

Domestic and International Origins of Varieties of Central Bank:

Global Textual Analysis of Central Bank
Mandates and Functions

Kenya Amano

Harvard University

Masaaki Higashijima

University of Tokyo

International Political Economy Society

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Georgetown University

Emergence of New Functions

Lagarde Vows to Put Climate Change on the E.C.B.'s Agenda



"Climate change is one of the most pressing global challenges facing society today," Christine Lagarde said on Wednesday at a confirmation hearing before a European Parliament committee in Brussels. John Thys/Agence France-Presse — Getty Images

Source: New York Times. Sept. 4, 2019

Emergence of New Functions

Business
Crypto

El Salvador Had a Bitcoin Revolution. Hardly Anybody Showed Up

A year after becoming the first nation to adopt the token as legal tender, adoption has moved slowly and price declines have dampened early enthusiasm for the experiment.



Bitcoin largely hasn't been embraced as an alternative to El Salvador's hard currency, the U.S. dollar. *Photographer: Cristina Baussan/Bloomberg*

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Why do some governments delegate more functions to their central bank than others?

Policy Delegation to Central Bank

- ▶ Importance and measuring central bank independence for price stability (Barro and Gordon 1983; Alesina and Summers 1993; Cukierman, Webb, and Neyapti 1992; Garriga 2016)
- ▶ Diffusion of central bank independence (Polillo and Guillén 2005; Bodea and Hicks 2015; Johnson 2016)
- ▶ New development on the role of central banks after the Financial Crisis and the pandemic (Musthaq 2021; Cantu et al. 2021; Khan 2017)

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This paper aims to build the theory of non-monetary policy delegation and measure non-monetary policy functions.

What Explains the Different Delegation of Policy Functions?

Argument

- ▶ Governments are likely to grant broader policy functions to central banks when countries are less democratic.
- ▶ In addition, governments tend to adopt similar policies when their peer countries introduce new ideas in policymaking.

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Mechanisms

Domestic factors: Democratic governance
(Competitive elections, and
executive constraints)

International factor: Policy diffusion through
policy political and economic ties

What Explains the Different Delegation of Policy Functions?

Hypothesis 1: Domestic Factor

- ▶ Democratic governments are less likely to delegate a wider range of policy functions to central banks.

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Mechanisms

- **Vertical accountability** Avoid a principal-agent problem to be accountable to voters
- **Horizontal accountability** Diverse veto players may decentralize policy functions.

“Of course, if the Bank were ever given monetary independence, you might need to lose bank supervision in case you became an overmighty citizen.”

by Terry Burns, the former head of the UK Treasury

Tucker (2018), *Unelected Power*

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Trade-off between breath and degree

What Explains the Different Delegation of Policy Functions?

Hypothesis 2: International Factor

- ▶ Governments are more likely to delegate a wider range of policy functions to central banks if their peer countries allow such policy functions to the banks.

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Mechanisms

- Bilateral connections/similarities in terms of (i) political regimes, (ii) economic ties, and (iii) geographical proximity
- New policy ideas/schemes are easier to diffuse to countries with similar regimes and close connections
- As an important linkage to the international community, institutional designs of central banks are influenced by innovations in new policy schemes adopted by their fellow central bankers

Research Design

Research Design

Data

- **Central bank legal statutes**

103 countries - panel data (incomplete)

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Two Approaches

- **Domestic factor: Cross-Sectional Analysis**
 - ✓ Cross-section data in 2016
 - ✓ Topic model to identify functions
- **Diffusion factor: Simple Network Analysis**
 - ✓ Panel data for 16 countries
 - ✓ Bag of words to identify new policy idea

Monetary Authority of Singapore Act

ARRANGEMENT OF SECTIONS

PART I

PRELIMINARY

Section

1. Short title
2. Interpretation

PART II

ESTABLISHMENT, CAPITAL AND ADMINISTRATION OF AUTHORITY

3. Establishment of Authority
4. Principal objects and functions of Authority
5. Paid-up capital
6. General Reserve Fund
7. Board of directors
8. Appointment of directors

Research Design: Data Example

Principal objects and functions of Authority

4.—(1) The principal objects of the Authority shall be —

- (a) to maintain price stability conducive to sustainable growth of the economy;
- (b) to foster a sound and reputable financial centre and to promote financial stability;
- (c) to ensure prudent and effective management of the official foreign reserves of Singapore; and
- (d) to grow Singapore as an internationally competitive financial centre.

