

# The political economy of reforms in central bank design: evidence from a new database

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# Motivation

- **Central Bank Independence over the past 4 decades**

- ▶ Large academic literature: why? how? what?
- ▶ Policy side: central banks around the world have gradually become more independent
- ▶ Despite the wide consensus on CBI, large worldwide differences in the timing and magnitude of reforms

*“Monetary policy independence remains of the highest importance, and it is important that we preserve monetary policy independence to help foster desirable macroeconomic outcomes and financial stability.”*

— Stanley Fisher (Nov 2015)

- No systematic study on the drivers of reforms in central bank institutional design

# The evolution of central banking

- **How to measure central bank independence?**

1. *De jure* CBI indices: Bade and Parkin (1982), Grilli et al. (1991), Cukierman (1992) and Cukierman et al. (1992)
2. *De facto* CBI indices: Cukierman et al. (1992)

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- **Impact of central bank independence on macroeconomic outcomes**

- ▶ Negative relationship between CBI and inflation: Grilli et al. (1991), Cukierman et al. (1992), Acemoglu et al. (2008), Arnone et al. (2009), Arnone and Romelli (2013)
- ▶ Positive impact on bank soundness (Doumpos et al., 2015)

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## ● Impact of central bank independence on macroeconomic outcomes

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## ● Changing role of Central Banks after the crisis

- ▶ Central bank financial independence ▶ Fed
- ▶ Central bank reporting and disclosure

## ● Main empirical challenge

- ▶ Lack of data on the timing, size and evolution of reforms in central bank design

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- Construct a new comprehensive database on central bank institutional design
- Propose an extended index of central bank independence by taking into account:
  - ▶ The *dynamics* of CBI since 1970s in 155 countries
  - ▶ New data on financial independence and reporting and disclosure
- Using the newly created index of CBI, I identify when, by how much and why did countries reform their central banks
  - ▶ Initial reforms, regional convergence and external pressure to reform increase the likelihood of reforms
  - ▶ Political factors or crises episodes have little impact



# The CBIE Index

# Data

- **The CBIE index:**

- ▶ 42 questions on central bank design across 6 dimensions:
  - ★ 1) Governor and Central Bank Board; 2) Monetary Policy and Conflicts Resolution; 3) Objectives; 4) Lending to the Government; 5) Financial Independence; 6) Reporting and Disclosure [▶ The index](#)
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- **Data:**

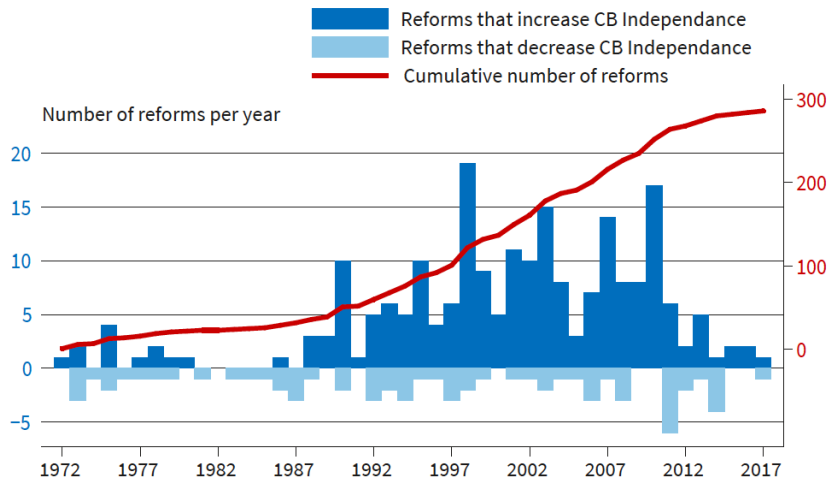
- ▶ 155 countries over the period 1972-2017
- ▶ 2490 changes to central bank legislation, of which **286 changed the degree of CBI**

