



UNIVERSITÀ DEGLI STUDI DI MILANO

FACOLTÀ DI SCIENZE POLITICHE, ECONOMICHE E SOCIALI

**Implications of the fluctuations of the exchange rate on the inflation rate.
An empirical approach on the Argentine experience.**

Matias Luraschi*

April 2022

Abstract

This working paper has studied the implications of exchange rate variations on the inflation rate in Argentina. It has been observed that variations in the exchange rate generates movements in the same direction on the inflation rate even when the quantity of money remains constant in real terms. Although it is understood that inflation is always and everywhere a monetary phenomenon, countries with a long inflationary history and consequently with a de facto bimonetary economy, such as Argentina, have particularities that are not observed within mainstream economic theory. Thus, it is noted that, given the lags of monetary policy, an anti-inflationary plan may be compromised by exchange rate fluctuations. In these circumstances, unconventional emergency policies are suggested.

*MSc (c) Data Science and Economics - email: matiassantiago.luraschi@studenti.unimi.it

1 Historical Context

Since the creation of the Central Bank in 1935, Argentina has suffered from constant inflationary processes that have deteriorated the purchasing power of the national currency and have practically eliminated its function as a store of value. Information on the annual rate of inflation has been collected since the middle of the last century and is shown in detail in Figure 1. The values shown out of range in the lower subgraph correspond to annual inflation rates above 150%, which were particularly concentrated in what is known as Argentina's lost decade¹.

