

Do Monetary Policy Frameworks Matter in Low-Income Countries?

Andrew Levin
Dartmouth College
May 2021

Note: This presentation draws on joint work with Alina Carare, Carlos De Resende, and Chelsea Zhang (NBER WP 28536).

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The “Quiet Revolution” in Economic Development

- *PPP-Adjusted Real GDP Per Capita (2017 intl.*

<i>Category</i>	<i># Countries in 1995</i>	<i>Average Growth Rate 1995 to 2019</i>
High-Income Countries	56	1.7%
Middle-Income Countries	52	2.3%
Lower-Income Countries	58	2.9%

Source: World Bank. Income Thresholds: HICs > \$12,500, LICs < \$4,000.

Lessons from the “Quiet Revolution” in Economic Development

- **Rule of Law:** consistent application of laws and regulations encourages investment and innovation
- **Transparency:** fosters public trust and mitigates the corrosive effects of corruption
- **Accountability:** government officials are incentivized to serve the general public, not special interests
- **Legitimacy:** broad public support for institutions contributes to political and economic stability
- **Sustainability:** economic growth that is broad-based is most likely to be supported and sustained over time

The Role of the Central Bank

- **Medium of Exchange:** the central bank's currency facilitates the efficiency of economic and financial transactions.
- **Unit of Account:** the central bank's currency serves as a benchmark for gauging the value of goods and services as well as real estate and financial assets.
- **Financial Stability:** the central bank's policy tools can facilitate competition, efficiency, and stability of commercial banks and financial markets.
- **Public Trust:** the central bank can be a role model for other public agencies and private institutions.

The Quiet Revolution in Monetary Policy

Consumer Price Inflation (annual average)

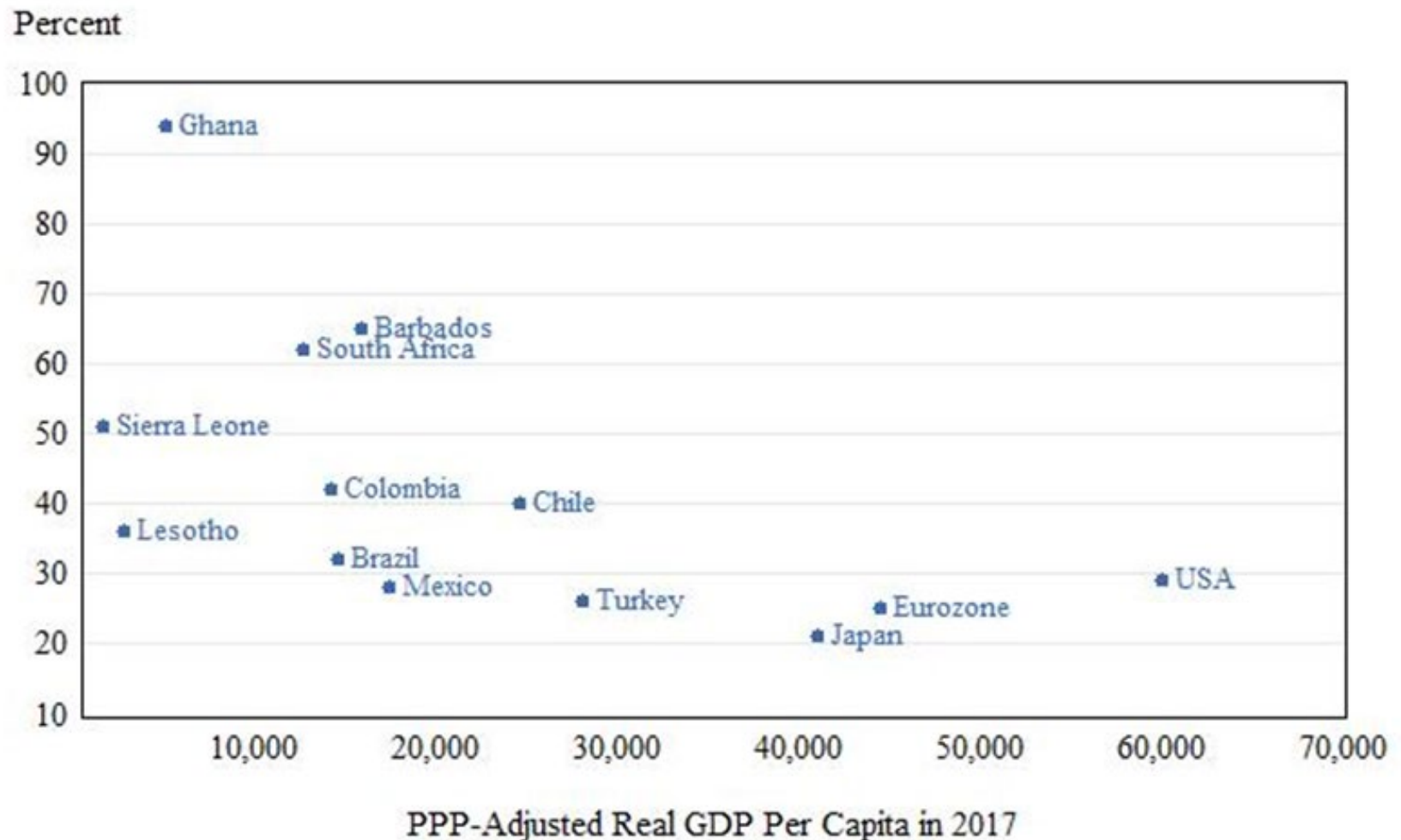
<i>Category</i>	1991-1995	2006-2010	2016-2020
High-Income Countries	3%	2%	2%
Middle-Income Countries	13%	5%	3%
LICs (median)	12%	8%	4%
LICs (75th pctl.)	44%	11%	7%

