

# Inflation Dynamics in Latin America: Lessons from the COVID and other episodes<sup>1</sup>

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<sup>1</sup>The views expressed in this paper are those of the authors and do not necessarily represent the views of the Central Bank of Chile.

- The post-COVID inflation surge has become a fundamental test on the progress towards achieving price stability in Latin America.
- Several questions:
  - What are the empirical trends in inflation dynamics in Latin America before and after COVID? How do they compare with other episodes and with advanced economies?
  - How do supply shocks propagate to core inflation in Latin America?
  - What role has monetary policy played during the COVID period and beyond?
- We summarize results across Latin America countries and comparing them with advanced economies. Of course, this approach hides heterogeneity.

## Preview of main results

- The gradual convergence of Latin American inflation to the levels, volatilities and CPI composition observed in advanced economies did not stop during the pandemic. However, it looked like that the advanced economies were converging from below to Latin America since 2021.
- The composition of driven factors behind the inflation surge in Latin America during 2021-2022 was more related to the persistence of inflation dynamics and the rise of inflation expectations than previous episodes (e.g., 2006-2008), when it was more influenced by other price shocks and excesses of demand.
- The inflation propagation of supply shocks tends to be more intense in Latin America, especially when headline inflation or inflation expectations are high.
- The reaction of Latin American monetary policy is more influenced by inflation expectations and the US monetary policy.

## Related literature

- **Analyzing the recent inflationary episode:** Ball et al. (2022), Bajraj et al. (2023), Blanchard and Bernanke (2023), Ha et al. (2021), Ha et al. (2022), Ha et al. (2023), Harding et al. (2023), International Monetary Fund (2022), Jordà and Nechio (2023), and many more.
- **Propagation of supply shocks to inflation:** Blanchard and Galí (2010), Ha et al. (2023), Kilian and Zhou (2023), and many more.
- **Distinctive monetary policy reaction in emerging economies:** Mohanty and Klau (2005), Aizenman et al. (2011), Caputo and Herrera (2017), Brandao-Marques et al. (2020), Kamin (2023), Werner (2023), and many more.

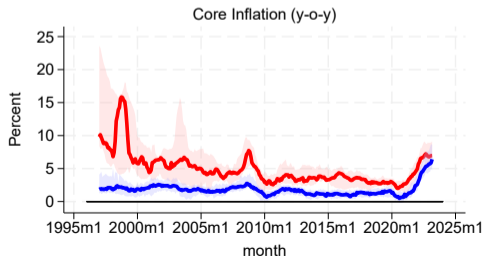
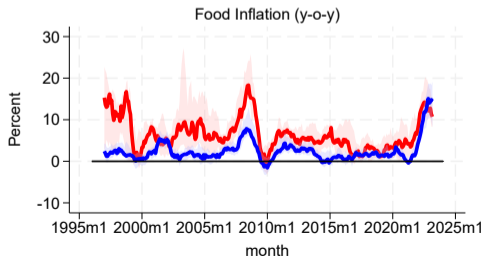
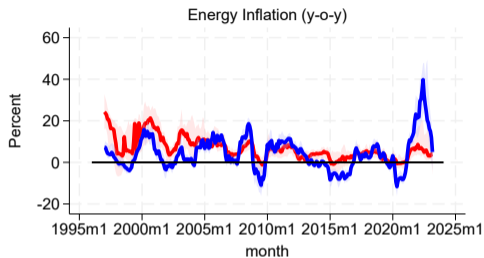
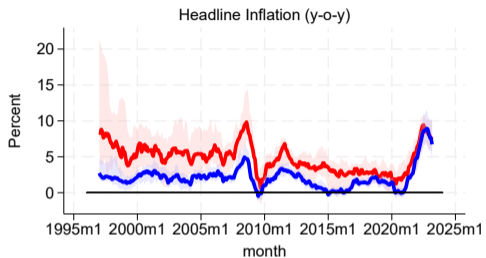
# Outline

