

Fiscal Dominance and Inflation: Evidence from Sub-Saharan Africa

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Outline

Concepts

Stylized facts

Why borrow from the central bank?

Should we care?

Concluding remarks

Concepts

Fiscal dominance.

- The coordination scheme where fiscal policy dominates monetary policy (Sargent and Wallace, 1981)
- Central bank lending to government for fiscal policy purposes beyond legal limits

De facto practices. The amount of central bank lending observed in data

- Total claims vs. loans
- Gross vs. net

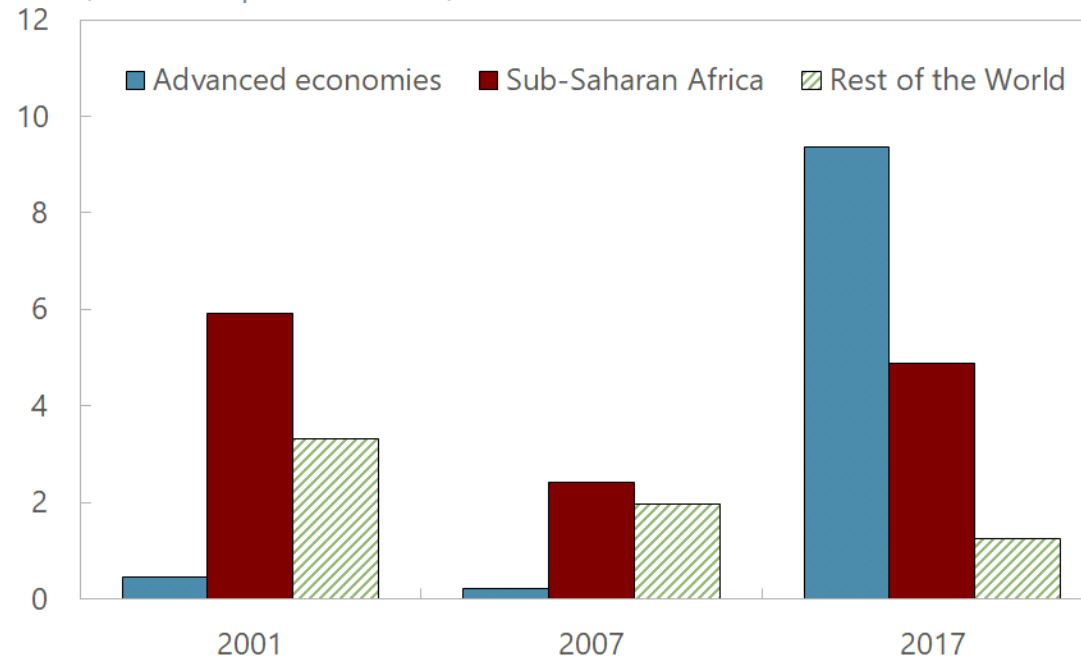
De jure limits. Legal limits on central bank lending as specified in Central Bank Act.

- country-specific (amount, applied interest rate, denominator (current revenue vs. last year's revenue))

Fact 1. Relative to other regions, CB claims on government are high in SSA...

Central Bank Claims on the Central Government, 2001-17

(median, in percent of GDP)

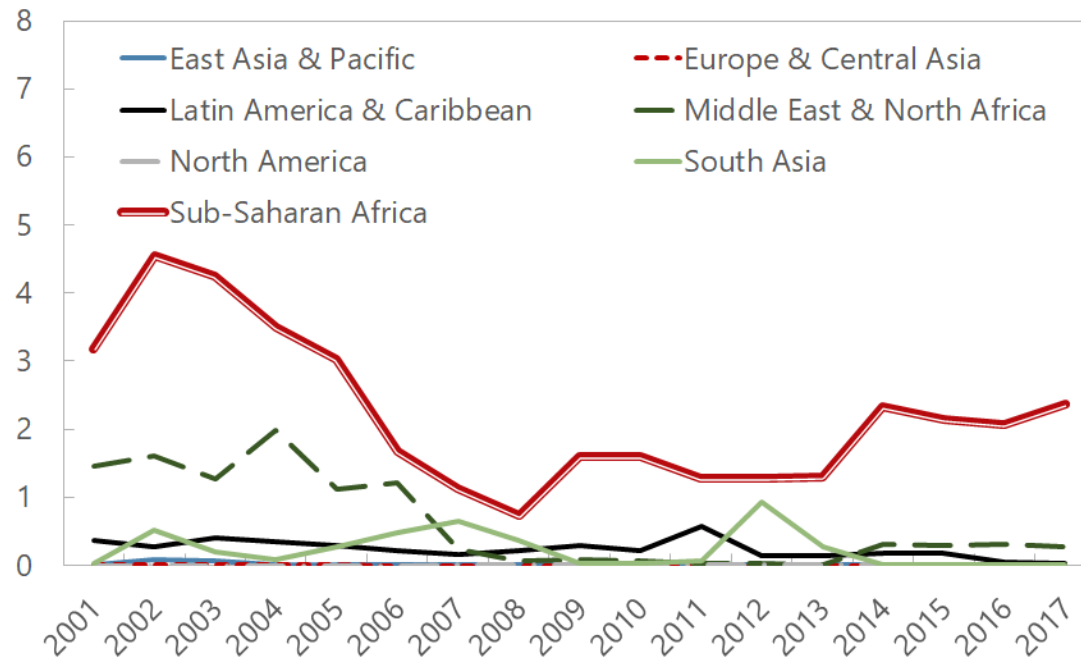


Sources: WEO; MFS; and IMF staff calculations.

... and SSA stands out even more when central bank's claims on government securities are excluded.