Source: World Bank.

Does the Monetary Policy Framework Matter in LICs?

- **Nominal Flexibility:** micro data suggests much more frequent price adjustments in LICs compared to advanced economies or middle-income countries.
- **Monetary Neutrality:** with frequent price adjustment, most New Keynesian models imply that the monetary framework is practically irrelevant, just like in the real business cycle (RBC) models of the 1980s.
- **Paucity of Research:** microeconomic policies can be refined using randomized control trials, whereas macroeconomic policies are not amenable to RCTs.

Monthly Frequency of Price Adjustment and Levels of Development



Our Research Strategy

- **Minimal Theory:** we use reduced-form regressions to avoid imposing structural assumptions about the underlying dynamics of the macroeconomy.
- **Difference-in-Differences:** we analyze the impact of exogenous shocks on LICs with different monetary policy frameworks.
- **Panel Analysis:** impact of unanticipated shifts in global GDP growth on 79 LICs during 1990 to 2015.
- **Event Study:** surprise devaluation of the Central African Franc (CFA) in January 1994, comparing impact on 10 CFA zone members vs. 18 other African countries.

Synopsis of Results

We decisively reject the hypothesis of monetary neutrality:

- **Panel Data:** global growth shocks have significantly larger effects on real GDP in LICs with rigid nominal exchange rates compared to LICs that target monetary aggregates or inflation.
- **Robustness:** these results are robust to alternative specifications of the sample, control variables, exclusion of outliers, and other external shocks (e.g., oil prices).
- **Event Study:** systematic and highly significant differential between real GDP growth rates of CFA zone countries compared to control group of other African countries.

Panel Data Methodology

- **Global Shocks.** For each LIC, we compute a trade-weighted measure of unanticipated shifts in external growth, using annual country-specific IMF WEO growth forecasts.
- **Monetary Frameworks.** We use the annual IMF AREAR classifications to distinguish (a) regimes that rely primarily on the exchange rate as the nominal anchor, and (b) regimes that target monetary aggregates or inflation.
- **Control Variables.** Trade openness, capital mobility, financial depth, governance indicators, country risk, military conflicts.

