

# Cross-section time series: Inflation and Exchange Rate in Latin America (2017-2023)

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# Esquema de presentación

- 1 Conceptual framework
- 2 Descriptive statistics
- 3 Unit root tests

1 Conceptual framework

2 Descriptive statistics

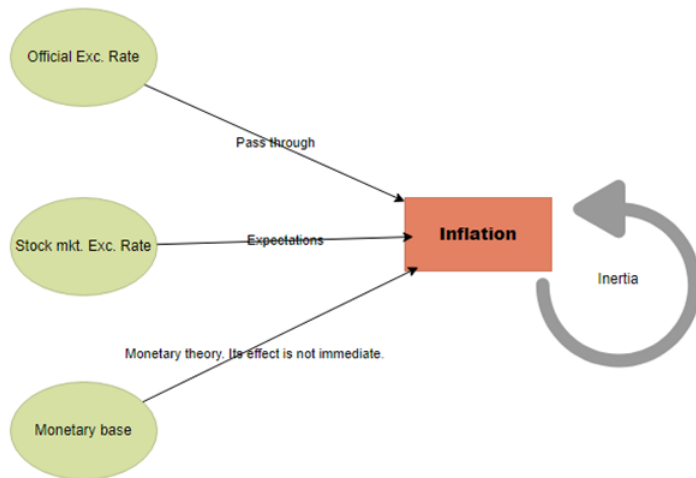
3 Unit root tests

# Conceptual framework

Last week, we demonstrated how, in the monthly inflation data for Argentina from January 2017 to November 2023, considering the monetary base, the parallel exchange rate, and the **official exchange rate** as explanatory variables, the latter is the only one that is statistically significant.

We will extend this analysis to other countries in Latin America.

# Original causal framework



1 Conceptual framework

2 Descriptive statistics

3 Unit root tests

# Inflation summary

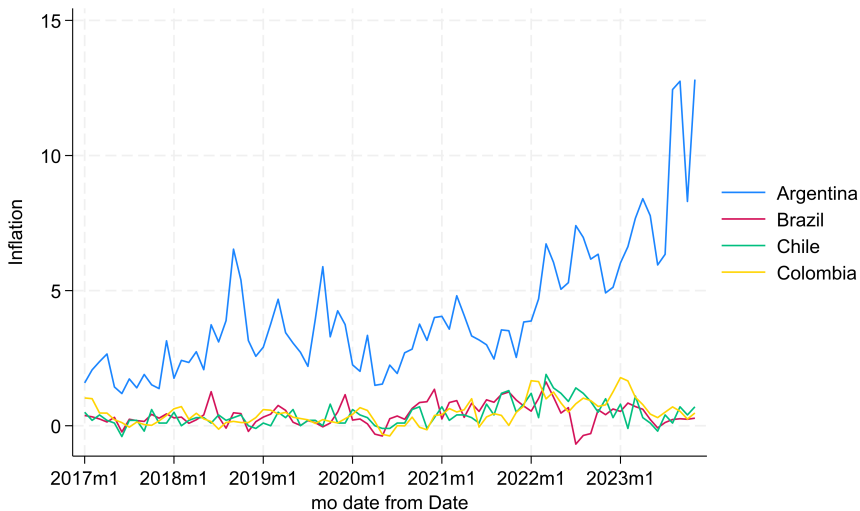
Variable	Mean	Std. dev.	Min	Max	Observations	
Inflat~n overall	1.356026	2.05158	-.6800034	12.81069	N =	332
between		1.850495	.4084337	4.131484	n =	4
within		1.277877	-1.583384	10.03523	T =	83