- 1 Introduction
- 2 Describing inflation patterns in Latin America
- 3 Transmission of supply shocks to core inflation
- 4 Monetary policy reaction in Latin America
- 5 Conclusions

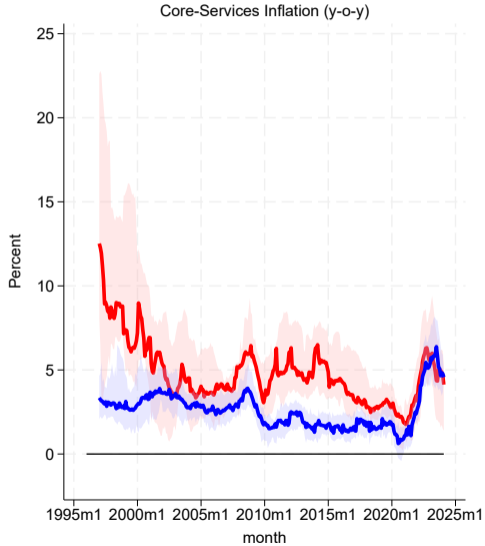
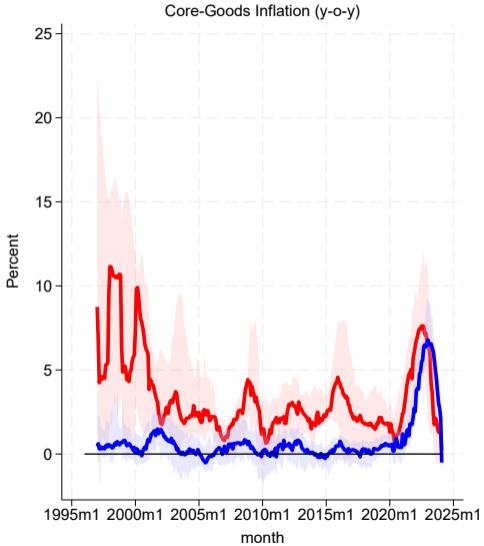
# Describing inflation patterns in Latin America

- Comparing inflation rates in Latin America and advanced economies
  - Using CPI database by Ha et al. (2023)
  - Using harmonized CPI database by Bajraj et al. (2023)
- Role of weights in CPI components [harmonized; recent episode]
- Inflation expectations and Phillips curve estimation
- Next slides have key inflation rates in **Advanced (blue)** and **Latin American (red)** countries. Monthly data, 12-month percentage change (logarithmic). Lines represent the median across countries within each group, while shaded areas indicate the 25th and 75th percentiles across countries.

# Based on Ha et al (2023) [LATAM & ADV]



# Inside core inflation: goods and services; based on Bajraj et al (2023)





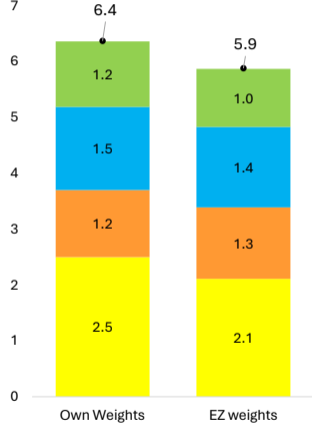
# Comparative Weights in Harmonized CPI Components

Table: Comparative Weights in Harmonized CPI Components

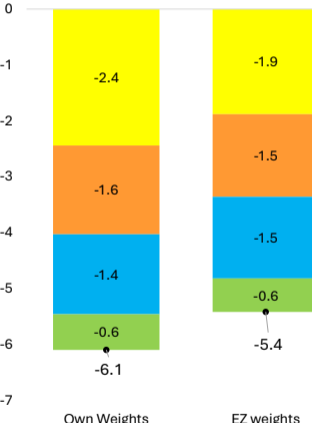
	FAT		Ind. Goods		Energy		Services	
	Own	EZ	Own	EZ	Own	EZ	Own	EZ
	Latin America							
Median	25	22	9	10	24	27	41	41
	Advanced Economies							
Median	20	20	9	10	27	27	43	43
	Emerging Market Economies (ex Latam)							
Median	30	20	11	10	24	27	32	42