Regression Specification

$$y_{i,t+1} - y_{i,t} = \alpha x_{i,t} + \beta M_{i,t} x_{i,t} \\ + \gamma_i + \delta_t + \varphi z_{i,t} + \varepsilon_{i,t}$$

where $y_{i,t}$ = log of real GDP for country i in year t

$x_{i,t}$ = external growth shock (from IMF WEO)

$M_{i,t}$ = monetary framework (from IMF ARREAR)

γ_i = country-specific fixed effects

δ_t = country-specific fixed effects

$z_{i,t}$ = vector of control variables

Null Hypothesis: $\beta = 0$ (*monetary neutrality*)

Sample of 79 LICs

Afghanistan	Gambia	Nicaragua
Albania	Georgia	Niger
Angola	Ghana	Nigeria
Armenia	Grenada	Pakistan
Azerbaijan	Guinea	Papua New Guinea
Bangladesh	Guinea-Bissau	Rwanda
Benin	Guyana	Samoa
Bhutan	Haiti	São Tomé and Príncipe
Bolivia	Honduras	Senegal
Burkina Faso	India	Sierra Leone
Burundi	Kenya	Solomon Islands
Cambodia	Kiribati	Sri Lanka
Cabo Verde	Kyrgyz Republic	St. Lucia
Cameroon	Lao P.D.R.	St. Vincent and Grenadines
Central African Republic	Lesotho	Sudan
Chad	Liberia	Tajikistan
Comoros	Madagascar	Tanzania
Congo, Democratic Republic	Malawi	Timor-Leste
Congo, Republic of	Maldives	Togo
Côte d'Ivoire	Mali	Tonga
Djibouti	Mauritania	Uganda
Dominica	Moldova	Uzbekistan
Eritrea	Mongolia	Vanuatu
Ethiopia	Mozambique	Vietnam
	Myanmar	Yemen
	Nepal	Zambia

Descriptive Statistics, 1990-2015

	Money / Inflation Target	Exchange Rate Target
Total Number of Annual Observations	587	1,064
GDP Per Capita (PPP-Adjusted Constant Dollars)		
All LICs	848	1,498
Lower-Income LICs (<i>less than \$800</i>)	428	436
Trade Openness		
Exports (<i>percent of GDP</i>)	29	31
Imports (<i>percent of GDP</i>)	42	47
Capital Mobility		
Capital Inflows (<i>percent of GDP</i>)	6.1	5.3
Capital Outflows (<i>percent of GDP</i>)	2.3	2.7
Financial Development		
Financial depth index	14	25
Governance Indicators		
Corruption	2.1	2.3
Composite Risk	58.1	58.2
Economic Risk	29.8	31.0
Financial Risk	31.5	31.1
Political Risk	54.8	54.3
Central Bank Independence	0.5	0.4

Impact of External Growth Shocks

Sample: All LICs (79 countries, 1578 observations)		
MP Framework	k (horizon in years)	
	0	1
Exchange Rate	0.49***	0.54***
Inflation or Monetary Targeting	0.16	-0.09
Difference	0.33*	0.63***
Sample: LICs with GDP Per Capita below US\$800 (62 countries, 870 observations)		
Exchange Rate	0.43**	0.86***
Inflation or Monetary Targeting	-0.18	-0.03
Difference	0.62**	0.88***

Note: The asterisks *, **, and * denote statistical significance at the 90, 95, and 99 percent confidence levels, respectively.**

Robustness Analysis

Sample: All LICs;
(79 countries 1552 observations)

Horizon	<i>k</i> (horizon in years)	
	0	1
Baseline, controlling for outliers	0.19	0.66***
Additional Controls:		
Trade Openness	0.20	0.60***
Capital Openness (Inflows + Outflows / GDP)	0.19	0.62***
Capital Openness (Ito's index)	0.20	0.48***
Financial Depth (Bank assets / GDP)	0.17	0.52***
Financial Depth (Credit to private sector / GDP)	0.14	0.59***
Fiscal Policy	0.15	0.34**

Note: The asterisks *, **, and * denote statistical significance at the 90, 95, and 99 percent confidence levels, respectively.**

The January 1994 CFA Devaluation

- **CFA Zone:** The CFA was fixed to the French franc starting in the colonial era and then fixed to the euro since 1999. The CFA has only been devalued once, in January 1994.
- **European Developments:** Under EMS, the French franc was linked to the German mark. Thus, Bundesbank tightening (after reunification of Germany) led to strong appreciation of the French franc and hence of the CFA.
- **Devaluation:** Following confidential consultations with the IMF and French authorities, the CFA was abruptly devalued by 50% on January 1, 1994.
- **Natural Experiment:** Compare growth in CFA zone members to other sub-Saharan African countries.

