



BSP RESEARCH ACADEMY

Quantifying the macroeconomic impact of the Philippine policy responses to COVID-19: Examining fiscal dominance

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This is based on a Discussion Paper

<https://www.bsp.gov.ph/Pages/MediaAndResearch/PublicationsAndReports/Discussion%20Papers/DP202205.pdf>

and the expanded full research paper as a chapter in the book “Labor Market Implications of the COVID-19 Pandemic in the Philippines” accessible at [https://www.bsp.gov.ph/Media And Research/Publications/LaborMarketImplicationsoftheCOVID-19PandemicinthePhilippines.pdf?fbclid=IwAR2YMITIjtFQfXVZVu0FoniibXL3c3SFConL36pbaHpBfRsrU4Bp6oh1r1Q](https://www.bsp.gov.ph/Media%20And%20Research/Publications/LaborMarketImplicationsoftheCOVID-19PandemicinthePhilippines.pdf?fbclid=IwAR2YMITIjtFQfXVZVu0FoniibXL3c3SFConL36pbaHpBfRsrU4Bp6oh1r1Q)

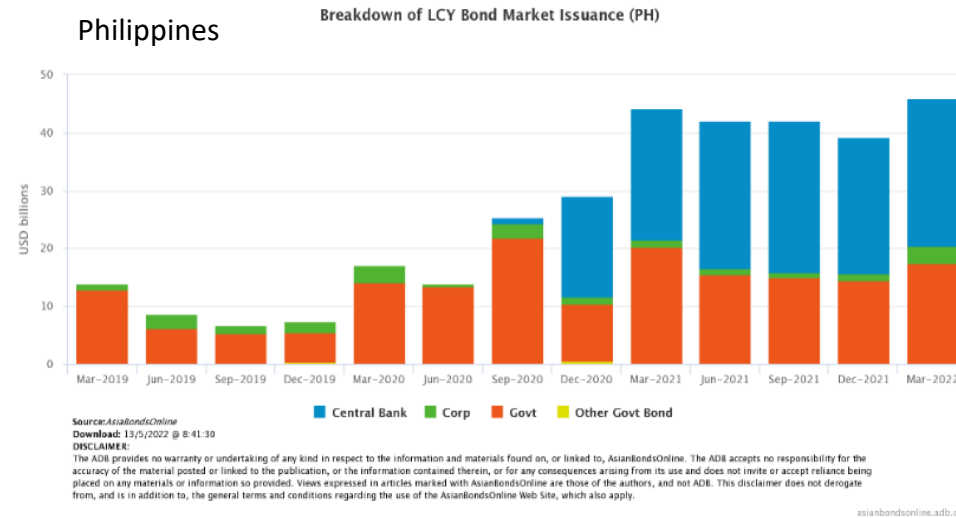
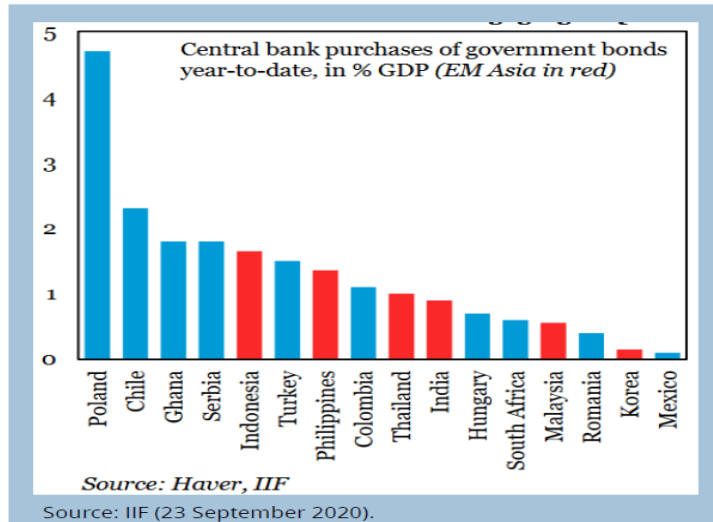
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OUTLINE