# Average Incidence of Main CPI Components – Latam

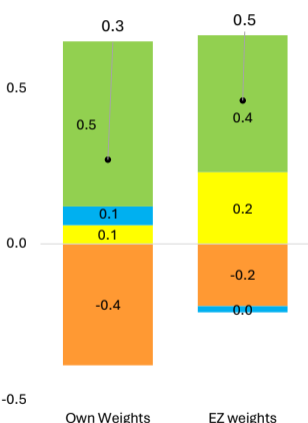
(a) Inflation increase: Q4.2019-Peak



(b) Inflation decrease: Peak-current

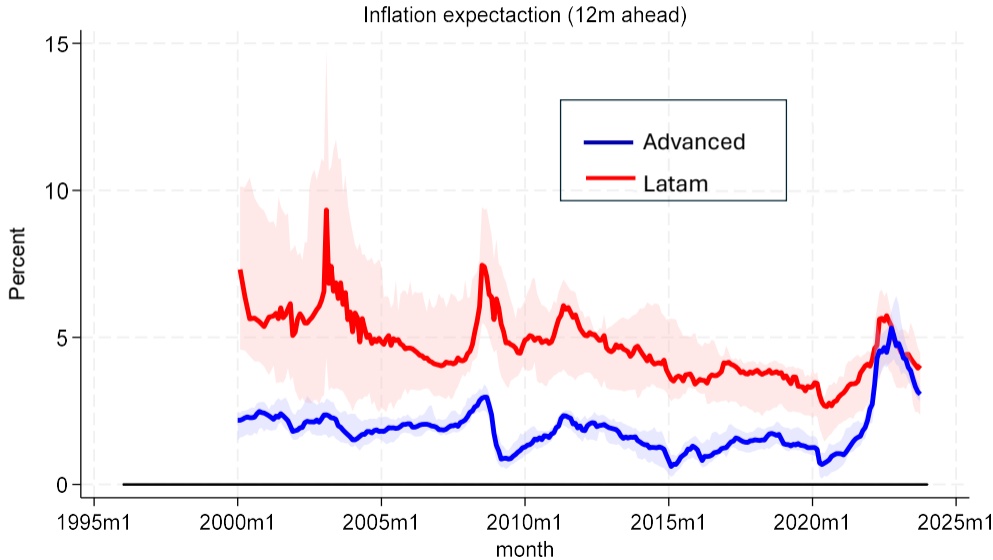


(c) Diff: Current level-Q4.2019



■ FAT ■ Energy ■ Ind. Goods ■ Services ● Headline

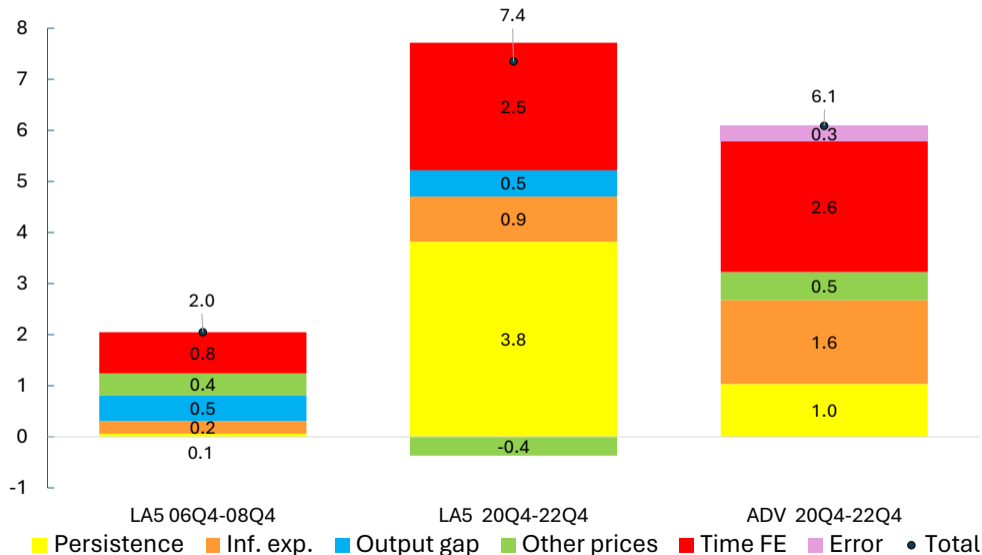
# Inflation expectation (12 months ahead) [Consensus Forecast]