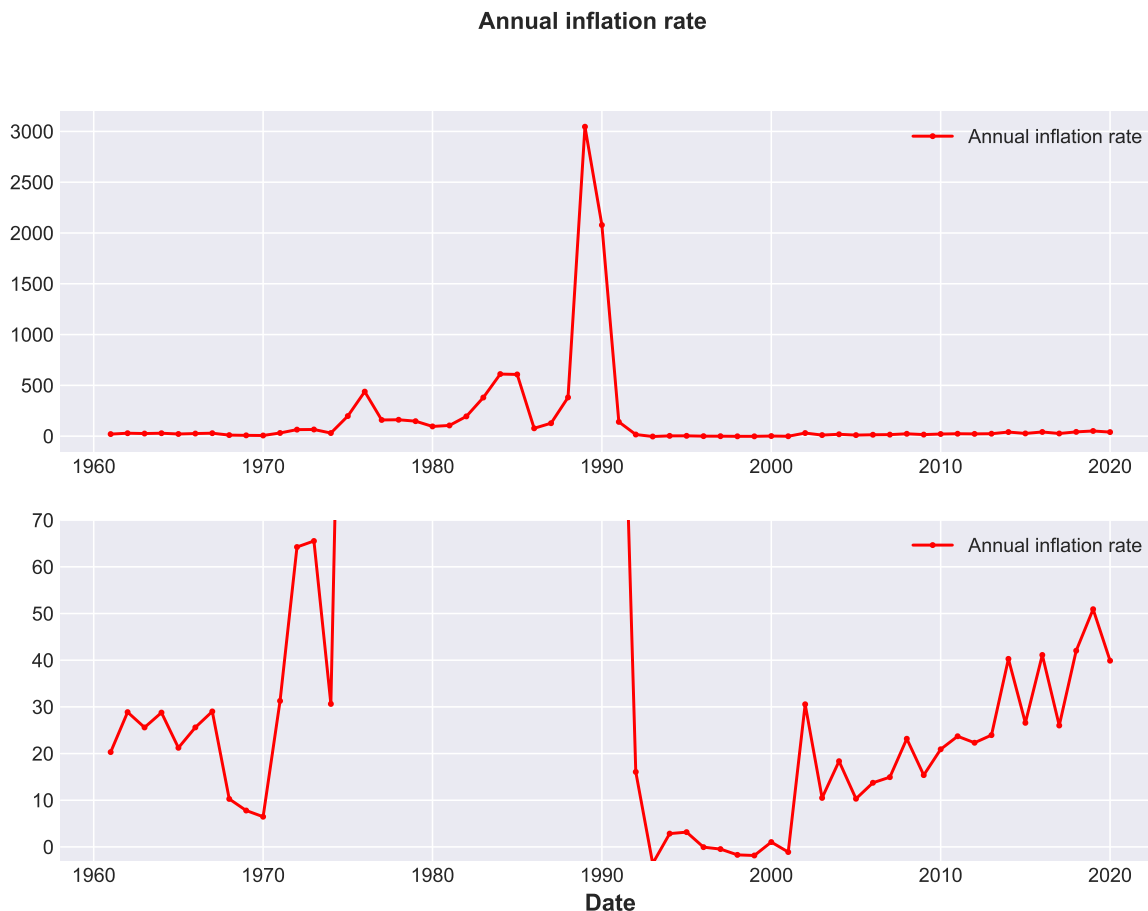


Figure 1: Annual inflation rate.

The magnitude and persistence of the inflationary phenomenon has changed the way in which citizens respond to the policies carried out by the monetary authority. Thus, to avoid the confiscation of the real value of their assets that seigniorage entails, agents escape from the domestic currency and keep their savings in other assets that cannot be reached by the monetary authority's policies (Neder and Descalzi, 2017). This has meant that in practice, the Argentine economy is bimonetary, with the U.S. dollar as the reference currency².

On the other hand, the government is aware of the de facto bimonetization of the economy and of the influence that the nominal exchange rate has on the cost structure of the production matrix. Thus, it has tried on several occasions to use the exchange rate as a nominal price anchor to tame

¹Although it does not strictly correspond to a decade, it is understood that [Argentina's lost decade](#) corresponds to the period between 1975 and 1991, during which the country suffered inflation rates above 100% in practically every year and hyperinflation that reached 3000% in 1989.

²[This video](#) shot by Bloomberg in late 2021 can give us an idea of how Argentines react to the policies of the Central Bank and deal with chronic inflation.

inflation (Fernandez, 2021). Broadly speaking, the country has been under the orbit of three economic programs that have used this type of policy, namely: Martinez de Hoz’s Crawling Peg Regime (1976-1981)³, The Convertibility Regime (1991-2001)⁴ and the Currency Control Regime (2011-2015)⁵. In all three experiences the common denominator was the use of the nominal exchange rate to stabilize the price level. However, since the fiscal imbalances that normally generate pressures on the price level were never solved, the three regimes ended abruptly with macro devaluations and exchange rate crises.

1.1 Martinez de Hoz’s Crawling Peg Regime

The first program, Martinez de Hoz’s Crawling Peg Regime, was aimed at the convergence of domestic inflation to international inflation. At the moment it was thought that inflation had quite a strong psychological component. Then the idea was to depreciate the currency at decreasing rates to guide inflation expectations in that direction. However, since structural reforms to reduce the fiscal deficit never took place, inflationary pressures kept arising and ended up appreciating the exchange rate and generated a macro banking, financial and exchange rate crisis in 1982 (Calvo, 1986). The inflation data for the period with the respective devaluation rates are presented below.

Quarter	Inflation	Devaluation
1976-1	59.9	62.8
1976-2	87.5	62.6
1976-3	18.2	12
1976-4	30.1	44.1
1977-1	30.7	32.4
1977-2	22.1	19.2
1977-3	27.2	17.7
1977-4	33.2	25.1
1978-1	31.2	23.3
1978-2	29.9	15.9

Quarter	Inflation	Devaluation
1978-3	22.7	73.9
1978-4	27.8	13.5
1979-1	32.1	15.8
1979-2	24.3	14.4
1979-3	28.1	12.8
1979-4	18.4	10.8
1980-1	18.5	8.8
1980-2	18.6	7
1980-3	14.7	5.2
1980-4	17	3.5

1.2 The Convertibility Regime

The second program that used a fixed exchange rate strategy was the Convertibility Regime, which eliminated the Central Bank’s faculty to finance the treasury by monetizing the fiscal deficit. During this period, which lasted from 1991 to 2001, inflation was practically nil and the exchange rate was always kept at the same value by law. However, when credit stopped flowing to Argentina, following the crises in emerging countries⁶, Argentina could not cope with the credit financing of its fiscal deficit and the refinancing of its debt. Hence the program culminated in the social outbreak at the end of 2001⁷ and the successive exit from the monetary regime and currency devaluation. (Cortés Conde, 2013).