# Exchange Rate summary

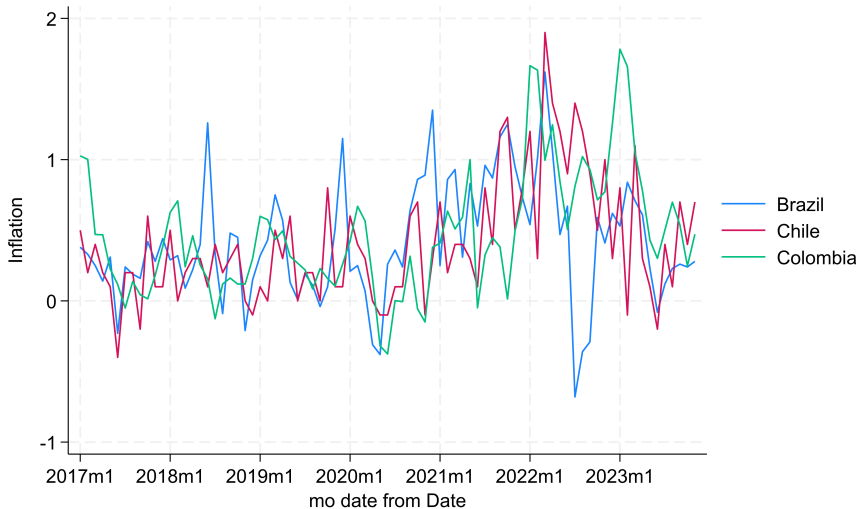
Variable		Mean	Std. dev.	Min	Max	Observations	
ERvar	overall	.0131467	.0414874	-.0870135	.2763768	N =	332
	between		.0174989	.0038501	.0393795	n =	4
	within		.0386115	-.0791064	.250144	T =	83