Sample of Countries

CFA Zone

Benin
Burkina Faso
Cameroon
Central African Republic
Chad
Cote d'Ivoire
Mali
Niger
Senegal
Togo

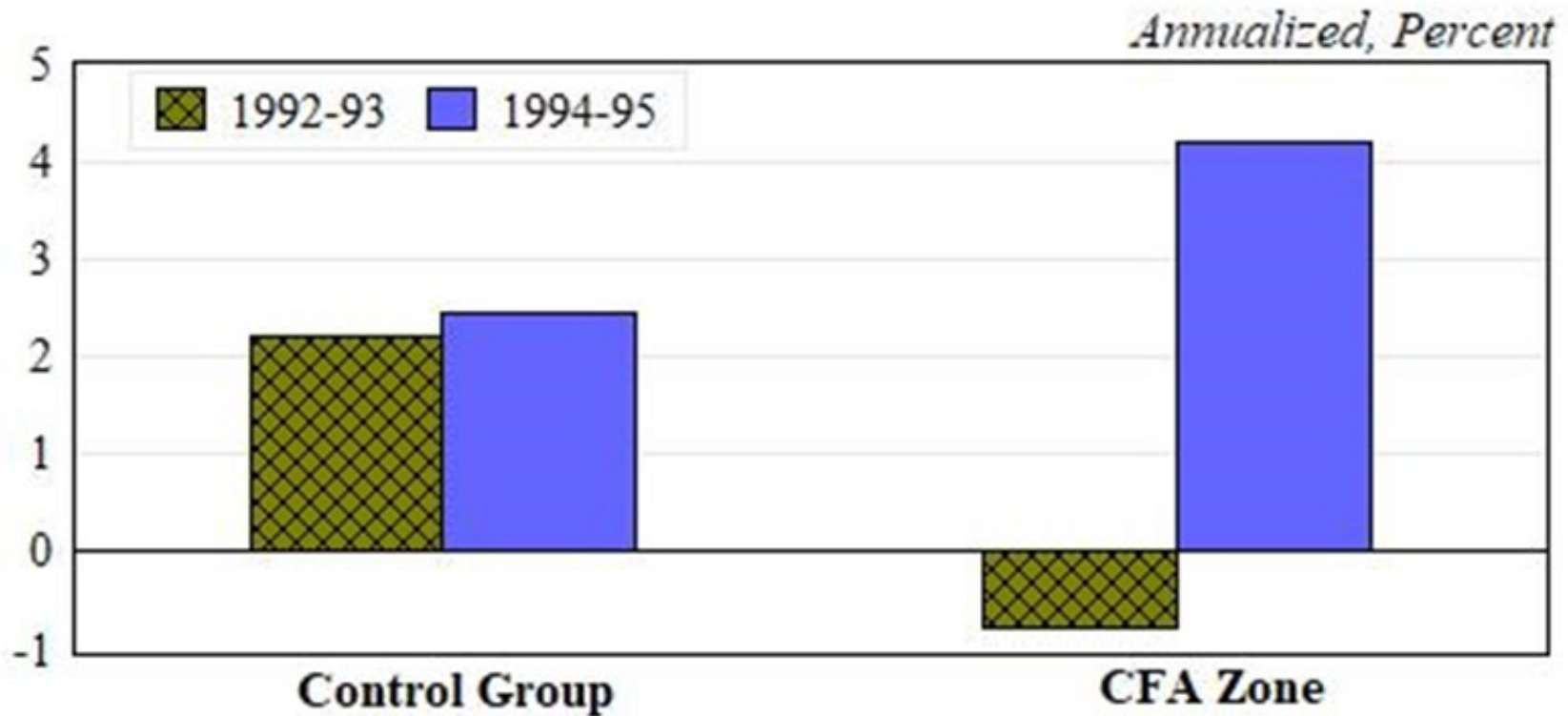
Control Group

Burundi
Cabo Verde
Comoros
Ethiopia
Gambia
Ghana
Guinea
Guinea-Bissau
Kenya
Lesotho
Madagascar
Malawi
Mozambique
Nigeria
São Tomé & Príncipe
Tanzania
Uganda
Zambia