1.3 The Currency Control Regime

Finally, the third program where this type of policy was implemented was during the second term of Cristina Kirchner (2011-2015), where, the prevailing foreign exchange shortages since 2008 led to the imposition of strict currency controls. Then, during this period, the exchange rate was kept at artificially low values and with a much lower evolution than the real inflation rate⁸ of the country in order to obtain electoral benefits⁹. This meant the generation of repressed inflation (Cavallo, 2013)

³La Tablita de Martinez de Hoz

⁴La Ley de Convertibilidad del Austral

⁵El Cepo Cambiario

⁶Tekila Effect in Mexico in 1995, Caipirinha Effect in Brazil in 1997 and Vodka Effect in Russia in 1998.

⁷A documentary rolled in late 2001 about the social outbreak can be seen [here](#).

⁸During 2007-2015, the national statistics office was intervened in order not to admit the high inflation rates prevailing in the economy. Therefore, in that period, official inflation statistics are not reliable and alternative sources must be used. More on the topic can be read [here](#).

⁹More on this matter: Dornbusch’s “The Macroeconomics of Populism in Latin America”.

and also the blossom of a black market for foreign currency¹⁰ which generated even more frictions on the economy and that culminated with a devaluation of about 50% in late 2015.

2 Period under analysis: Macri's administration (2015-2019).

The change of government in 2015 implied a reversal of the policies carried out in previous years. Thus, exchange controls were eliminated and a flexible exchange rate regime was introduced so that the Central Bank was not forced to intervene in the purchase and sale of foreign currency. Then, given the confidence shock generated by the new government, credit flowed into Argentina during the first two years. However, the inaction in the first half of the presidential term to reduce the deficit caused a reversal in the flow of credit as of early 2018. (Sturzenegger, 2019).

2.1 The crisis of 2018-2019 and the agreement with the IMF

The run against the national currency observed as of 2018 led the government to get a Stand-By Agreement with the IMF in pursuit of obtaining the necessary financing to fund its deficit and to appease the markets. That said, several modifications in the agreement and extensions in the original amount from 50 billion dollars to end up at 57,1 billion dollars were interpreted as the country's inability to finance its spending and dynamited confidence in the economic plan and in the government team. This led to the resignation of the President of the Central Bank in 2018 and the succession of various crises, which, among other things, were determinant for the adverse outcome of the ruling administration in the 2019 presidential elections.

Let's analyze the evolution of the monetary base for the period under analysis. In Figure 2 we see that although the nominal monetary base grows until the second agreement with the IMF, the real monetary base actually stays practically constant in real terms and it actually starts to decline by late 2018.