**Table:** Measures of Central Bank Independence and Reforms

Paper	Index Name	Variables	Countries	Period	Nr. of reforms
Grilli et al. (1991)	GMT	16	18	1989	–
Cukierman et al. (1992)	CWN	16	72	1950-1989	35
Cukierman et al. (2002)	CWN	16	26	1991-1998	9
Polillo and Guillén (2005)	CWN	16	91	1989-2000	60
Jacome and Vazquez (2008)	CWNE	17	24	1990-2002	13
Acemoglu et al. (2008)	CWN	16	52	1972-2005	40
Dincer and Eichengreen (2014)	CBIU	24	85	1998-2010	44
Bodea and Hicks (2015)	CWN	16	83	1972-2010	108
<b>This paper</b>	<b>CBIE</b>	<b>42</b>	<b>155</b>	<b>1972-2017</b>	<b>286</b>

Note: Number of countries and reforms in CBI identified in previous works and in this paper

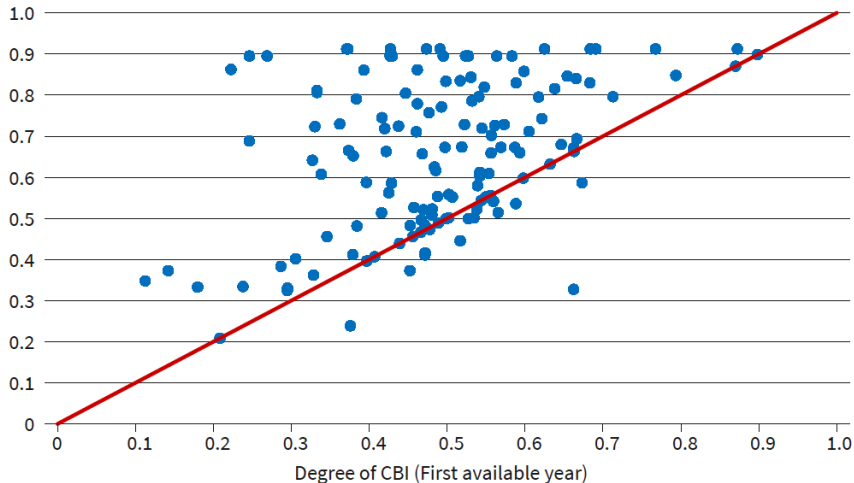
## Central Bank Legislative Reforms (1972–2017)



Note: Frequency of reforms that increased/decreased the CBIE index, together with the cumulative number of reforms in CBI between 1972 and 2017

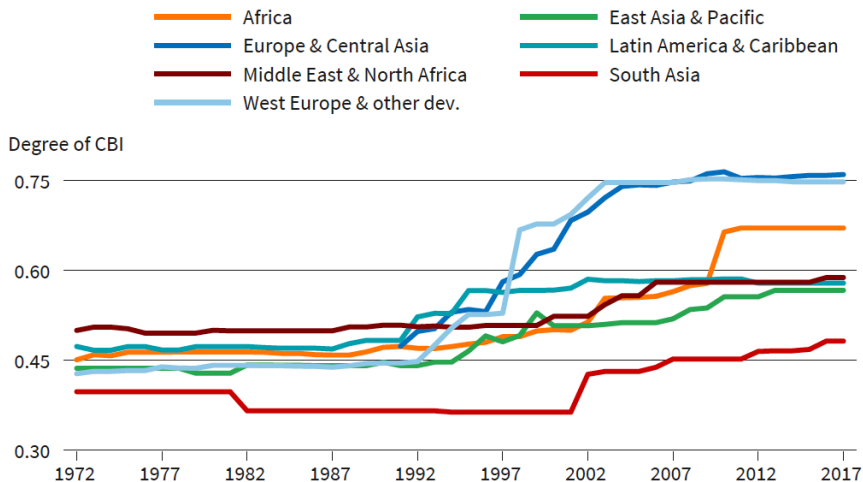
## Evolution of Central Bank Independence

Degree of CBI (Last available year)



Note: Level of central bank independence proxied by the CBIE index in 1972 (or the first year available) and 2017

## Evolution of CBI by Regions



Note: Evolution of the average index of CBI by regional clusters

# Determinants of reforms in central bank design

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- Endogenous Political Institutions (Aghion et al., 2004, QJE): political institutions such as central banks evolve endogenously in response to changing political and economic conditions