[Act 9 of 2013 wef 18/04/2013]

[13/2007 wef 30/06/2007]

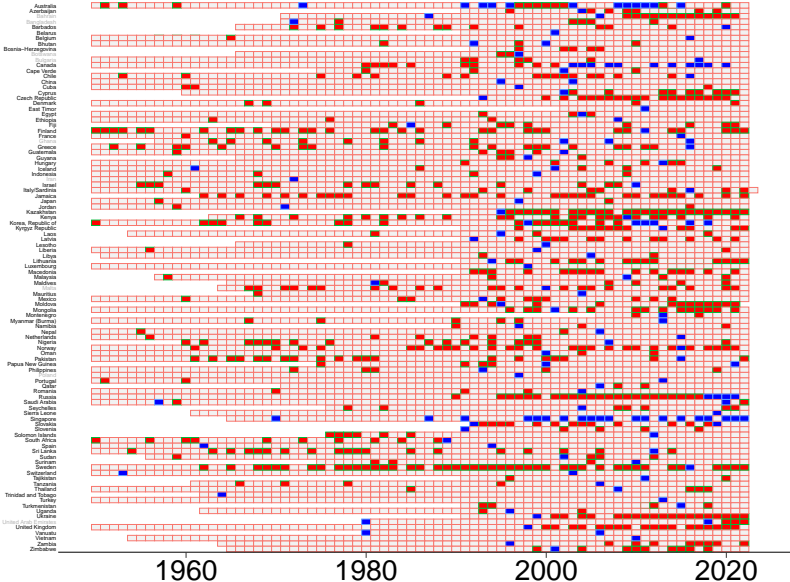
(2) The functions of the Authority shall be —

- (a) to act as the central bank of Singapore, conduct monetary policy, issue currency, oversee payment systems and serve as banker to and financial agent of the Government;
- (b) to conduct integrated supervision of the financial services

[Act 9 of 2013 wef 18/04/2013]

Data: Amendment Frequency

Blue square: Text data is collected



Cross-Sectional Analysis

Domestic Factor: Democratic Governance

Cross-Sectional Analysis: Operationalization

▶ Data

Central bank legal statutes

- 103 countries

▶ Operationalization of Central Bank Functions

✓ Document-Topic Distribution

- Share of the topic word amounts related to each policy function

✓ Keyword Assisted Topic Model (Eshima et al. 2021)

Cross-Sectional Analysis: Operationalization

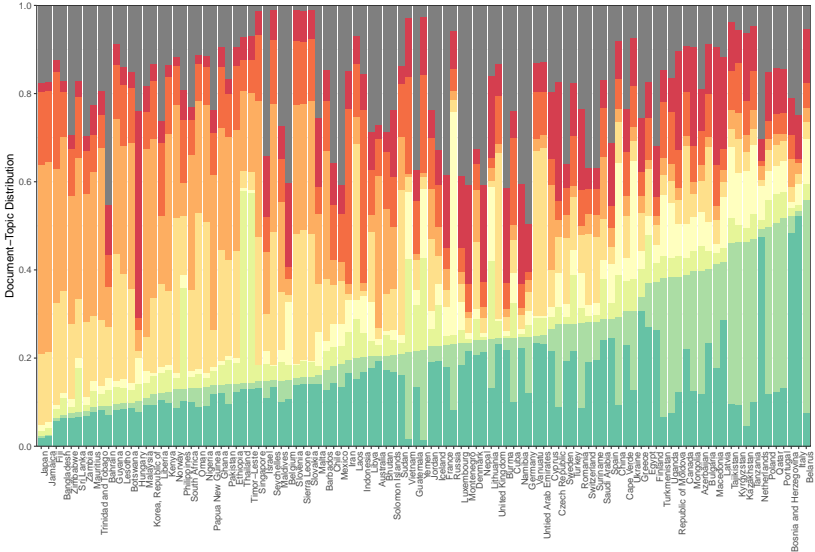
- ▶ Policy Function Topic
 1. Monetary policy
 2. Financial stability and regulation
 3. Currency provision
 4. Payment and settlement
 5. Foreign exchange and reserve management
 6. Other operations