Central Bank Loans to Central Government, 2001-17

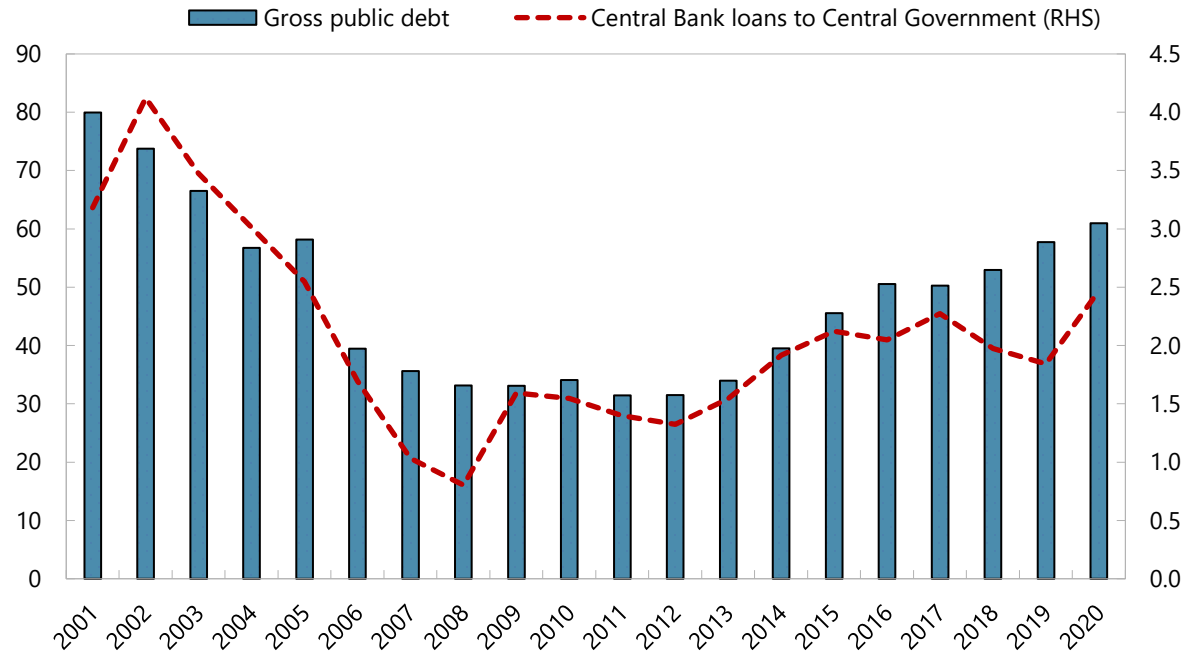
(median, in percent of GDP)



Sources: MFS; WEO; and IMF staff calculations.

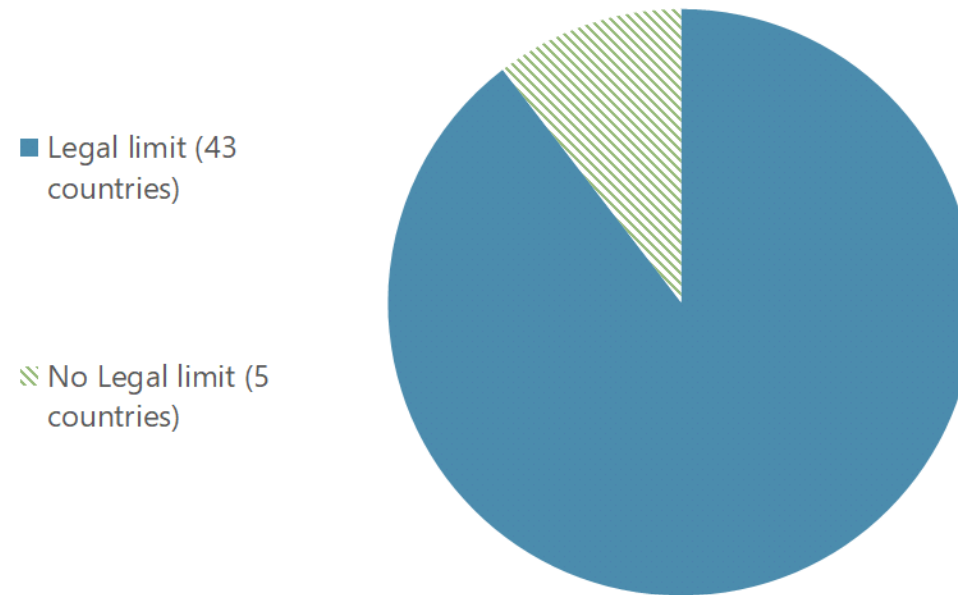
Fact 2. An increase in CBF tends to coincide with an increase in public debt.

SSA: Public Debt and Central Bank Loans
(median, in percent of GDP)



Fact 3. Legal limits are adopted by a majority of SSA countries...

Sub-Saharan Africa: Number of Countries with Legal Limits on Central Bank Lending, 2017