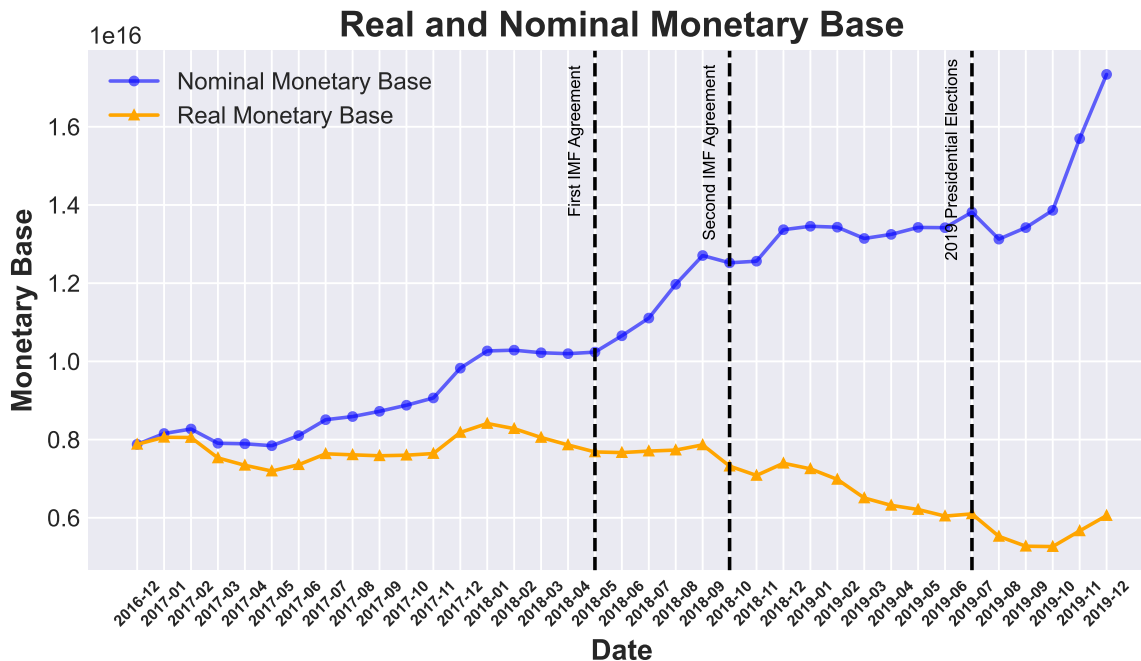


Figure 2: Evolution of the Monetary Base.

The agreement with the IMF prohibited, among other things, the intervention of the Central Bank in the foreign exchange market in order to bring the currency to its market price. This prohibition,

¹⁰More on this matter [here](#).

added to a flexible exchange rate regime and in a context of free capital inflows and outflows, implied a depreciation of the exchange rate, as shown in Figure 3.

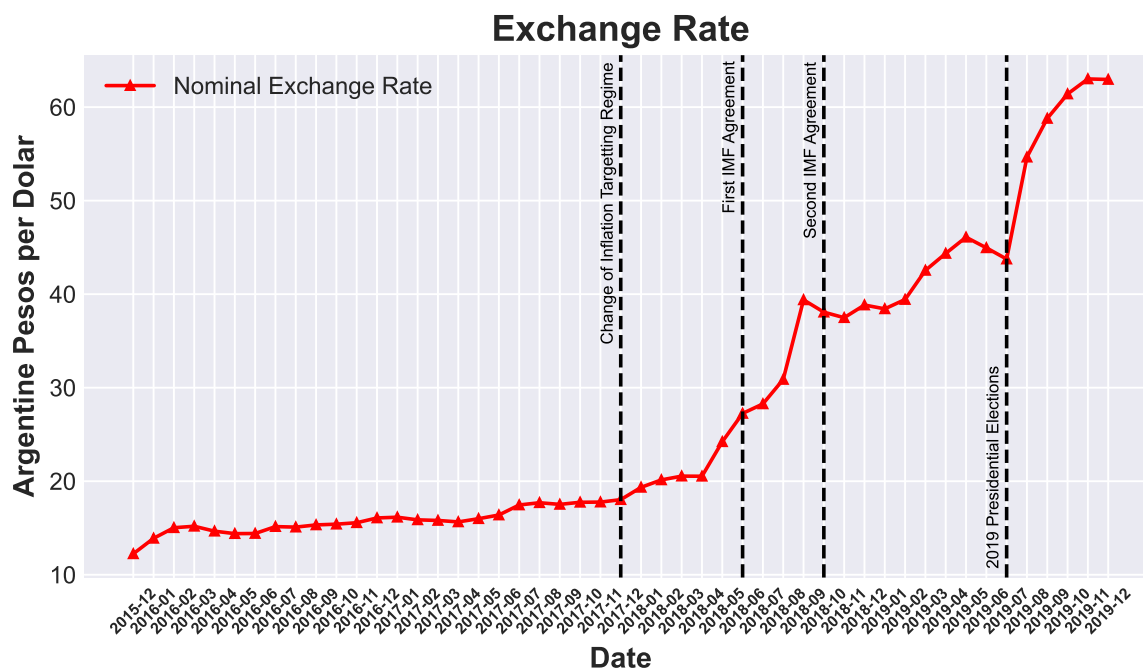


Figure 3: Evolution of the Exchange Rate.

Then, even though the monetary base remained constant in real terms at the beginning, and subsequently fell in real terms, the price index continued to grow throughout the period as shown in Figure 4.