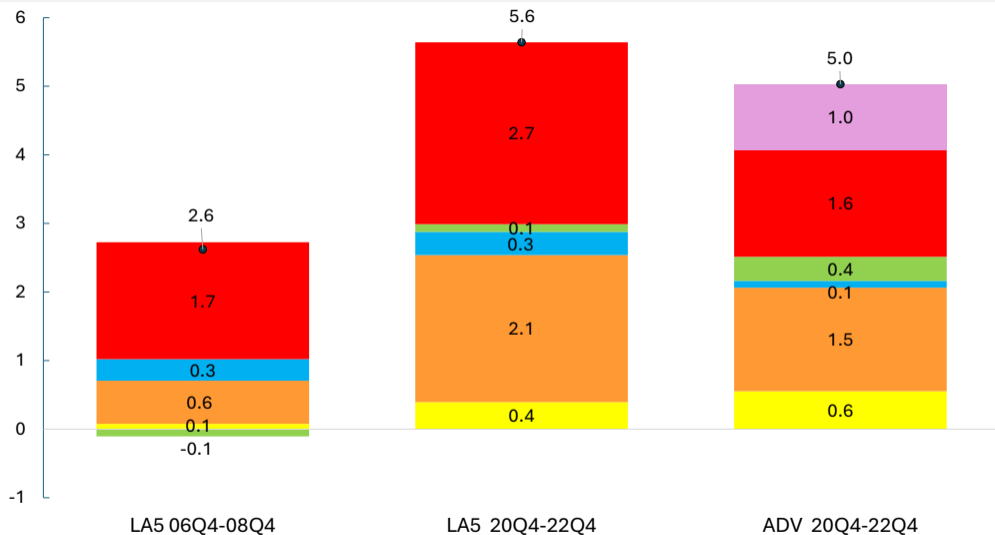
## Phillips curve estimation - core goods and services

Type	Core goods		Core services	
Countries	LA5	ADV	LA5	ADV
Variables				
Lag inflation	0.615*** (0.0493)	0.261*** (0.0755)	0.135 (0.0811)	0.207** (0.0732)
Lag Inf. expectation	0.392 (0.255)	0.631*** (0.164)	0.940* (0.396)	0.576*** (0.154)
Lag output gap	0.218** (0.0738)	0.0379 (0.0620)	0.136 (0.132)	0.126** (0.0443)
Lag core serv inf.	-0.518** (0.119)	-0.0276 (0.0911)	— —	— —