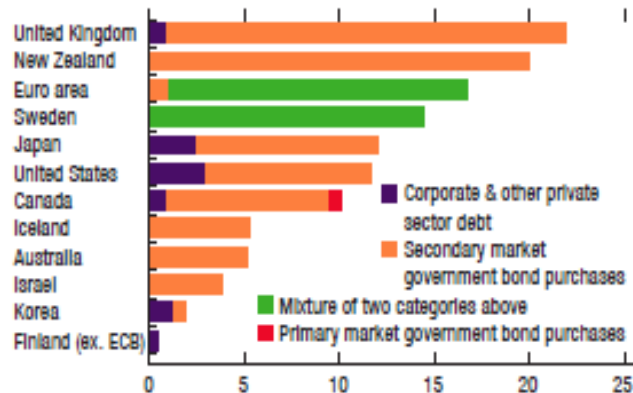
- Motivation for the study – slides 3-7
- Objectives for the study – slide 8
- Theoretical Framework – slide 9
- Empirical Approach – slide 11
- Empirical Results-OLS Regression – slides 12 - 14
- Empirical Results-Vector Error Correction Model – slides 15 – 17
- Conclusion and Policy Implications – slide 18

What is the motivation for this study? (slides 3-7)

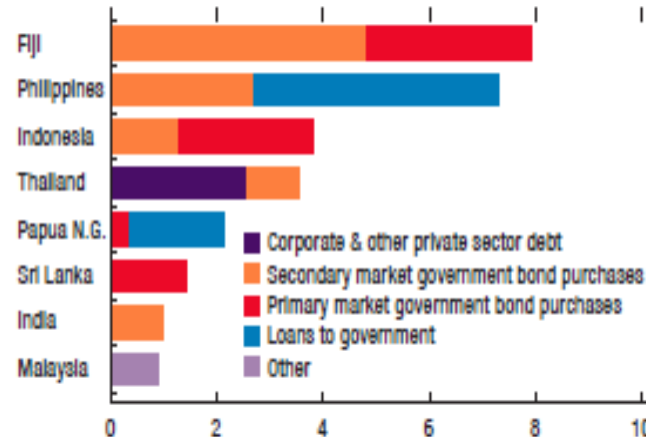
Central banks' responses to COVID-19 via UMPs were widespread...