Comparison of Key Indicators

Indicator	CFA Zone			Control Group		
	Mean	Min	Max	Mean	Min	Max
Population (millions)	9	3	15	18	0	108
Real GDP Per Capita (\$US)	409	197	777	489	148	1,342
Trade/GDP (Export + Imports / GDP, percentage)	24	17	36	28	10	81
Capital Flows/GDP (Inflows + Outflows / GDP, percentage)	2	-1	11	5	-1	18
Financial Depth (Bank Assets / GDP, percentage)	14	6	29	13	4	25
Corruption Index	3	2	4	3	2	4
Political Risk Rating	50	41	63	54	41	65
Composite Risk Rating	53	48	59	53	39	64

Response of Real GDP Growth to the January 1994 CFA Devaluation



Difference-in-Difference Analysis of the January 1994 CFA Devaluation

(Change in 2-Year Avg. Real GDP Growth, 1994-95 vs. 1992-93)

	<u>CFA Zone</u>	<u>Control Group</u>	<u>Difference</u>
Benchmark Sample	5.0	0.2	4.74 **
Exclude Lowest-Income LICs (GDP per capita < \$800)	5.3	0.7	5.17 *
Exclude Highest-Income LICs (GDP per capita > \$2,500)	5.4	0.2	4.63 *
Exclude Growth Outlier	2.6	0.2	2.34 **

*Note: The asterisks * and ** denote statistical significance at the 90 percent and 95 percent confidence levels, respectively.*

Comparing Current Frameworks in Sub-Saharan Africa

- **South Africa Common Monetary Area**
(Botswana, Eswatini, Lesotho, Namibia, South Africa)
- **CFA Zone (fixed peg to the euro)**

*CEMAC: Cameroon, Central African Republic, Chad,
Congo-Brazzaville, Equatorial Guinea, Gabon*

*WAEMU: Benin, Burkina Faso, Cote d'Ivoire,
Guinea-Bissau, Mali, Niger, Senegal, Togo*
- **Four Non-CFA Countries**
(Guinea, Madagascar, Mauritania, Mauritius)

CPI Inflation in the South African Common Monetary Area (2010-2019)

Country	Mean	Std. Dev.
South Africa	5.2%	0.8%
Lesotho	4.9%	1.0%
Namibia	5.2%	1.1%
Eswatini	5.7%	1.7%
Botswana	4.8%	2.1%

Source: World Bank online database, author's calculations.

CPI Inflation in the CFA Zone

(annual average, 2010-2019)

Country	Mean		Country	Mean
Benin	1.3%		Equatorial Guinea	3.0%
Burkina Faso	0.7%		Gabon	2.2%
Cameroon	1.9%		Guinea-Bissau	1.5%
Central Africa Rep.	4.4%		Mali	1.0%
Chad	1.5%		Niger	1.0%
Congo-Brazzaville	2.3%		Senegal	1.0%
Cote d'Ivoire	1.2%		Togo	1.4%

Sources: World Bank online database, ICASEES, author's calculations.

Inflation Volatility in the CFA Zone

(standard deviation, 2010-2019)

Country	Std. Dev.		Country	Std. Dev.
Benin	2.2%		Equatorial Guinea	2.1%
Burkina Faso	1.9%		Gabon	1.5%
Cameroon	0.8%		Guinea-Bissau	1.6%
Central Africa Rep.	5.6%		Mali	2.0%
Chad	3.0%		Niger	1.8%
Congo-Brazzaville	1.6%		Senegal	1.1%
Cote d'Ivoire	1.5%		Togo	1.2%

Sources: World Bank online database, ICASEES, author's calculations.

CPI Inflation in 4 Non-CFA Countries (2010-2019)

Country	Mean	Std. Dev.
Guinea <i>(departed CFA zone in 1960)</i>	11.8%	4.1%
Madagascar <i>(departed CFA zone in 1973)</i>	7.3%	1.5%
Mauritania <i>(departed CFA zone in 1973)</i>	3.7%	1.5%
Mauritius	3.0%	1.7%

Source: World Bank online database, author's calculations.

Key Principles of IMF Guidance

- 1) The central bank should have a **clear legal mandate** and **operational independence** to fulfill its responsibilities in a context of **public accountability**.
- 2) The central bank should have a medium-term **inflation objective** that serves as the cornerstone for its monetary policy actions and communications.
- 3) In making its monetary policy decisions, the central bank should carefully consider the implications for **macroeconomic activity** and **financial stability**.

Source: IMF (2016) “Evolving Monetary Policy Frameworks in Low-Income and Other Developing Countries”