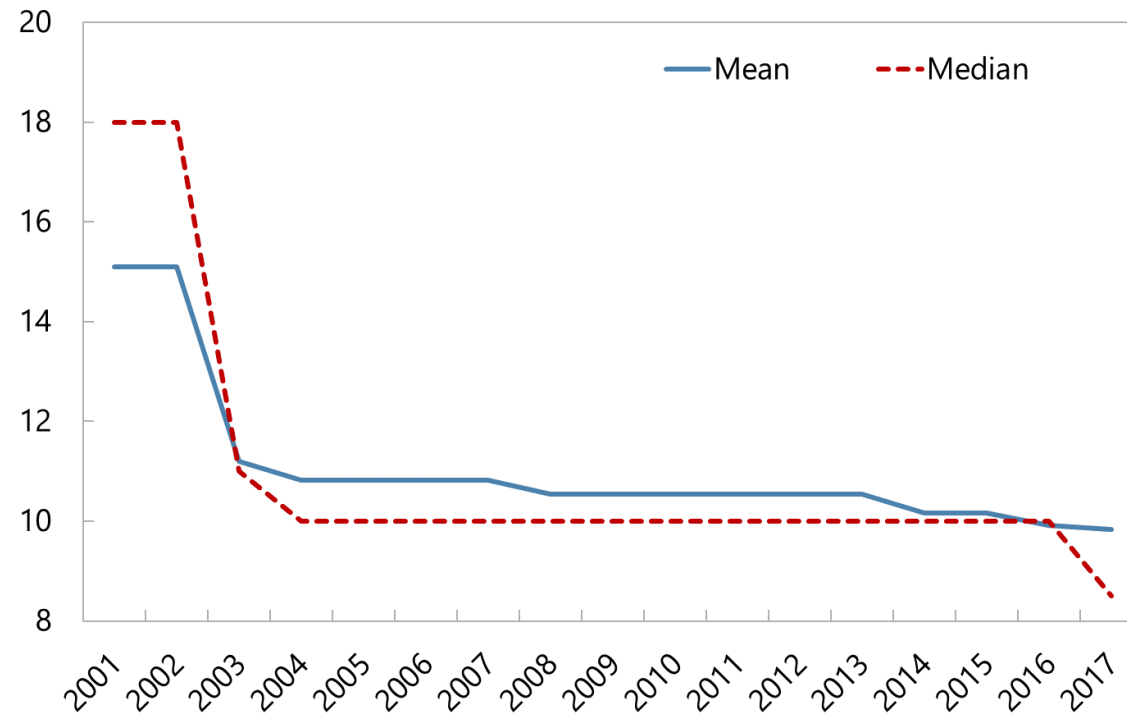


Sources: Central Bank Legislation Database (CBLD) and national authorities.

... and legal limits have become stricter over time.

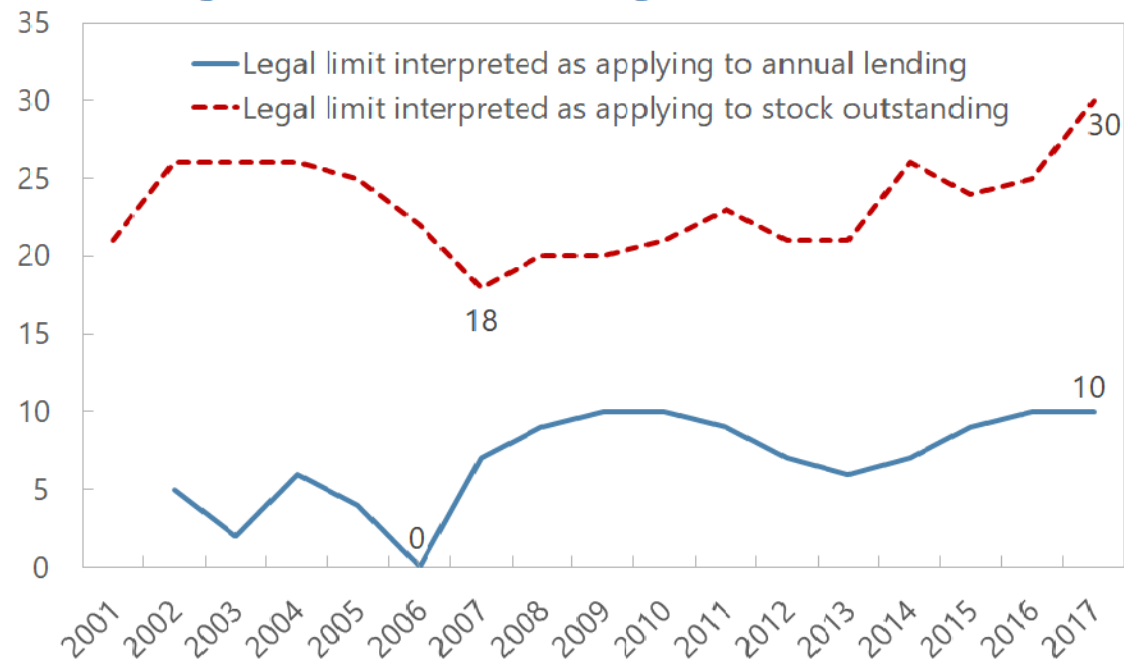
Legal Limits, 2001-17

(in percent of revenue)



Fact 4. CBF above legal limits is a systemic phenomenon in SSA...

Sub-Saharan Africa: Number of Countries with Central Bank Lending to Government above Legal Limits, 2001-17