- ▶ Governance Topic
 1. Appointment
 2. Relationship to Government

Cross-Sectional Analysis: Topic-identifying keywords

Policy Function Topic					
Monetary policy	Financial stability and regulation	Currency provision	Payment and settlement	Foreign exchange and reserve management	Other operations
monetary	banking	coins	payment	foreign	operation
economic	supervision	notes	settlement	exchange	operations
macro-economic	oversight	banknotes	paying	reserve	statistics
price	regulation	circulation	payments	reserves	data
rate	supervisory	issue	settlement	currency	research
market	macro-prudential	issued	securities	intervention	debt
money	prudential	digital	security	liquidity	asset
	macroprudential	deposit		swap	statistic
	prudent				consumer
	lender				services
	resort				service
					publication
					publications

Cross-Sectional Analysis: Document-Topic Distribution



- Others
- Other operations
- Appointment
- Foreign exchange and reserve management
- Currency provision
- Monetary policy
- Payment and settlement
- Financial stability and regulation
- Relation to government

Cross-Sectional Analysis: Models

- ▶ Outcome variables
Document-Topic Distribution for the 8 topics
- ▶ Explanatory variable
Liberal Democracy Index (V-Dem)

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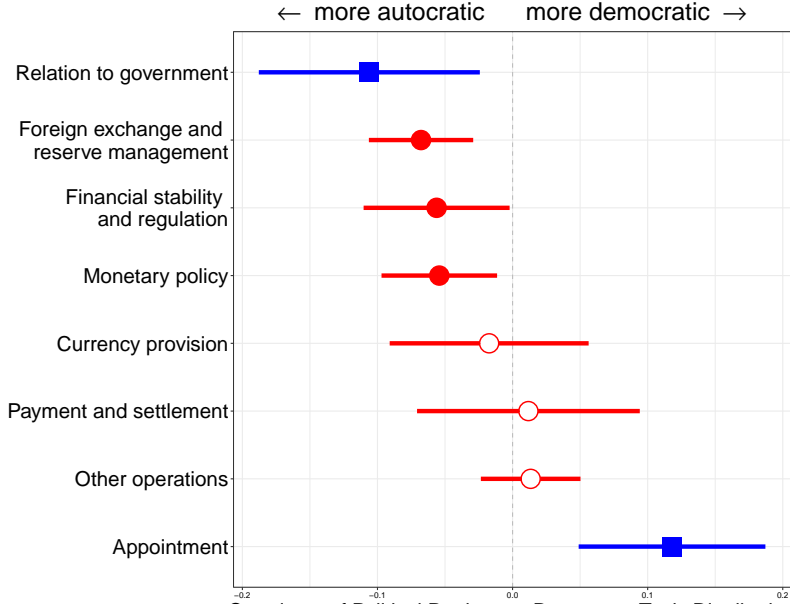
Expectation

- ✓ Functions topics **except for Monetary policy** are negatively correlated with the Liberal Democracy Index

Preliminary Results

Cross-Sectional Analysis

Correlates of Liberal Democracy Index (V-Dem)



Correlates of Political Regime on Document-Topic Distribution

Network Analysis

International Factor: Policy Diffusion

Network Analysis: Operationalization

▶ Data

Panel data of Central bank legal statutes

- 16 countries between 1950-2022

▶ Operationalization of Central Bank's New Policy Ideas

✓ Bag of Words

- Simply counting how many times each word appears in each law across countries and years

✓ Identify new words after the **financial crisis (2008)**

- ✓ Using the list of new words, estimate the degree to which paired countries share the new words

Network Analysis: Operationalization

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- New words (After 2008): **2,553 words, including 316 shared new words**