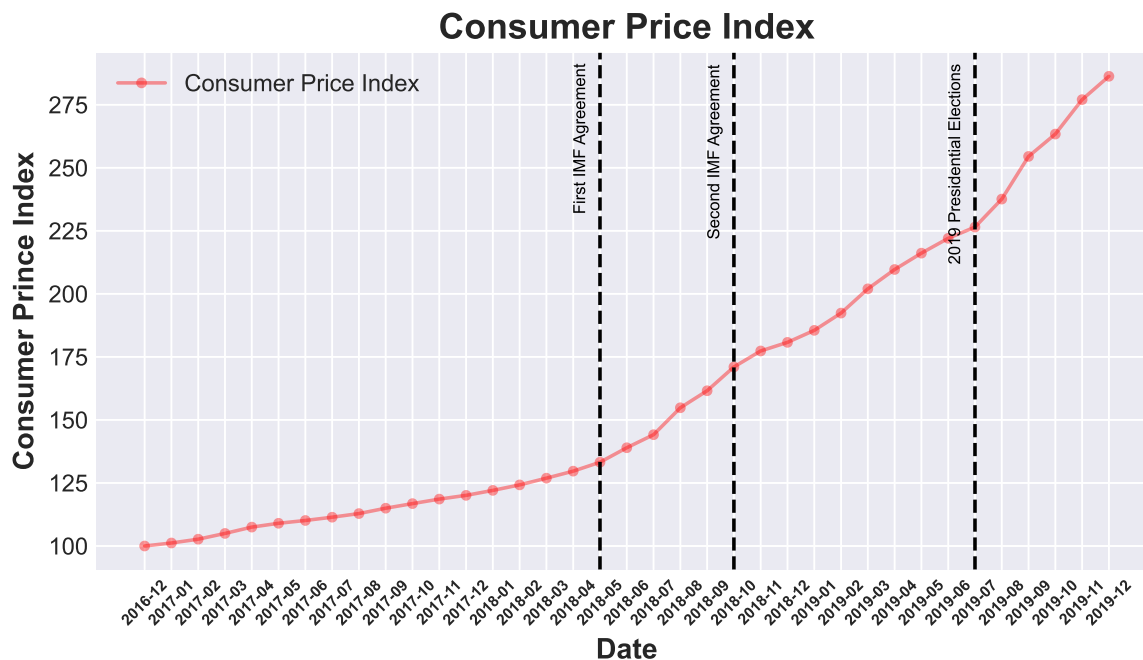


Figure 4: Evolution of Consumer Price Index (December 2016=100).

If, on the other hand, we were to analyze the inter-monthly change of the real monetary base,

the exchange rate and inflation as shown in Figure 5, we can observe that despite showing a negative average variation of the real monetary base (-0.66%), inflation observes a positive average variation (2.90%) in tune with the movements of the exchange rate variations (4.07%).

Although, between 2018 and 2019 we observe on average a reduction of the monetary base in real terms, inflation showed a significant growth during the period. This growth would seem to be partly explained by the movements within the exchange rate, given the structure of the Argentine productive matrix as well as taking into account the behaviors of the agents that were explained previously.

Average Monthly Variation (2017-2019)		
Inflation	Exchange Rate	Real Monetary Base
2,90%	4,07%	-0,66%