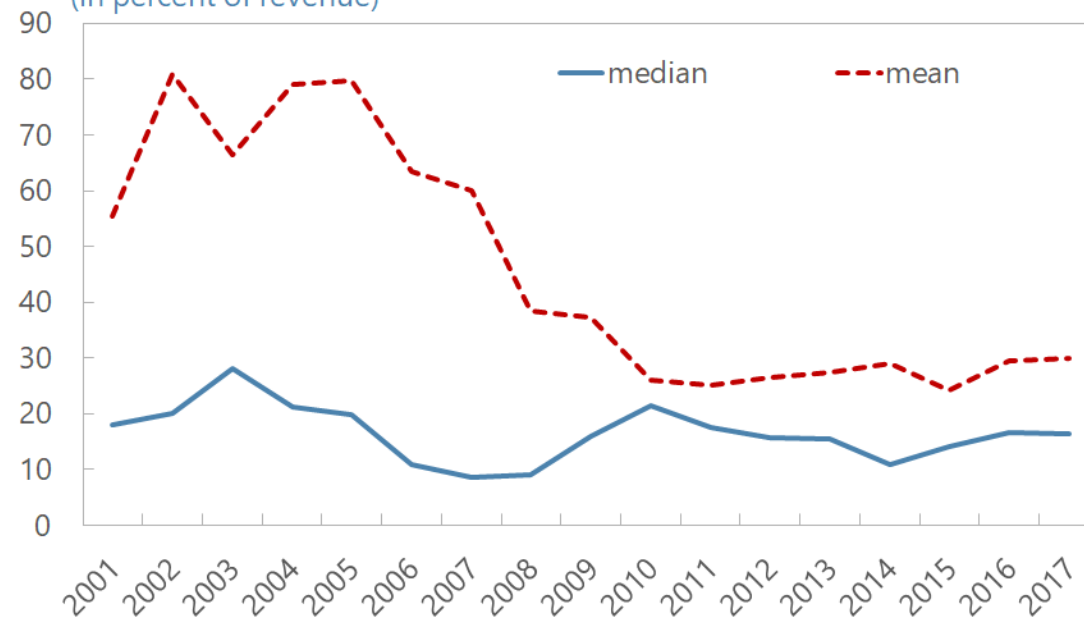


Sources: CBLD; MFS; national authorities; and IMF staff calculations.

... but the magnitude by which CBF exceeds legal limits has declined.

Sub-Saharan Africa: Outstanding Central Bank Claims on Government Above Legal Limits, 2001-17

(in percent of revenue)



Sources: CBLD; MFS; national authorities; and IMF staff calculations.

Stylized Facts: Summary

CBF is highest in the SSA region.

CBF tends to increase during periods of pressure on public finances.

Legal limits have become stricter over time.

Fiscal dominance has declined over time, despite the tightening of legal limits.



Why borrow from the central bank?

Because there is a financing need: fiscal deficits

Given the financing need, what factors determine the size of CBF?

- Level of any legal limits
- Alternative financing options (market access)
- IMF-supported program (conditionality)

We use a dynamic panel regression (the Arellano-Bond estimator) with country- and time-fixed effects

$$Y_{it} = \beta_1 F_{it} + \beta_2 F_{it} \cdot L_{it} + \beta_3 F_{it} \cdot MKT_{it} + \beta_4 F_{it} \cdot QPC_{it} + [\mathbf{a}]' \mathbf{X}_{i,t} + [\mathbf{b}]' \mathbf{Z}_{i,t-1} + \zeta_i + \theta_t + \varepsilon_{it}$$

Y_{it} : central bank lending (loans and advances outstanding) as a percent of GDP;

F_{it} : fiscal deficit as a percent of GDP;

L_{it} : legal limits on central bank lending as a percent of revenue;

MKT_{it} : dummy for market access (=1 if country issues government securities over 1 year maturity, 0 otherwise);

QPC_{it} : dummy for IMF conditionality on central bank lending (=1 if country has conditions in IMF-supported program, 0 otherwise);

$\mathbf{X}_{i,t}$: a vector of $[L_{it}, MKT_{it}, QPC_{it}]$;

$\mathbf{Z}_{i,t-1}$: a vector of control variables;

ζ_i : country fixed effect;

θ_t : time fixed effect; and

ε_{it} : residual.

Dependent variable: Central bank loans/GDP	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
Fiscal deficits	0.104*** (0.0359)	0.0362 (0.0254)	0.0409* (0.0209)	0.0216 (0.0262)	0.0267 (0.0220)
Fiscal deficits* Legal limit		0.00458*** (0.00154)	0.00527*** (0.00142)	0.00553*** (0.00193)	0.00622*** (0.00175)
Fiscal deficits*Domestic market access			-0.0639** (0.0284)		-0.0622** (0.0260)
Fiscal deficits*IMF conditionality				-0.0269* (0.0149)	-0.0255** (0.0123)
Legal limit (measured in percent of revenue)		-0.00140 (0.0317)	0.000722 (0.0344)	-0.00360 (0.0318)	-0.00175 (0.0343)
Domestic market access			-0.923** (0.427)		-0.808** (0.383)
IMF conditionality				-0.796 (0.542)	-0.689 (0.517)
Lags of central bank loans/GDP	0.805*** (0.0461)	0.795*** (0.0381)	0.799*** (0.0402)	0.790*** (0.0354)	0.795*** (0.0368)
Lag of real GDP growth	-0.0163 (0.0115)	-0.0223** (0.0108)	-0.0210** (0.00980)	-0.0221** (0.0112)	-0.0209** (0.0100)
Lag of government deposit/GDP	-0.0737 (0.0739)	-0.0811 (0.0606)	-0.0952 (0.0640)	-0.0735 (0.0598)	-0.0873 (0.0630)
Lag of government debt/GDP	-0.0100* (0.00567)	-0.00345 (0.00666)	-0.00263 (0.00696)	-0.00730 (0.00675)	-0.00621 (0.00680)
Observations	667	596	596	596	596
Number of countries	45	41	41	41	41

Robust standard errors in parentheses

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

Interaction terms allow us to assess how legal limits, domestic market access, and program conditionality affect the amount of fiscal deficits being financed by the central bank.

$$\frac{\partial Y_{it}}{\partial F_{it}} = \beta_1 + \beta_2 L_{it} + \beta_3 MKT_{it} + \beta_4 QPC_{it},$$

where $\beta_2 > 0$, $\beta_3 < 0$, and $\beta_4 < 0$.

On average, about 9 percent of a fiscal deficit is financed by the CBF. But if the government is able to borrow from financial markets and issue bonds, then only about 3 percent of the fiscal deficit is covered by CBF. Finally, IMF-supported programs that restrict lending are effective.