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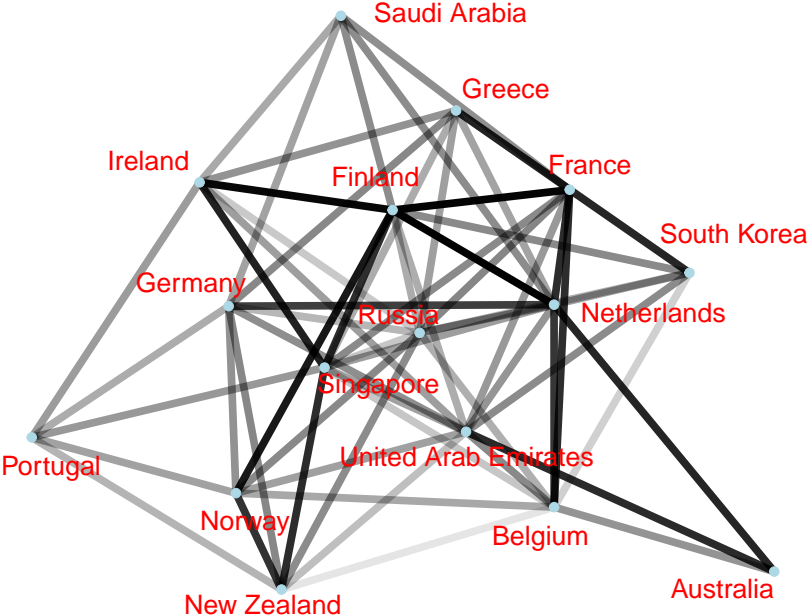
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"macroprudential," "counterparty"

Network Analysis: Operationalization



Network Analysis: Model

- ▶ Unit of Analysis
 - Country pairs (dyads)
- ▶ Outcome variables
 - Degree of shared words for each dyad
- ▶ Explanatory variables
 - Political regime similarity (take 1 if the dyad is the same regime)
 - Direct Investment Amount among the dyad (Coordinated Direct Investment Survey, IMF)
 - Geographical proximity (take 1 if the paired countries are adjacent)

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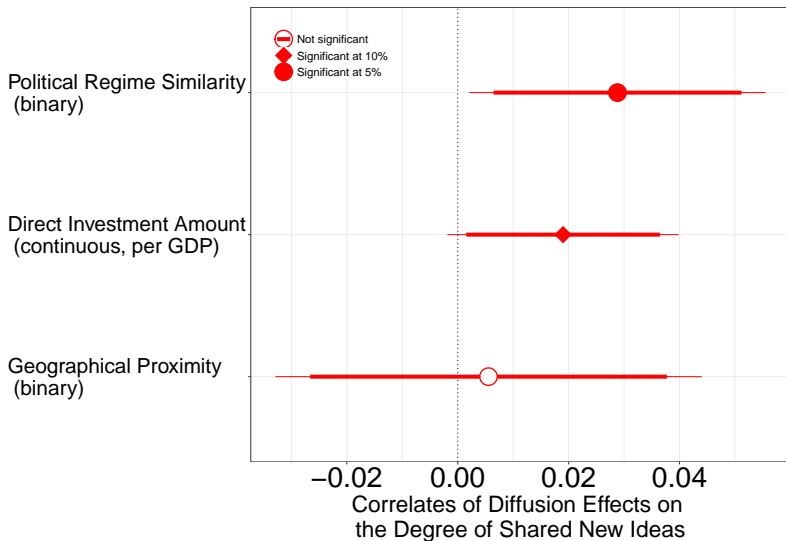
Expectation

- ✓ The degree of sharing new ideas are positively correlate with political and economic ties.

Preliminary Results

Network Analysis

Correlates of the Diffusion Effects



Future Directions

- ▶ **Data Collection:** Built panel data.
- ▶ **Theory:** Link more with the principal-agent problem, and political regime with diffusion process
- ▶ **Theory/Measurement** Compare *de jure* with *de facto* functions.
- ▶ **Measurement:** Human coding for policy functions
- ▶ **Measurement:** Identify new policy ideas with topic model

Thank you!

Kenya Amano
kamano@fas.harvard.edu