1. UMPs in Response to COVID-19 in Advanced Economies (Values of announced packages in percent of GDP)

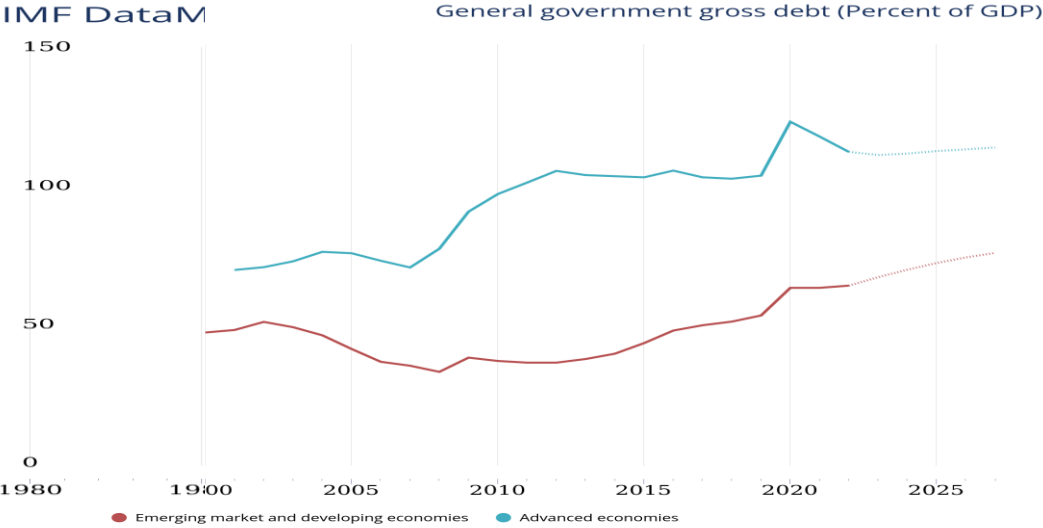
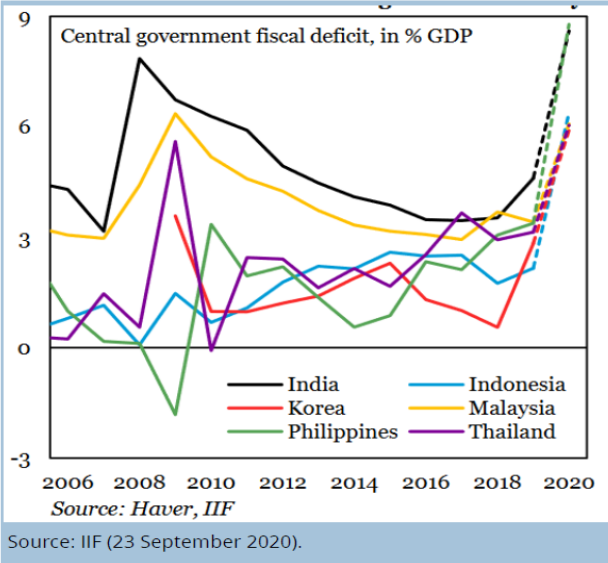
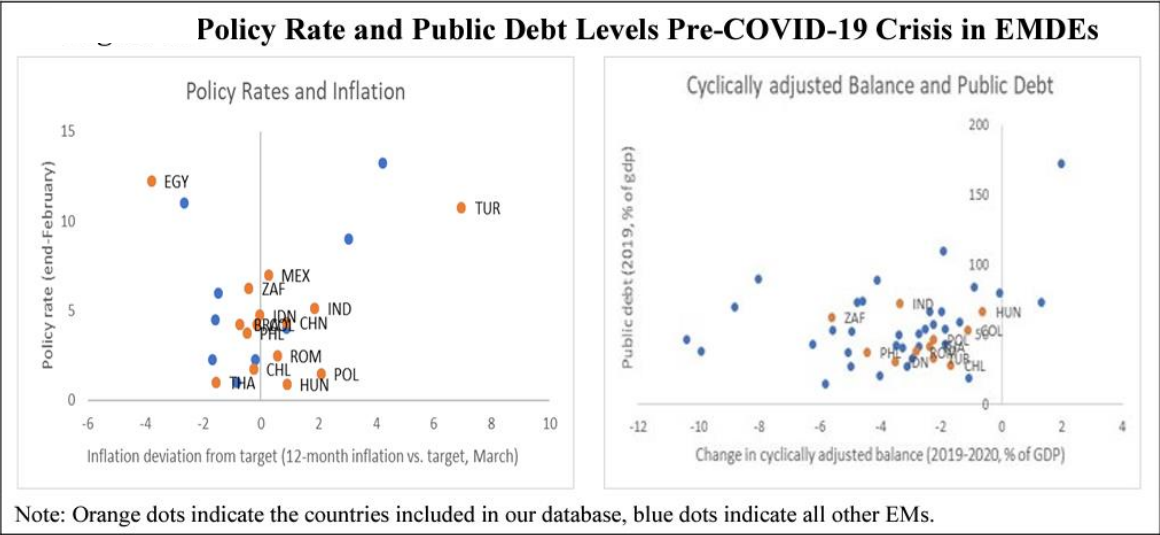


3. UMPs in Response to COVID-19 in Asia-Pacific EMEs (Values of announced packages in percent of GDP)



What is the motivation for this study? (slides 4-7)

...alongside the rise in fiscal deficits and debt-to-GDP globally...

