, and is accountable for the discharge of its duties. The legal framework for banking supervision includes legal protection for the supervisor.

Limitation of existing findings

Doumpos et al. (2015) & Klomp and De Haan (2009) look at central bank independence (CBI)

- CBI indexes are mainly based on [monetary policy independence](#)
- Not all central banks are also banking supervisors

Dincer and Eichengreen (2013) look at supervisory independence, but...

- Whenever the CB is the supervisor, [they apply the CBI index, which is based on monetary policy](#)
- Otherwise, they look at whether an agency is part of the [Ministry of Finance](#)
- They look at aggregate measures of banking instability

Barth et al. (2013) examine banks' efficiency, not instability. Moreover, ...

- Their RSI index looks at accountability, legal liability, term length
- Their data is based on a [survey with many gaps and issues of interpretability](#)