# Decomposition of change in core inflation - goods



# Decomposition of change in core inflation - services

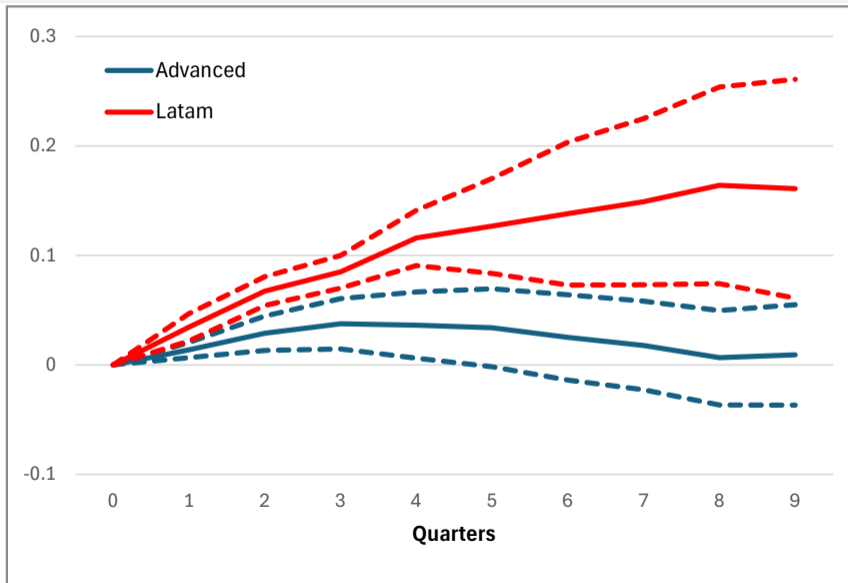


■ Persistence  
 ■ Inf. exp.  
 ■ Output gap  
 ■ Other prices  
 ■ Time FE  
 ■ Error  
 ● Total

# Transmission of supply shocks to core inflation

- Pass-through of energy price shocks to core CPI
- Variation in the pass-through of energy price shocks: additional effects under high past headline inflation
- Pass-through of food price shocks to core CPI
- Variation in the pass-through of food price shocks: past headline inflation and inflation expectations
- Methodological approach based on Jordà (2005), Auerbach and Gorodnichenko (2012), Carriere-Swallow et al. (2023)
- Next slides have responses with the 90 percent confidence intervals marked with dashed lines [several controls].

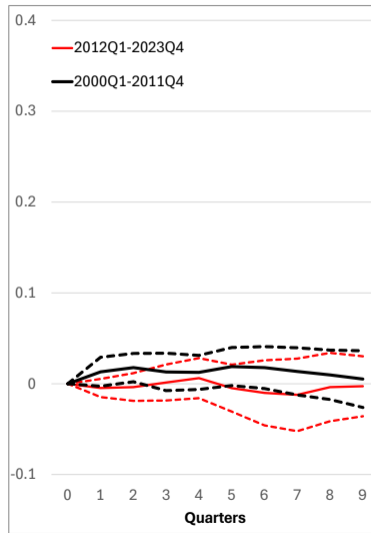
# Response of core CPI to energy price shocks