# Determinants of reforms in central bank design

- Endogenous Political Institutions (Aghion et al., 2004, QJE): political institutions such as central banks evolve endogenously in response to changing political and economic conditions
- Sources of endogeneity:
  - ▶ Status quo bias
  - ▶ External inducements
  - ▶ Crises and shocks
  - ▶ Ideology and political factors
  - ▶ Economic conditions

$$\begin{aligned} \Delta CBIE_{i,t} = & \beta_1 \text{Status quo}_{i,t-1} + \beta_2' \phi^{\text{External pressure}} + \beta_3' \phi^{\text{Crisis}} + \\ & + \beta_4' \phi^{\text{Politics}} + \beta_6' \phi^{\text{Economic}} + \alpha_i + \tau_t + \epsilon_{i,t} \end{aligned} \quad (1)$$

## Drivers of reforms in CB design

- Previous levels of independence, regional convergence and external pressures represent important drivers of changes in CBI

	(1)	(2)	(3)	(4)	(5)
				Advanced	Developing
Status quo	-0.039*** (0.014)	-0.038*** (0.014)	-0.056*** (0.018)	-0.218** (0.089)	-0.038* (0.020)
Regional pressure	0.045*** (0.017)	0.046*** (0.017)	0.042* (0.022)	-0.137 (0.088)	0.080*** (0.023)
IMF Programs	0.004*** (0.001)	0.003*** (0.001)	0.004*** (0.002)	0.007 (0.004)	0.004** (0.002)
Monetary Union	0.044*** (0.006)	0.045*** (0.006)	0.042*** (0.006)	0.044*** (0.009)	0.022 (0.014)
Financial Crisis		-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.004)	-0.001 (0.003)
Currency Crises		-0.001 (0.002)	-0.001 (0.002)	0.008 (0.010)	-0.001 (0.003)
Sovereign Debt Crisis		0.006 (0.005)	0.008 (0.006)	0.006 (0.006)	0.008 (0.006)
Inflationary episodes		0.003** (0.001)	0.005** (0.002)	-0.008 (0.005)	0.005* (0.003)
Cabinet change			0.004 (0.003)	0.013* (0.007)	0.002 (0.004)
Government Crisis			0.002 (0.002)	0.001 (0.003)	0.004 (0.002)
Polity <sub><i>i,t-1</i></sub>			0.001 (0.000)	-0.002 (0.002)	0.001 (0.000)
GDP Growth dummy			0.002 (0.002)	0.005* (0.003)	0.001 (0.002)
$\Delta$ Econ. Globalization <sub><i>i,t-1</i></sub>			0.001** (0.000)	-0.001 (0.001)	0.001** (0.000)
Debt to GDP <sub><i>i,t-1</i></sub>			-0.001 (0.000)	0.001 (0.000)	-0.001 (0.000)
Observations	5,592	5,592	3,886	1,044	2,842
Number of countries	151	151	133	33	108
R-squared	0.099	0.101	0.118	0.315	0.107

# Direction and magnitude of reforms

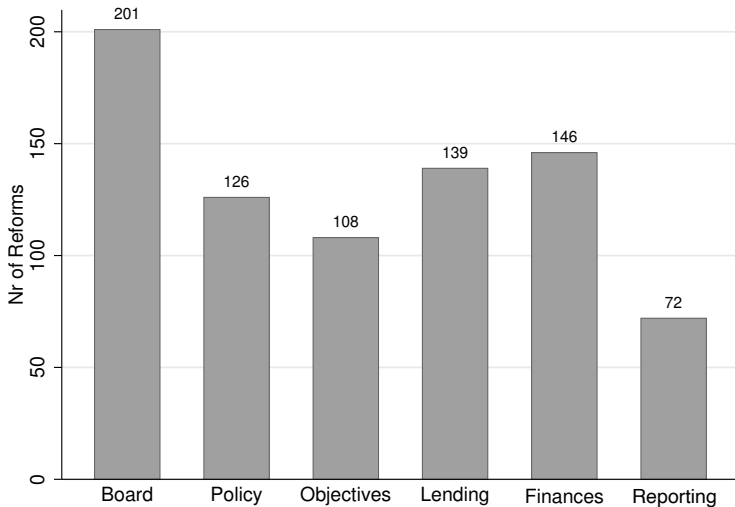
$$\text{Prob}(\text{Reform}_{i,t} = 1) = F(\beta_2 \text{Status quo}_{i,t-1} + \beta_2' \phi^{\text{External pressure}} + \beta_3' \phi^{\text{Crisis}} + \beta_4' \phi^{\text{Politics}} + \beta_6' \phi^{\text{Economic}} + \epsilon_{i,t}), \quad (2)$$

- Do the drivers of reform differ depending on the direction of reforms?