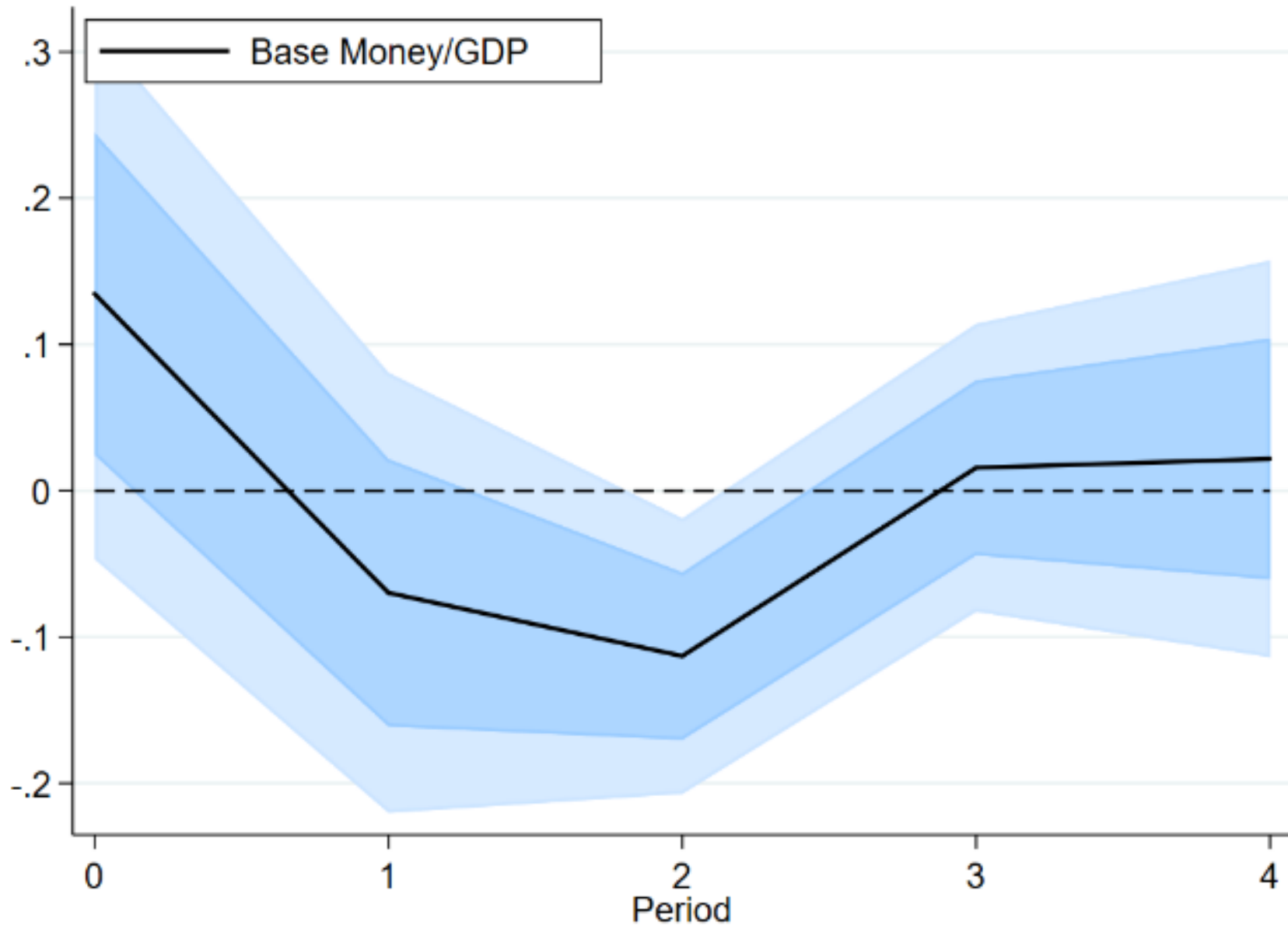
Should we care?