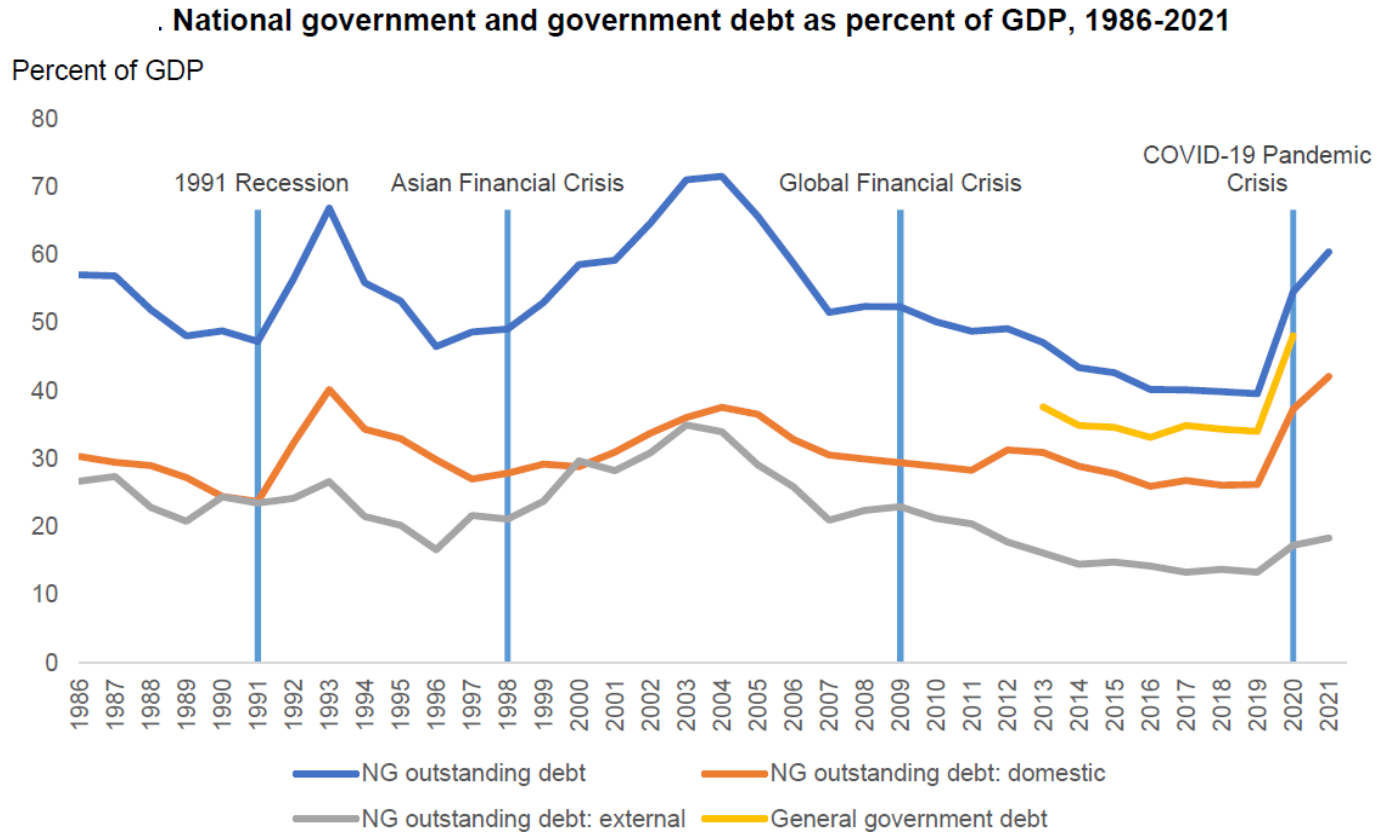


©IMF, 2022, Source: World Economic Outlook (October 2022)



What is the motivation for this study? (slides 5-7)

...Philippine debt-to-GDP is no exception



Source: Bureau of Treasury and Department of Finance.

Source: Debuque-Gonzales, M, Diokno-Sicat, C, Corpus, J.P., Palomar, R. Ruiz, M. and Miral, R. (2022) Fiscal effects of the COVID-19 pandemic: Assessing public debt sustainability in the Philippines, PIDS Discussion Paper Series. May 2022.



What is the motivation for this study? (slides 6-7)

Philippine Macroeconomic Responses to the Pandemic

FISCAL POLICY RESPONSES

Table 1 The 4-Pillar Socioeconomic Strategy Against COVID-19
Pandemic

	Description	In PHP billion ^{1/}	In USD billion ^{2/}	As % of GDP ^{3/}
Pillar I	Emergency support for vulnerable groups	648.2	13.2	3.3
Pillar II	Marshalling resources to fight COVID-19	227.3	4.6	1.2
Pillar III	Monetary actions to keep the economy afloat	1,410	28.6	7.3
Pillar IV	An economic recovery program to create jobs and sustain growth	749.98	15.2	3.9
Total for fiscal stimulus (Pillars I, II, IV)		1,625.5	33.0	8.4
Total for monetary stimulus (Pillar III-A)		1,410.0	28.6	7.3
GRAND TOTAL		3,035.5	61.6	15.6

Source: Domestic Finance Group and Legislative Liaison, Department of Finance (DFG DOF)

Notes: ^{1/} As of 7 February 2021.

^{2/} Conversion to US dollar is based on the 2021 average peso dollar exchange rate of PhP49.25/US\$1.