Month-to-month variation

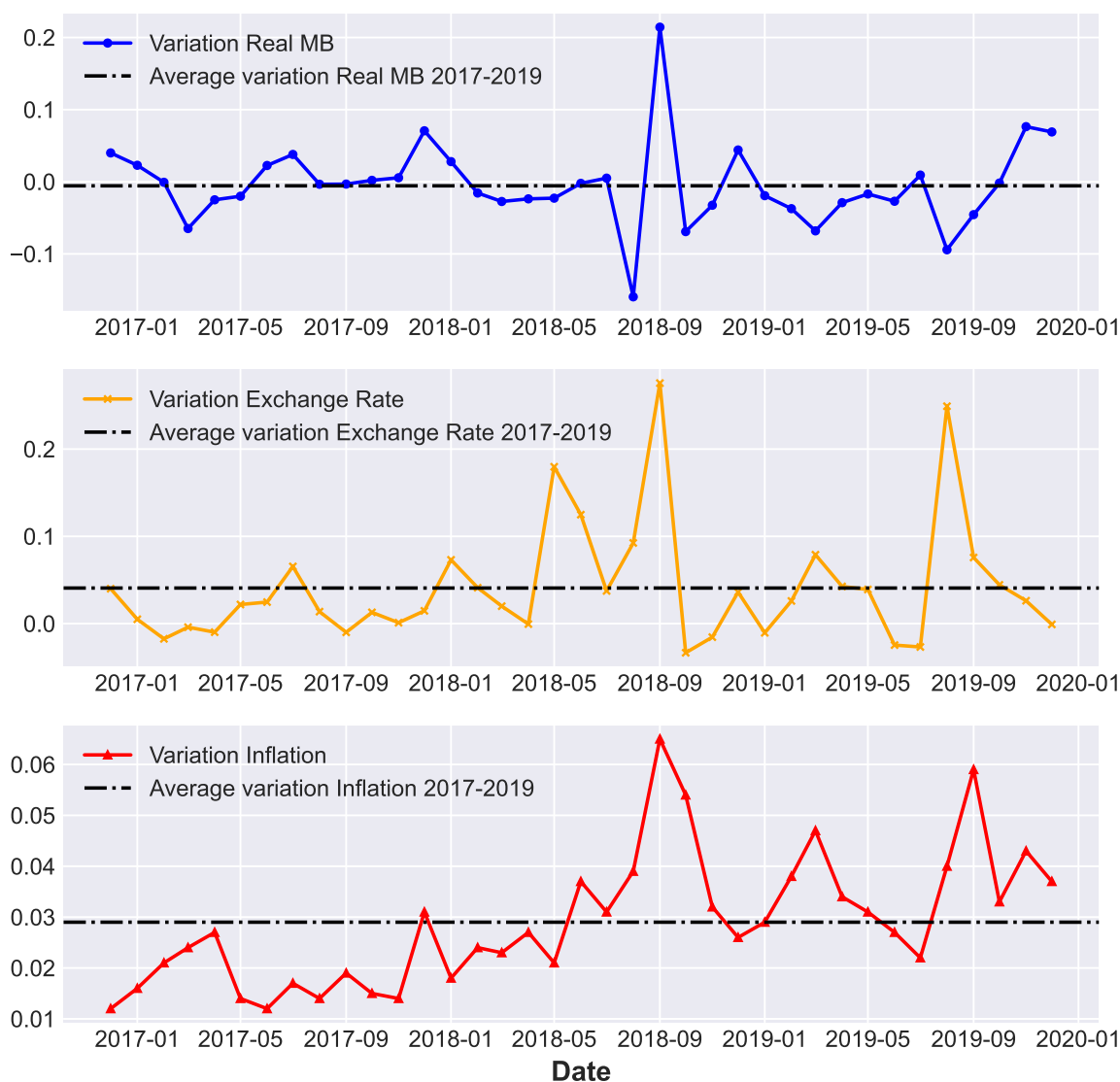
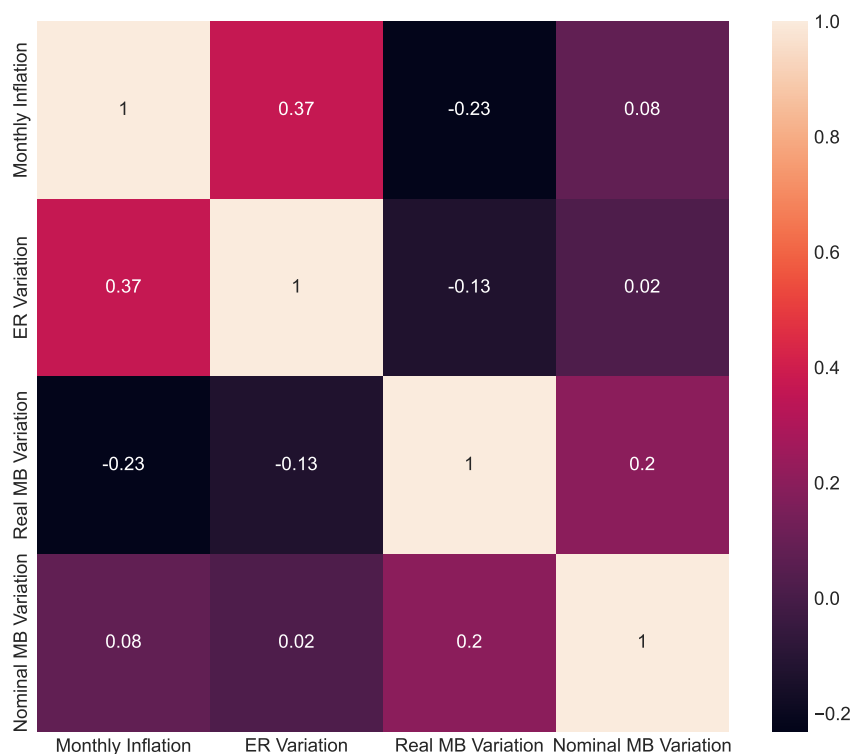