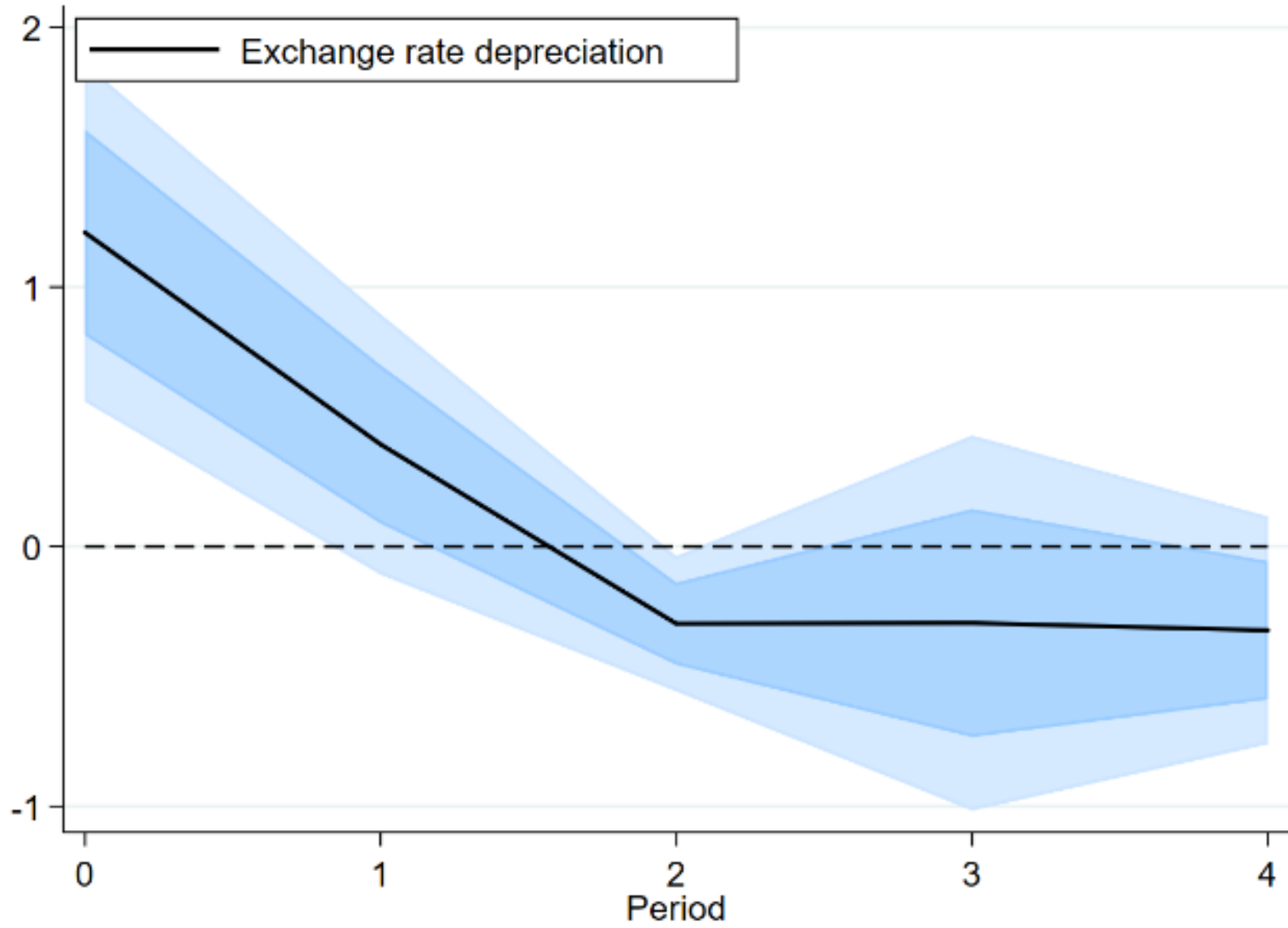
We estimate the dynamic response of key macroeconomic variables to a shock by combining the local projections (LP) estimator (Jorda, 2005) with country- and time-fixed effects.

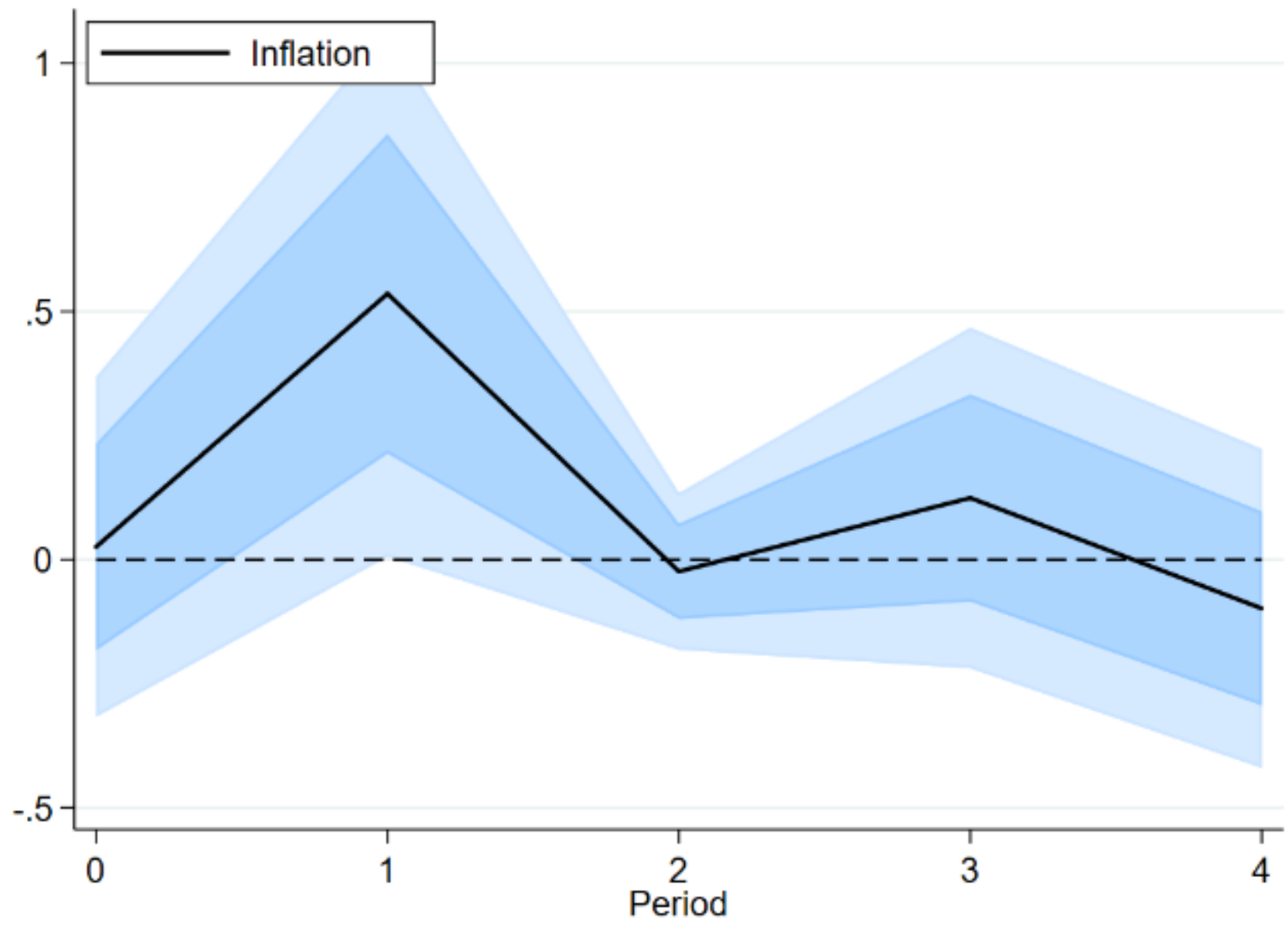
$$W_{i,t+h} = \gamma^{(h)} Y_{it} + [\mathbf{d}^{(h)}]' \mathbf{Controls} + \zeta_i^{(h)} + \theta_t^{(h)} + u_{i,t+h},$$