^{3/} Nominal GDP for 2021 is estimated at PhP 19,410,568 million.

Source: Basilio, Britt-Fermo and Cacnio, Quantifying the macroeconomic impact of the Philippine fiscal and monetary responses to the COVID-19 pandemic, BSP Discussion Paper series No. 14, 2022.



What is the motivation for this study? (slides 7-7)

Philippine Macroeconomic Responses to the Pandemic

MONETARY POLICY RESPONSES

- Cut the policy rate by a cumulative 200 basis points starting in February 2020 (RRP rate at 2.0 percent as of November 2020).
- Reduced the reserve requirement ratios of universal and commercial banks (UKBs) and non-bank financial institutions with quasi-banking functions (NBQBs) by 200 basis points, from 14 percent to 12 percent.
- Lowered term spread of peso rediscounting loans relative to the overnight lending rate to zero.
- Entered into a PhP 300-billion (around USD 5.9 billion) purchase of government securities (GS) from the NG under repurchase agreement with a term of 3 months in March 2020, which can be extended by another 3 months subject to Monetary Board (MB) approval.
- Provisional advances amounting to PhP 540 billion (USD 10.9 billion) were granted in October 2020, January 2021, and July 2021; latest tranche of provisional advances in January 2022 at PhP 300 billion (USD 6 billion).
- Opened a window for purchases of government securities in the secondary market.
- Remitted PhP 20 billion in advance dividends to the NG in March 2020 and another PhP 15 billion in August 2021.

Source: Basilio, Britt-Fermo and Cacnio, Quantifying the macroeconomic impact of the Philippine fiscal and monetary responses to the COVID-19 pandemic, BSP Discussion Paper Series No. 14, 2022



What are the objectives of the study? (slides 8-8)

- This study investigates the presence of fiscal dominance and its implications for monetary policy in the Philippines
- We conduct a quantitative analysis on whether there is evidence of fiscal dominance in the country by looking into the interaction between public debt management, monetary policy and fiscal policy



Theoretical Framework (slide 9)

Links between public debt management, fiscal policy, and monetary policy.

Fiscal Policy	Debt Management	Debt Management or Monetary Policy?	Monetary Policy
D_t	$= [B_t - B_{t-1}]$	$+ [TB_t - TB_{t-1}]$	$+ [M_t - M_{t-1}]$

Source: Taken from “Threat of fiscal dominance? BIS/OECD workshop on policy interactions between fiscal policy, monetary policy and government debt management after the financial crisis”. Basel. BIS Papers No 65. 2 December 2011



Empirical Approach (slides 11-11)

I. Ordinary Least Squares Regression

$$y_t = f(x_{1t}, x_{2t-1}, \dots) \quad (a)$$

where y_t is the average maturity of outstanding domestic debt whereas the Reverse Repurchase (RRP) Overnight (O/N) Rate, Deficit to GDP in percent, Debt to GDP in percent and interest rate differentials are the x_t 's.

II. A second approach we implemented, along the principles set out by Mishkin (2000), is to adopt a vector error correction (VECM) estimation method to examine the possible presence of fiscal dominance in the conduct of monetary policy by investigating the responses of inflation to shocks in money supply, budget deficit and domestic debt.

$$\Delta y_t = \alpha_0 + \sum_{i=1}^k \alpha_{1i} \Delta y_{t-i} + \sum_{i=1}^k \alpha_{2i} \Delta x_{t-i} + \gamma_1 ECM_{t-1} + \varepsilon_{1t} \quad (b)$$

$$\Delta x_t = \beta_0 + \sum_{i=1}^k \beta_{1i} \Delta y_{t-i} + \sum_{i=1}^k \beta_{2i} \Delta x_{t-i} + \gamma_2 ECM_{t-1} + \varepsilon_{2t} \quad (c)$$



Empirical Results: OLS Regression (slides 12-14)