**Table:** Sign and magnitude of reforms

	(1)	(2)	(3)	(4)
	Reform	Large Reform	Reversal	Large Reversal
Status quo	-10.595*** (2.522)	-16.104*** (5.160)	1.687 (4.251)	-8.543 (7.007)
Regional pressure	-2.347 (2.552)	20.174*** (5.784)	-2.521 (4.549)	-18.241** (8.050)
IMF Programs	0.468* (0.288)	1.090* (0.560)	-0.195 (0.587)	-0.722 (0.986)
Financial Crisis	0.374 (0.282)	-0.410 (0.510)	0.855* (0.479)	1.904*** (0.694)
Polity <sub>i,t-1</sub>	-0.073* (0.039)	-0.191*** (0.072)	-0.073 (0.075)	-0.454 (0.310)
Additional controls	Yes	Yes	Yes	Yes
Observations	2,602	1,785	780	335
Number of countries	101	78	42	27

# Legislative reforms by subcategories



Source: Authors' calculations

## Reforms in central bank design by sub-categories

	(1)	(2)	(3)	(4)	(5)	(6)
	$\Delta$ Board	$\Delta$ Mon. Policy	$\Delta$ Objectives	$\Delta$ Lending	$\Delta$ Financial Ind.	$\Delta$ Reporting
Status quo	-0.059*** (0.018)	-0.066*** (0.021)	-0.065*** (0.024)	-0.051** (0.021)	-0.024** (0.012)	-0.030** (0.011)
Regional pressure	0.005 (0.017)	0.034* (0.020)	0.038 (0.025)	0.060** (0.025)	-0.002 (0.013)	0.010 (0.012)
IMF Programs	0.002 (0.002)	0.005** (0.002)	0.007 (0.005)	0.010*** (0.003)	-0.001 (0.001)	0.001 (0.001)
Financial Crisis	0.001 (0.003)	-0.003 (0.002)	-0.003 (0.005)	0.001 (0.005)	-0.002** (0.001)	0.002 (0.002)
Inflationary episodes	0.007*** (0.002)	0.002 (0.002)	0.009* (0.005)	0.008* (0.004)	0.001 (0.001)	-0.001 (0.002)
Polity <sub><i>i,t-1</i></sub>	-0.001 (0.000)	0.001 (0.000)	-0.001 (0.001)	0.001* (0.000)	0.001*** (0.000)	-0.001 (0.000)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,886	3,886	3,886	3,886	3,886	3,886
Number of countries	133	133	133	133	133	133
R-squared	0.114	0.095	0.098	0.100	0.042	0.041

# Central bank design and democracy

**Table:** Central bank design and democracy

	(1)	(2)	(3)	(4)	(5)	(6)
		Developing		Developing		Developing
Status quo	-0.057*** (0.018)	-0.039* (0.020)	-0.057*** (0.018)	-0.035* (0.020)	-0.070*** (0.023)	-0.078*** (0.025)
Regional pressure	0.042* (0.022)	0.080*** (0.023)	0.041* (0.022)	0.083*** (0.023)	0.041 (0.027)	0.066** (0.028)
IMF Programs	0.004*** (0.002)	0.004** (0.002)	0.005*** (0.002)	0.005** (0.002)	0.006*** (0.002)	0.006** (0.003)
Inflationary episodes	0.005** (0.002)	0.005* (0.003)	0.005** (0.002)	0.004* (0.002)	0.009*** (0.003)	0.008** (0.004)
Democracy <sub><i>i,t</i></sub>	0.003 (0.004)	0.003 (0.004)				
Democratic Reform <sub><i>i,t</i></sub>			0.029** (0.014)	0.029** (0.014)		
$\Delta$ Nationalist Index					-0.023*** (0.007)	-0.026** (0.010)
$\Delta$ Econ. Globalization <sub><i>i,t-1</i></sub>	0.001** (0.000)	0.001** (0.000)	0.001** (0.000)	0.001** (0.000)	0.001** (0.000)	0.001** (0.001)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,883	2,839	3,882	2,838	3,056	2,049
Number of countries	133	108	133	108	124	99
R-squared	0.118	0.107	0.124	0.115	0.132	0.131