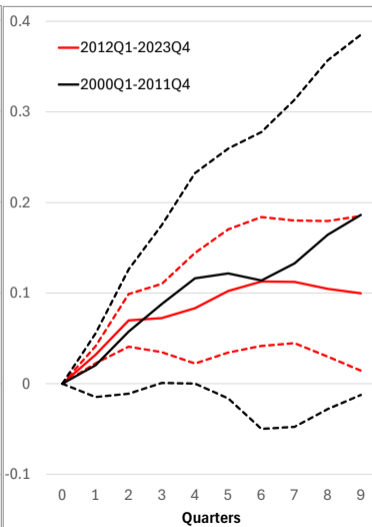


# Response of core CPI to energy price shocks - different samples

A. Advanced countries

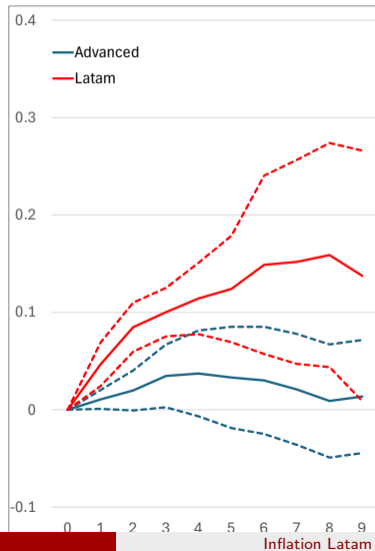


B. Latin American countries

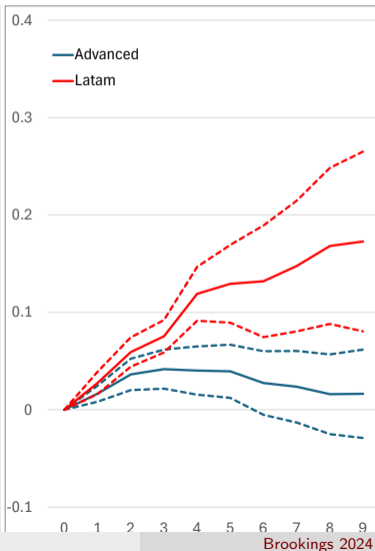


# Response of core CPI to energy price shock – goods and services

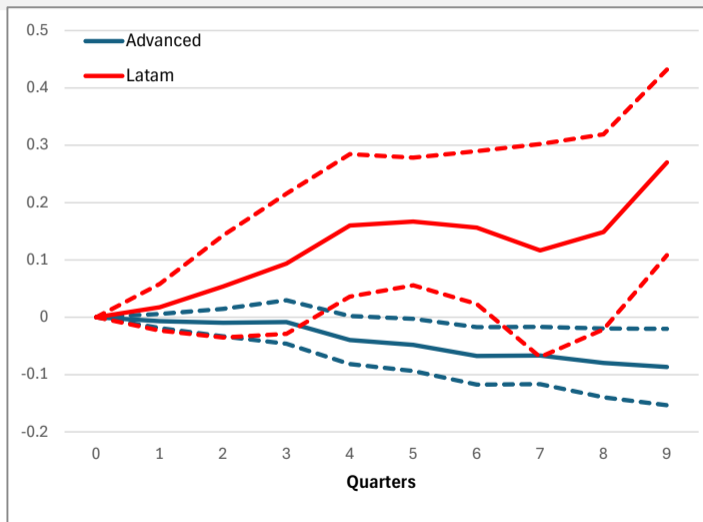
**A. GOODS**



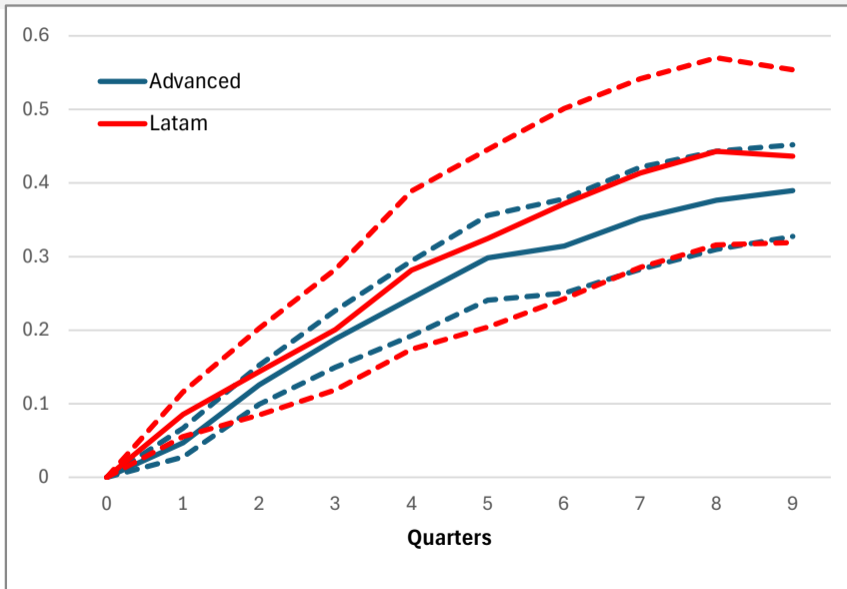
**B. SERVICES**



# Response of core CPI to energy price shocks - Additional effect under high headline inflation

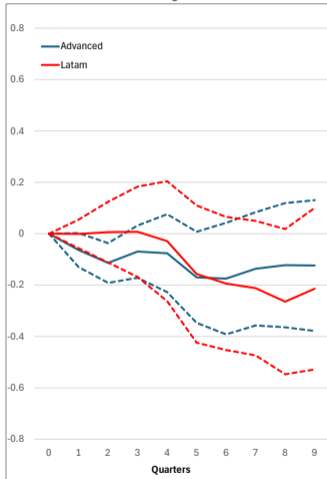


# Response of core CPI to food price shocks

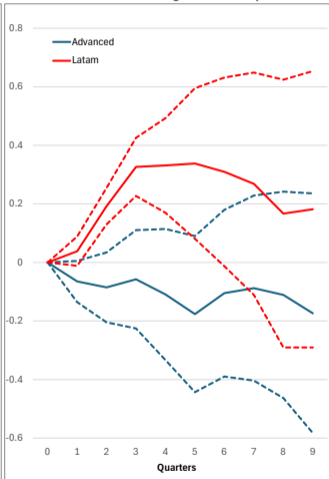


# Response of core CPI to food price shocks. Additional effects

A. Additional effect under high headline inflation



B. Additional effect under high inflation expectation