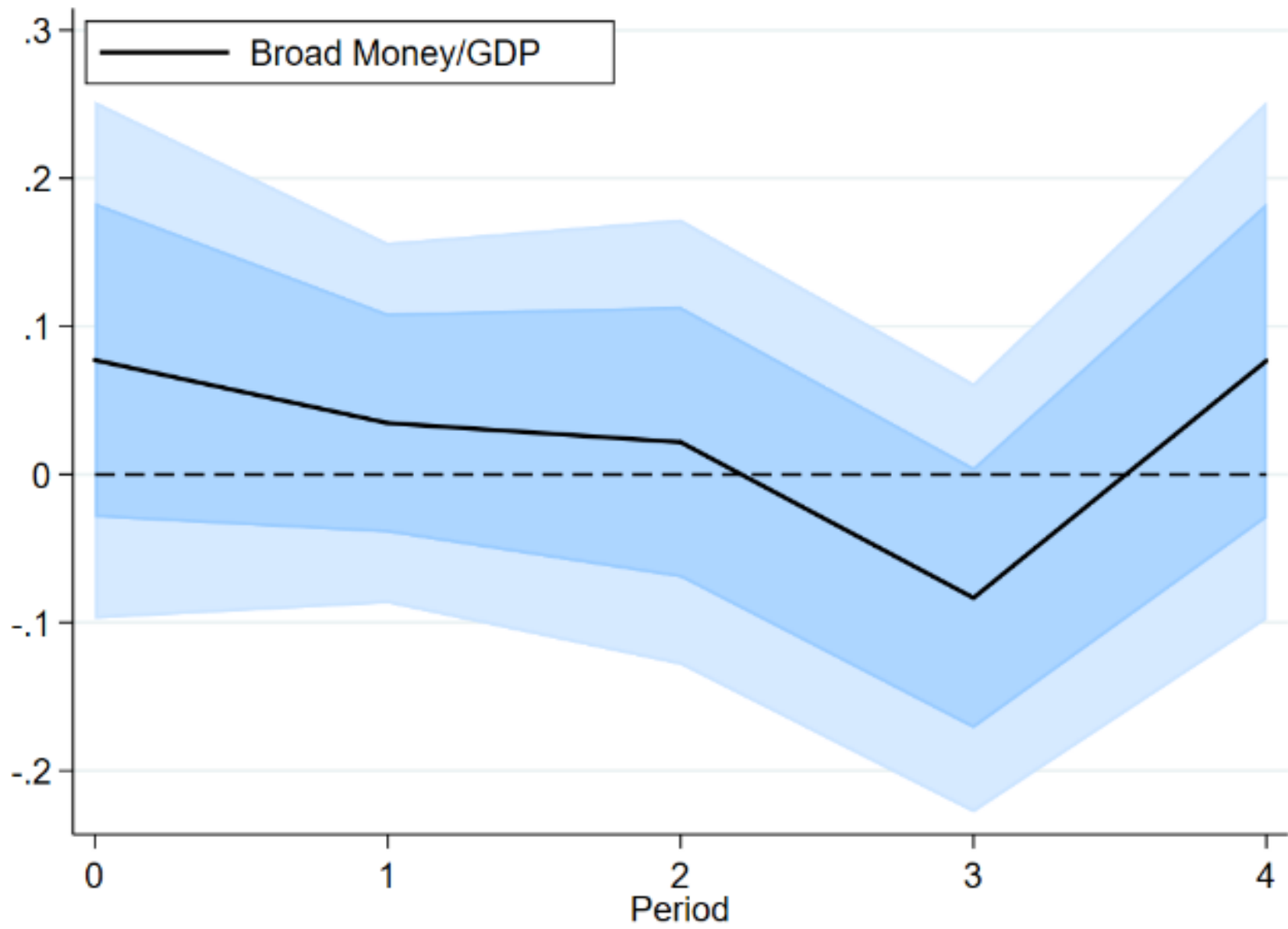
where W is the macroeconomic variable of interest (base money, inflation, the exchange rate, and broad money); Y is the ratio of total CBF to GDP; and Controls are the control variables from the baseline regression in slide 13.

We estimate a separate regression for each horizon h . Standard errors are clustered by country and time.









Concluding remarks

Fiscal dominance is a relevant macroeconomic risk that policymakers should take seriously—even if the impact of central bank financing does not reach hyperinflation proportions, it can still generate significant inflationary pressure.

The central bank may sometimes need to provide additional financing in exceptional circumstances. It should, however, be on a temporary basis to avoid the risk of runaway inflation and keep expectations anchored.