# Robustness tests

1. Alternative aggregation methods to construct the CBIE index: (i) propensity score matching and (ii) weighting scheme
2. Alternative definitions of central bank independence: (i) restricted index and (ii) classical indices of CBI
3. Interaction terms between: (i) lagged CBIE index and the external inducement variables and (ii) Polity index and the external inducement variables
4. Controlling for the size of IMF loan to GDP and placebo test for IMF programs.
5. Alternative econometric approaches: dynamic spatial panel data model

# On the political economy of reforms in central bank design ...

- Large dataset on the timing, evolution and magnitude of reforms in central bank design between 1972-2017
- The likelihood of CBs reforms is mainly driven by status quo and regional pressure as well as an international pressure to reform such as IMF Loan Programs
- Contributes to a larger literature on political institutions by underscoring the importance of understanding the dynamics of the reform process

**Database publicly available**



# Can we take CBI for granted?

- Since the GFC, a growing number of central banks around the world are facing political pressures that have called their independence into question

Hungary's central bank 'revolution' attacked

Orbán and Fidesz party consolidate control of MNB

Kater Eddy in Budapest MARCH 19 2015

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**Turkish central bank needs to be 'fully independent,' IMF's Europe director says**

PUBLISHED SUN, APR 16 2016 11:06 AM EDT | UPDATED WED, APR 16 2016 6:10 AM EDT

**RBI governor Urjit Patel quits after months of friction with Modi government**

Los Angeles Times

By Neel Anand | December 16, 2016

Argentina's president fires central bank chief over foreign reserves

 **Donald J. Trump** ✓  
@realDonaldTrump

The only problem our economy has is the Fed. They don't have a feel for the Market, they don't understand necessary Trade Wars or Strong Dollars or even Democrat Shutdowns over Borders. The Fed is like a powerful golfer who can't score because he has no touch - he can't putt!

♡ 97.9K 3:55 PM - Dec 24, 2018

74.4K people are talking about this

- Impact of climate change on the institutional design of central banks

Thank you for your attention

email: romellid@tcd.ie

Data: <https://davideromelli.com/cbidata/>

Acemoglu, D., Johnson, S., Querubin, P., and Robinson, J. A. (2008). When does policy reform work? the case of central bank independence. *Brookings Papers on Economic Activity*, 2008(1):351–418.

Bodea, C. and Hicks, R. (2015). International finance and central bank independence: Institutional diffusion and the flow and cost of capital. *The Journal of Politics*, 77(1):pp. 268–284.

Cukierman, A., Miller, G. P., and Neyapti, B. (2002). Central bank reform, liberalization and inflation in transition economies—an international perspective. *Journal of Monetary Economics*, 49(2):237–264.

Cukierman, A., Webb, S. B., and Neyapti, B. (1992). Measuring the independence of central banks and its effect on policy outcomes. *The World Bank Economic Review*, 6(3):353–398.