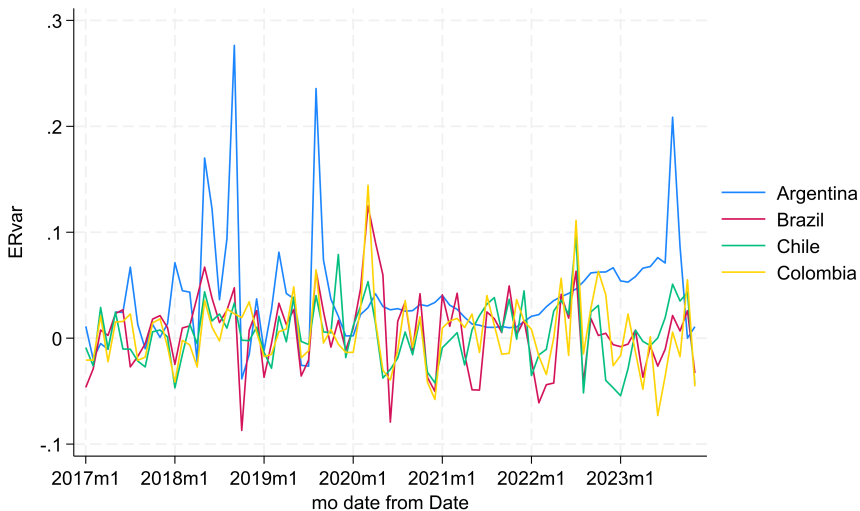
# Timelines Inflation



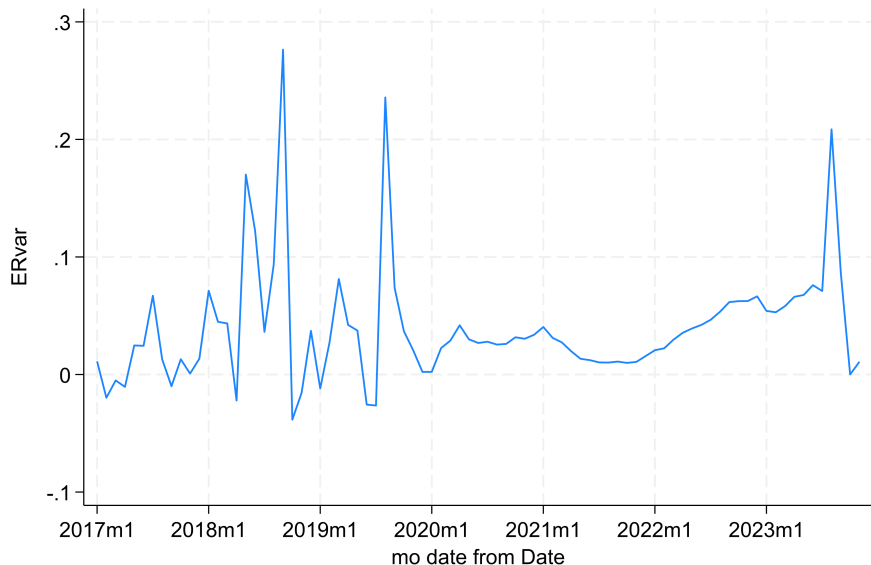
# Timelines Inflation without ARG



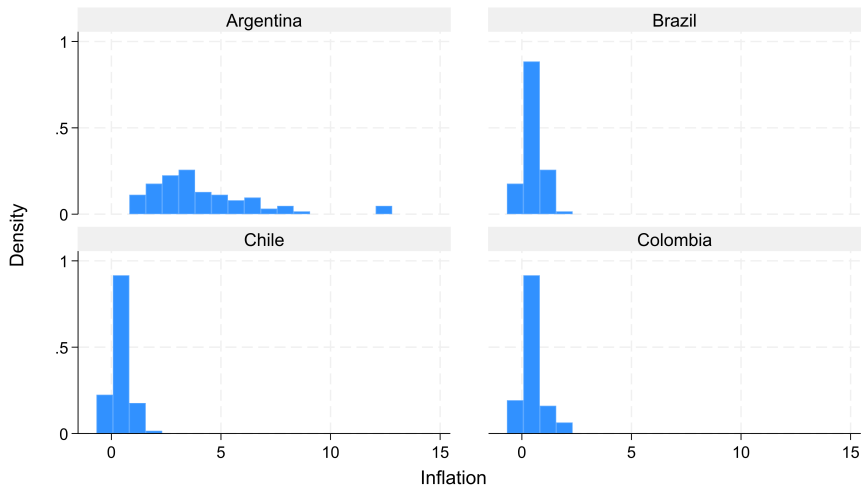
# Timelines Exchange Rate



# Timeline Exchange Rate ARG

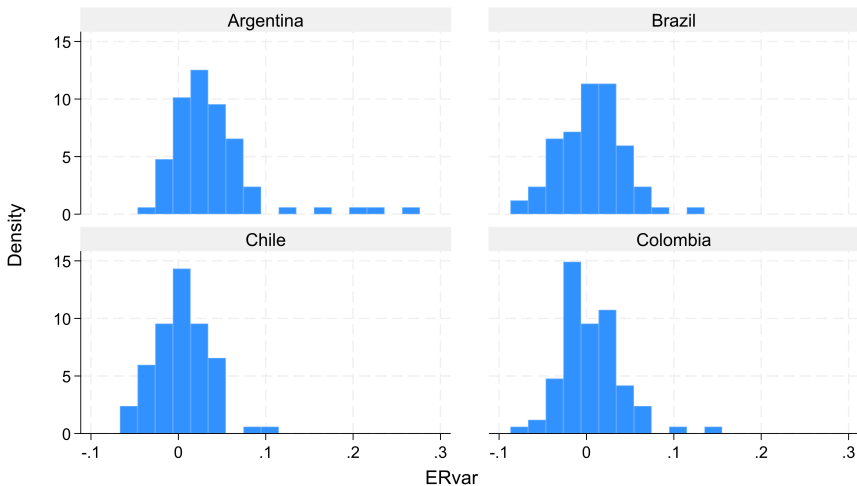


# Histograms Inflation



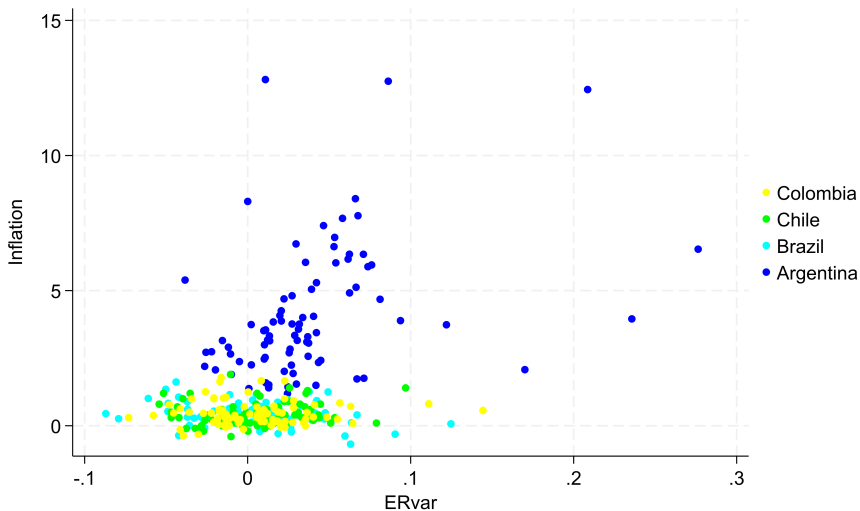
Graphs by Country

# Histograms Inflation

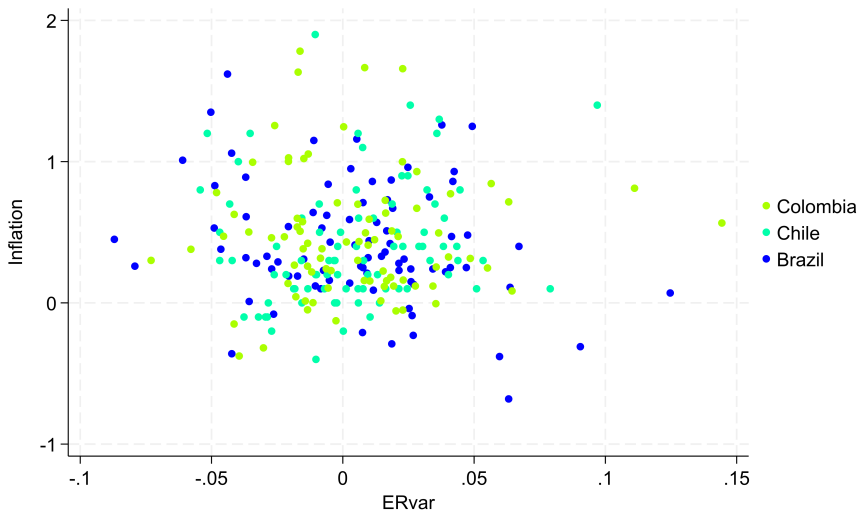


Graphs by Country

# Scatterplot

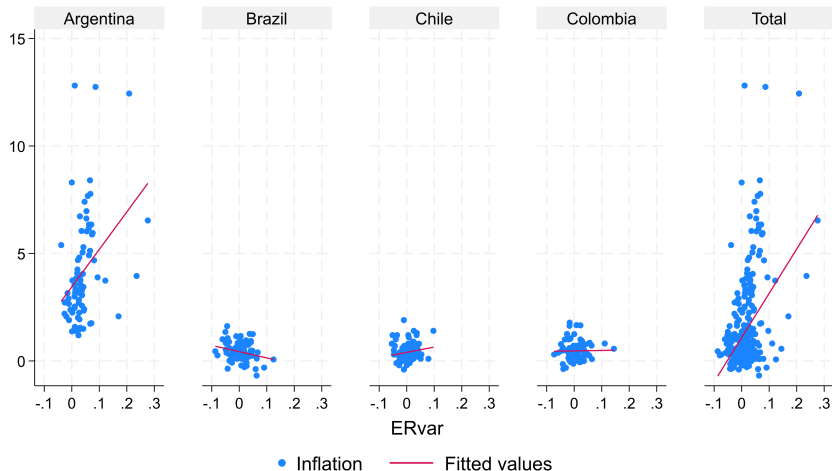


# Scatterplot excluding Arg





# Scatterplots with regression lines



Graphs by Country

# Conclusions

- The inflation distribution in Argentina is notably different and right-skewed compared to that of Brazil, Chile, and Colombia.
- In general terms, the exchange rate is much more similar, but it experiences recurrent and abrupt devaluations. This allows us to hypothesize about the pass-through effects.