# Monetary policy reaction in Latin America

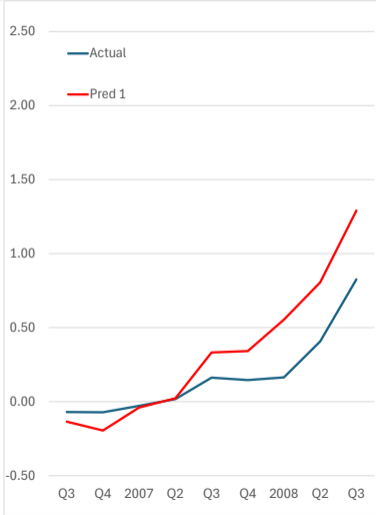
- We estimate a Taylor-type rule in for **changes** in the monetary policy rates
  - Driving factors: core inflation, output gap, inflation expectations (one year ahead).
- Comparing LA5 (Brazil, Chile, Colombia, Mexico, Peru) with a set of advanced economies (Canada, Norway, Sweden, UK, US)

# Taylor type-rule estimation I

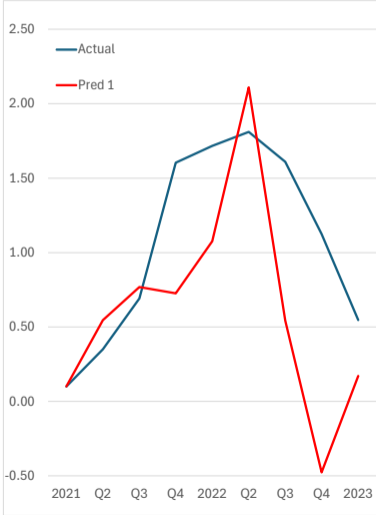
Variables	LA5 - M1	ADV - M1
Core inf. ( $\pi^{c,a}$ )	0.0217 (0.0358)	0.0263 (0.0283)
Output gap ( $y$ )	0.0517*** (0.0141)	0.0213* (0.0108)
Inf. exp. ( $\pi^e$ )	0.0793 (0.0527)	0.127*** (0.0350)
Change in $\pi^{c,a}$	0.347*** (0.0706)	0.0255 (0.0513)
Change in $\pi^e$	1.050*** (0.0955)	0.240*** (0.0552)
Change in $y$	-0.0111 (0.0136)	0.0196* (0.0111)
Observations	433	460
R-squared	0.504	0.281