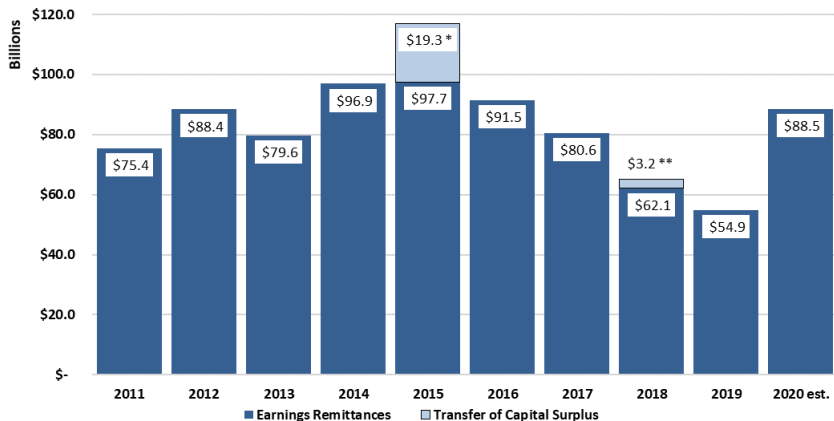
Dincer, N. N. and Eichengreen, B. (2014). Central Bank Transparency and Independence: Updates and New Measures. *International Journal of Central Banking*, 10(1):189–259.

Grilli, V., Masciandaro, D., and Tabellini, G. (1991). Political and monetary institutions and public financial policies in the industrial countries. *Economic Policy*, 6(13):342–392.

Jacome, L. and Vazquez, F. (2008). Is there any link between legal central bank independence and inflation? evidence from latin america and the caribbean. *European Journal of Political Economy*, 24(4):788–801.

Polillo, S. and Guillén, M. F. (2005). Globalization pressures and the state: The worldwide spread of central bank independence. *American Journal of Sociology*, 110(6):1764–1802.

## Federal Reserve Remittances to the U.S. Treasury



\* The Reserve Banks transferred to the Treasury \$19.3 billion from their capital surplus on December 28, 2015, which was the amount necessary to reduce aggregate Reserve Bank surplus to the \$10 billion surplus limitation in the Fixing America's Surface Transportation Act.

\*\* The Reserve Banks transferred to the Treasury \$3.175 billion from their capital surplus in 2018, of which \$2.5 billion was the amount necessary to reduce aggregate Reserve Bank surplus to the \$7.5 billion surplus limitation in the Bipartisan Budget Act of 2018 and \$675 million was the amount necessary to further reduce aggregate Reserve Bank surplus to the \$6.825 billion surplus limitation in the Economic Growth, Regulatory Relief, and Consumer Protection Act.

# Institutional characteristics of the CBIE index

Criteria	GMT	CWN	CBIE
Governor and Central Bank Board			
Who appoints the governor	*	*	*
Term of office of governor	*	*	*
Reappointment option for governor			*
Dismissal of governor		*	*
Governor allowed to hold another office in government		*	*
Qualification requirements for governor			*
Who appoints the board members	*		*
Term of office of board members	*		*
Reappointment option for board members			*
Dismissal of board members			*
Board Members allowed to hold another office in government			*
Qualification requirements for board members			*
Staggering term of office for board members			*
Government representatives in the board	*		*
Monetary Policy and Conflicts Resolution			
Who formulates monetary policy	*	*	*
Central bank responsible to fix key policy rates	*		*
Banking sector supervision	*		*
Central bank role in government's budget and/or debt	*		*
Final authority in monetary policy	*	*	*
Objectives			
Central bank's statutory goals	*	*	*

# Institutional characteristics of the CBIE index

Criteria	GMT	CWN	CBIE
Lending to the Government			
Direct credit: not automatic	*	*	*
Direct credit: market of lending		*	*
Who decides financing conditions to government		*	*
Beneficiaries of central bank lending		*	*
Direct credit: type of limit	*	*	*
Direct credit: maturity of loans	*	*	*
Direct credit: interest rates	*	*	*
Prohibition from buying government securities in primary market	*	*	*
Financial Independence			
Payment of the initial capital of the central bank			*
Authorized capital of the central bank			*
Central bank financial autonomy			*
Arrangements for automatic recapitalization			*
Transfers of money from the treasury			*
Central bank approves its annual budget			*
Central bank adopt its annual balance sheet			*
Auditing agency			*
Allocation of the net profits			*
Allocation of profits to the general reserve fund			*
Partial payments of dividends before the end of the fiscal year			*
Unrealized profits included in the calculation of distributable profits			*
Central Bank Reporting and Disclosure			
Central bank reporting			*
Central bank financial statements			*

Notes: CBIE = Extended CBI Index; GMT = Grilli et al. (1991); CWN = Cukierman et al. (1992).