- At first glance, the relationship between inflation and the exchange rate appears stronger in Argentina (with a steeper slope), yet at the same time, it exhibits greater variance.

1 Conceptual framework

2 Descriptive statistics

3 Unit root tests

# Unit root test results

Test	H <sub>0</sub>	Inf	ER
Levin Lin Chu test	Panels contain UR	R***	R***
Levin Lin Chu test 4 lags	Panels contain UR	NR	NR
Breitung UR test 4 lags	Panels contain UR	NR	R***
Harris Travaliz	Panels contain UR	R***	R***
Harris Travaliz Trend	Panels contain UR	R***	R***
Hadri	All panels are stationary	R***	R**

# Unit root DF test (Individual)

Country	Lags	Result
Argentina	2	NR
Brazil	1	R***
Colombia	1	R***
Chile	1	R**
Chile	2	NR
Chile	3	NR

# Unit root test results without Arg

Test	H0	Inf	ER
Levin Lin Chu test	Panels contain UR	R***	R***
Levin Lin Chu test 4 lags	Panels contain UR	NR	NR
Breitung UR test 4 lags	Panels contain UR	R***	R***
Harris Travaliz	Panels contain UR	R***	R***
Harris Travaliz Trend	Panels contain UR	R***	R***
Hadri	All panels are stationary	R**	NR

# Obrigado!!