Table C											
Regression Results: Response of Average Maturity of Government Debt Issuance to Macroeconomic Variables											
	Sample / Variables	Constant	RRP O/N RATE	WMOR	Deficit/GDP (-1)	10-Year - RRP Rate	10-Year - 5 Year Rate	Debt/GDP	Adjusted R-squared	F Stat	DW
a	Q1 2004 to Q4 2021	13.79 [32.38]***	-0.944 [-12.74]***		0.471 [7.76]***				70.9	87.7	0.213
a	Q1 2004 to Q1 2016	14.06 [25.65]***	-1.056 [-10.43]***		0.322 [2.71]***				72.6	67.8	0.154
a	Q2 2016 to Q4 2021	10.64 [22.11]***	-0.11 [-0.98]		0.34 [8.51]***				83.3	56.0	1.000
a1	Q1 2004 to Q4 2021	13.71 [31.76]***		-0.919 [-12.366]***	0.499 [7.506]***				70.0	83.0	0.232
a1	Q1 2004 to Q1 2016	14.09 [26.48]***		-1.062 [10.68]***	0.323 [2.75]***				73.2	68.0	0.156
a1	Q2 2016 to Q4 2021	10.638 [23.047]***		-0.099 [-0.942]	0.355 [7.99]***				83.5	54.0	1.098
a2	Q1 2004 to Q4 2021	9.97 [32.24]***			0.048 [0.53]	-0.768 [-6.73]***			41.7	26.0	0.208
a3	Q1 2004 to Q4 2021	8.97 [27.32]***			0.167 [1.61]*		-0.436 [-1.88]*		72.0	3.8	0.066
a4	Q1 2004 to Q4 2021	61.62 [19.71]***	-0.606 [-7.95]***					-17.91 [-6.64]***	65.1	68.1	0.171
Source: Authors' estimation.											
Note: Values shown for each period and variable are the coefficients; Numbers in parenthesis are the t-statistics; ***-significant at 1% CI; ** significant at 5% CI; * significant at 10% CI.											



Empirical Results: OLS Regression (slides 13-14)

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Empirical Results: OLS Regression (slides 14-14)

Table C

Regression Results: Response of Average Maturity of Government Debt Issuance to Macroeconomic Variables

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Note: Values shown for each period and variable are the coefficients; Numbers in parenthesis are the t-statistics; ***-significant at 1% CI; ** significant at 5% CI; * significant at 10% CI.



Empirical Results: VECM (Cointegrating Equation and ECM) (slide 15-17)

Table 1. Results of the Vector Error Correction Model Estimation**											
Long Run (LR) Equation: $Inflrate = -5.78 + -0.675*m3growthave + 2.984*deficittoGDP + 45.1 *debttoGDP$											
					[4.64]					[-4.00]	
While the ECM equation: $D(Inflrate) = 0.601*D(Inflrate(-1)) + 0.096*D(M3Growthave) - 0.29*D(deficittoGDP) - 13.657*D(debttoGDP)$											
					[5.47]					[2.92]	
										[1.33]	
											[1.49]

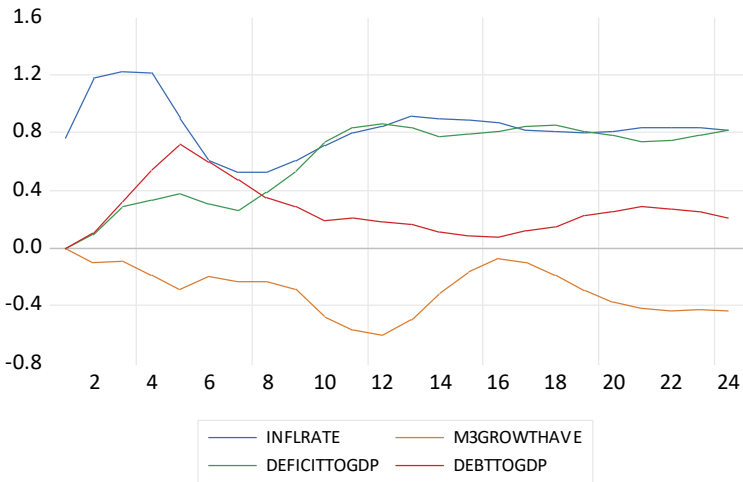
** For brevity, we have included here only the lagged variables with the highest significance. Values in [] refer to t-statistics.