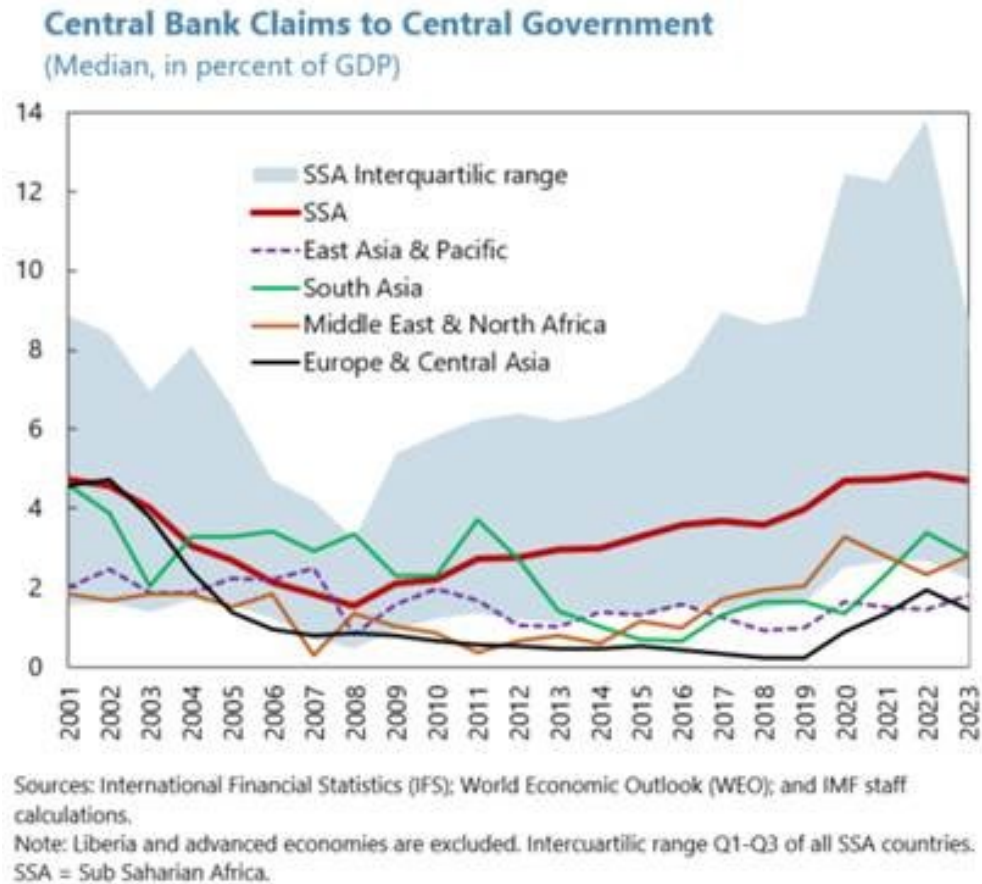
Additional financing should be allowed through clearly defined escape clauses rather than by eliminating or relaxing legal limits.

Legal limits are no panacea, but they seem to provide a useful defense against fiscal dominance: countries borrow less from central banks when they have stricter legal limits.

Policies that foster development of financial markets can also reduce the propensity of the government to turn to the central bank.

Annex

Relative to other regions, CBF to government is high in SSA...



Legal Limits on Central Bank Lending, 2017

Country	Legal limit	Country	Legal limit	Country	Legal limit
Angola	L/10/R1	Kenya	T/5/R	Seychelles	No limit
Botswana	T/5/R3	Lesotho	T/5/R	Sierra Leone	L/5/R1
Burundi	CB act not found	Liberia	T/10/R2	Somalia	L/15/R1
Cape Verde	L/5/R	Madagascar	L/7/R	South Africa	No limit
CEMAC*6	L/20/R1	Malawi	L/20/R S/20/R	South Sudan	L/5/R3
Comoros	L/20/R3	Mauritania	L/5/R1	Sudan	L/15/R1
DRC	Strict Prohibition	Mauritius	T/10/R	Swaziland	T/20/R3
Eritrea	CB Act not found	Mozambique	L/10/R	Tanzania	T/12.5/R3
Ethiopia	No limit	Namibia	T/25/R3	Uganda	L/18/R3
Gambia	T/10/R1	Nigeria	L/5/R1	WAEMU*8	Strict prohibition
Ghana	T/5/R	Rwanda	L/11/R1	Zambia	T/15/R1
Guinea	L/5/R3	Sao Tome	L/5/R1	Zimbabwe	T/20/R1

Legal limit = Types/Max amount allowed/Denominators where three types are L=loans, S = securities, and T= total claims. R/R1/R2/R3 = Revenue of current year/last year/last two years/last three years, respectively.

Table 1. Sub-Saharan Africa: Descriptive Statistics, 2001-17

(in percent; otherwise indicated)

Variable	Number of observations	Mean	Standard Deviation	Minimum	Maximum
Central bank claims/GDP	719	6.1	8.9	0.0	63.2
Percentage change of central bank claims/GDP	675	5.2	22.8	-217.5	150.7
Central bank loans/GDP	719	3.7	5.6	0.0	61.5
Percentage change of central bank loans/GDP	677	2.1	21.6	-260.5	162.1
Fiscal deficits/GDP	756	2.6	5.6	-27.2	30.4
Real GDP Growth	764	4.6	5.2	-36.7	60.1
Legal Limit/revenue	726	11.0	7.9	0.0	25.0
Government deposits/GDP	731	4.4	5.1	0.0	33.0
Government gross debt/GDP	754	62.1	49.6	0.5	406.7
Dummy for domestic market development (1 or 0)	764	0.5	0.5	0.0	1.0
Dummy for IMF conditionality on central bank lending (1 or 0)	809	0.2	0.4	0.0	1.0

Sources: WEO; IFS; and IMF staff calculations.

Table 3. Sub-Saharan Africa: Descriptive Statistics, 2001-17
(in percent)

Variable	Number of observations	Mean	Standard Deviation	Minimum	Maximum
Base Money	729	11.0	7.4	0.1	52.8
Exchange rate	764	4.7	16.8	-28.1	295.5
Inflation	764	8.2	18.0	-72.7	357.3
Broad Money	764	32.4	24.2	3.1	150.8

Sources: WEO; IFS; and IMF staff calculations.

Notes: base money is defined as a ratio to nominal GDP, exchange rates are defined as the annual percent change in terms of national currency per USD, inflation is the annual growth rate of CPI, and broad money is defined as a ratio to nominal GDP.