# Changes in monetary policy rates in LA5. 2006Q3-2008Q3 and 2021Q1-2023Q1

A. Average change in MP rate in LA5. 2006Q3-2008Q3



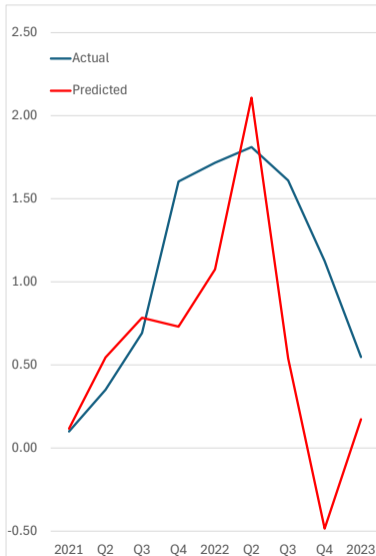
B. Average change in MP rate in LA5. 2021Q1-2023Q1



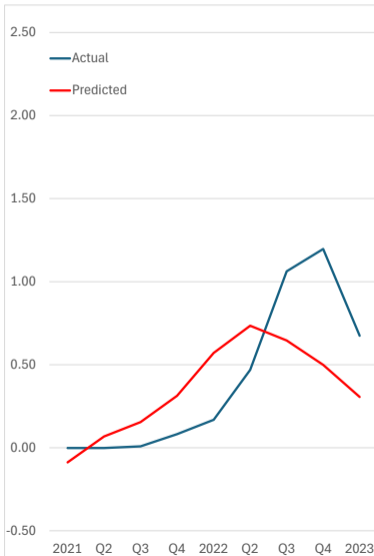


# Changes in monetary policy rates 2021Q1-2023Q1. LA5 vs ADV

A. Average change in MP rate in LA5. 2021Q1-2023Q1



B. Average change in MP rate in ADV. 2021Q1-2023Q1



## Taylor type-rule estimation II. Adding the role US MP & past changes

Variables	LA5 - M2	ADV - M2	LA5 - M3	ADV - M3
Lag change	0.380***	0.402***	0.453***	0.459***
MP rate	(0.0384)	(0.0472)	(0.0369)	(0.0429)
Core inf. ( $\pi^{c,a}$ )	-0.00827	0.0305	0.119***	0.0218
	(0.0309)	(0.0239)	(0.0342)	(0.0237)
Change in $\pi^e$	1.093***	0.369***	1.033***	0.342***
	(0.0820)	(0.0503)	(0.0808)	(0.0501)
Change in $y$	0.0163	0.0154*	0.0165	0.0188**
	(0.0118)	(0.00898)	(0.0116)	(0.00895)
Lag change	0.360***	0.195***		
MP rate US	(0.0679)	(0.0377)		
Lag Diff.			-0.106***	-0.0644***
MP rate w/US			(0.0155)	(0.0114)
Observations	431	368	431	368
R-squared	0.639	0.555	0.654	0.561

# Conclusions I

- Latin American inflation has experienced a remarkable convergence and stabilization over the last few decades.
  - Alignment with advanced economies in level and volatility
  - Convergence continued post-COVID
  - Also convergence to advanced economies in composition of CPI baskets
  
- Core inflation rise during 2021-2022 was clearly more severe than during 2006-2008 in Latin America.
  - Key drivers 2006-2008: the output gap and price shocks
  - Key drivers 2021-2022: persistence in inflation dynamics and expectations
  - Substantial contribution of global factors in both episodes

## Conclusions II

- The transmission of inflationary shocks in Latin America is more intense.
  - More propagation is observed when headline inflation and inflation expectations are high.
  - Despite evident progress in inflation control in Latin America, still potential benefits of enhancing more the monetary policy credibility.
  
- Monetary policy in Latin American countries reacts more to (i) inflation expectations and (ii) US monetary policy.
  - (i) helps to explain why central banks in Latin America raised their rates faster and more aggressively from 2021 to 2022.
  - (ii) contributes to understanding the slower normalization of the monetary policy rate in Latin America since mid-2022.

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