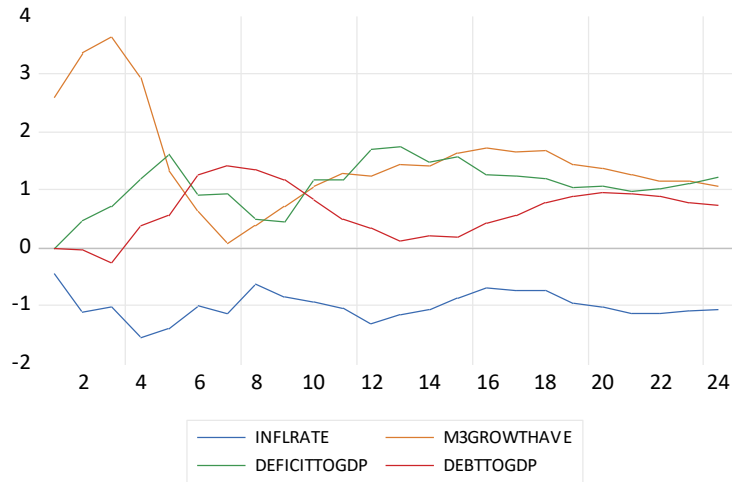
Empirical Results: VECM (Impulse Response Functions)

slide 17-17

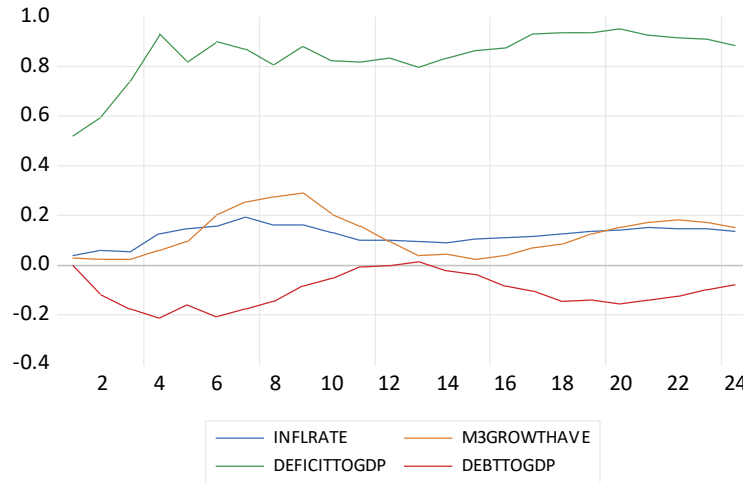
Response of INFLRATE to Cholesky One S.D. (d.f. adjusted) Innovations



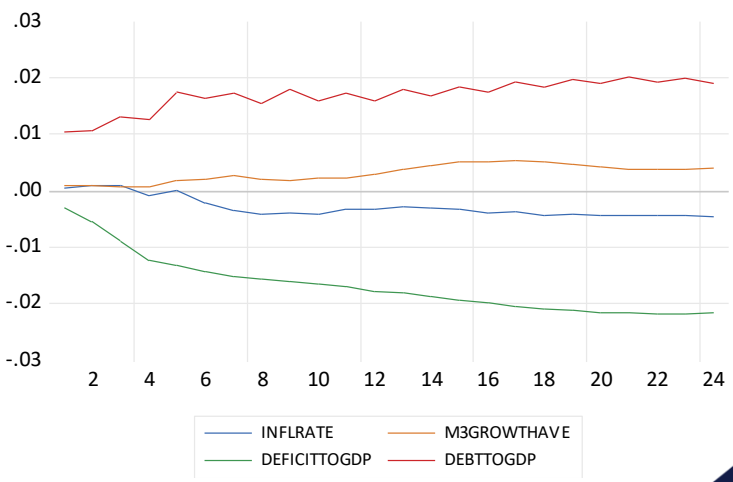
Response of M3GROWTHAVE to Cholesky One S.D. (d.f. adjusted) Innovations



Response of DEFICITTOGDP to Cholesky One S.D. (d.f. adjusted) Innovations



Response of DEBTTOGDP to Cholesky One S.D. (d.f. adjusted) Innovations



CONCLUSION and Policy Implications

1. Decisions on debt management are affected by both fiscal and monetary policies but no persistent dominance from either policies
2. The solution to minimize the specter of fiscal dominance is for fiscal and monetary authorities to coordinate more closely
3. Closer coordination must include a collaboration on the debt management and financing implementation of the NG in the recovery moving forward, especially given the results from this study that the inflation rate has a significant and higher magnitude of response to debt-to-GDP, than does M3 growth or the fiscal deficit
4. Implications on debt sustainability



Thank you