Figure 5: Month-to-month Variation

Finally, if we were to analyze the correlations between the variables during the economic crisis period, which is from January 2018 until December 2019 we would get the following results.



The highest Pearson Correlation Index is shown between inflation and the variation of the exchange rate (0,37), higher than the variation on the nominal monetary base (0,08). Surprisingly, for the period 2018-2019, the correlation coefficient between inflation and the real monetary base variations is negative (-0,23).

3 Final Comments

"Whenever I visit a country, they always say: 'You don't understand, Professor Dornbusch, here it is different...' Well, it never is."

Rudi Dornbusch

The data would seem to show that a country like Argentina, with a very long inflationary history and which uses the dollar as a store of value for its savings, observes a positive correlation between exchange rate movements and inflation.

That said, while it is understood that inflation is always and everywhere a monetary phenomenon (Friedman, 1963), the particularities of the Argentine economy, given 80 years of irresponsible monetary policies, have altered not only the expectations and behavior of agents, but most likely the structural form of local inflation. That said, it is feasible that local inflation includes a component of the variation of the exchange rate. Historical evidence seems to point out that movements in the exchange affect the inflation rate in the immediate short run via the expectations channel.

Lastly and taking into consideration the experience gathered during the 2018-2019 economic crisis:

- During the implementation of an anti-inflationary plan and in the presence of a run against the currency, it may be necessary to temporarily limit the inflow and outflow of capital and the sale of foreign currency in order to avoid abrupt changes in the exchange rate. That is to say: in times of crisis, and in order not to squander all the effort made in monetary matters, maintaining a relative stability of the dollar should be considered essential.
- However, it is necessary to understand that this type of recommendation should be seen as an exceptional resource and that under no circumstances should it constitute the main anti-inflationary policy tool of any plan. Thus, this exceptional resource should be used only when the structural changes necessary to curb inflation have been implemented, that is, when a substantial reduction of the fiscal deficit, the main creator of inflationary pressures, is already underway. In a nutshell: *heterodox policies might temporally complement orthodox policies if and only if the latter have already taken place.*

References

- [1] Calvo G. (1986) “Fractured Liberalism: Argentina under Martínez de Hoz”. University of Chicago
- [2] Cavallo D. (2013) “Camino a la estabilidad. Cómo derrotar a la inflación para avanzar hacia el desarrollo económico y el progreso social”.
- [3] Cortés Conde R. (2013) “The Political Economy of Argentina in the Twentieth Century”.
- [4] Fernández M. (2021) “Estabilizaciones transitorias y permanentes usando al tipo de cambio o la cantidad de dinero como anclas nominales”. Universidad del CEMA.
- [5] Friedman M. (1963) “A Monetary History of the United States, 1867-1960”.
- [6] Neder and Descalzi (2017) “Financing Fiscal Deficits. Intertemporal approach under different exchange rate regimes”. Universidad Nacional de Córdoba.
- [7] Sturzenegger F. (2019) “Macri’s Macro: The Elusive Road to Stability and Growth”. Universidad de San Andres.