

Macri's Macro: The Elusive Road to Stability and Growth

ABSTRACT This paper reviews the various macroeconomic stabilization programs implemented during the Macri government between 2015 and 2019. After an initial success, each program was discontinued because of a distinct form of fiscal dominance: as pensions are indexed with a lag and represent a large portion of spending, quick disinflations jeopardize fiscal consolidation. Thus, lack of progress on the fiscal front was the fundamental reason why the objective of macroeconomic stability remained elusive.

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

—Professor Rudi Dornbusch to his students, as recalled by the author

On December 10, 2015, Mauricio Macri was sworn in as president of Argentina. Macri was an unexpected character for such a position: an outsider coming from Argentina’s business elites who had left that coveted world to become first the president of a popular soccer team and later the mayor of the city of Buenos Aires. His own personal story of change symbolized what he wished for his country: a change that was expected to reverse Argentina’s decades-long decline.

Note: The events in this paper are based on the recollection of the author, who served as the governor of the Central Bank of Argentina from December 2015 until June 2018.

Conflict of Interest Disclosure: The author served as governor of the Central Bank of Argentina from December 2015 until June 2018 and is professor of economics at Universidad de San Andrés and an adviser for Latus View, an investment firm. Beyond these affiliations, the author did not receive financial support from any firm or person for this paper or from any firm or person with a financial or political interest in this paper. He is currently not an officer, director, or board member of any organization with an interest in this paper. No outside party had the right to review this paper before circulation. The views expressed in this paper are those of the author and do not necessarily reflect those of Universidad de San Andrés or Latus View.

Macri's presidency sparked interest worldwide. The soft-spoken Macri, emphasizing moderation, empathy, and democratic values, had dethroned a 14-year hold on power by the Peronist party. His fight had been that of a kind word against an aggressive state machine with plenty of resources, David versus Goliath. As Argentina slid closer to becoming a more authoritarian left-wing populist country, the world gazed on in awe. Argentina, a member of the G-20, could transform the political spectrum throughout the region. Thus, Macri's triumph, which reversed course, was received with a sense of relief.

The same sense of relief and quiet optimism was shared by Argentina's population, as well as by Macri's team. The program they had set up envisioned a baseline annual growth rate of 3 percent, though deep down they believed this was a conservative number. Inflation would gradually come down, and they expected it to be around 5 percent by the end of Macri's first term. As a result of this combination, real wages would have increased and populism would have been proven wrong.

Yet by the end of Macri's presidency, things had turned out very differently. Output had actually decreased by more than 4 percent (close to 8 percent in per capita terms), and inflation had added nearly 300 percent to the price level. By the end of the term, nobody could help feeling a sense of frustration. Should things not have turned out much better? Did things work out so badly because necessary measures were too painful and were not tackled? Was what happened the result of external factors? Was it the result of self-inflicted mistakes? Was it an unavoidable consequence of the situation the government had inherited? Or was it confirmation that Argentina is a lost cause and will never overcome its problems? This paper attempts to shed some light on these questions.

The paper proceeds as follows. Section I begins with an analysis of the initial conditions. My conclusion is that the starting point was worse than expected and perceived at the time. Section II discusses the main components of the initial plan: a gradual fiscal adjustment, inflation targeting, and a floating exchange rate, together with the reasons why this plan was chosen. Section III, the core of the paper, discusses the first two years of the program, when inflation targeting was implemented. The results, on the one hand, were a consistent disinflation driven by expectations, at a pace that was comparable with other experiences but slower than expected and slower than the preestablished targets. Fiscal policy, on the other hand, suffered a large initial worsening relative to the plan. The subsequent efforts at fiscal consolidation were not enough and led to a collision with the stabilization program. This collision was not the result of an attempt to secure

more resources from the Central Bank (BCRA) but rather the result of a disagreement with the speed of disinflation: its fast pace jeopardized fiscal convergence because half of government spending is indexed backward. Section IV discusses the unraveling of the program, which started with changing the inflation targets at the end of 2017, leading to a series of successive crises that lasted until the elections, almost two years later. Section V endeavors to draw some lessons. My main conclusion is that the program failed because an excessively lax fiscal policy led to a conflict with the Central Bank that resulted in weaker monetary institutions, which, in turn, sent the economy into turmoil. In a paradoxical twist, it was the embracing of populist fiscal policy that undermined the administration's efforts to prove populism wrong.

I. Initial Conditions

Perhaps a good way to start is to review the conditions inherited by the incoming government at the end of 2015. The inheritance included four years of stagnation, a large and growing budget deficit, persistent high inflation, exchange rate controls that had led to a black market exchange rate trading at a large premium relative to the official rate, utility prices that had been frozen in spite of high inflation, and lack of reliable statistics. On the positive side, the current account deficit was not too large, though it had been growing. Table 1 shows the starting points of these variables, among others.

The issue of debt levels requires discussion, given that it was the centerpiece of the debate on the legacy left by the previous government. The previous administration argued that it had managed to achieve a dramatic reduction in the level of debt-to-GDP and, particularly, in the debt owed to private creditors. This was supported by official data as shown in figure 1 ("Gross debt with private creditors as defined by the government") and in table 1 ("Official debt").

Yet, I believe that some adjustments should be made, as some of the changes in debt levels came hand in hand with changes in the government's assets or liabilities, creating a different dynamic on the government's net worth. For example, in 2014 the government issued about US\$ 6.2 billion in government bonds to purchase a 51 percent equity stake in the oil company (YPF).¹ However, this debt increase came with a simultaneous growth

1. Resolution 26/2014 of the Secretariat of Finance (Ministry of Finance). The purchase of 51 percent of YPF occurred when the price of West Texas intermediate (WTI) was US\$ 101 per barrel. Five years later, the market value of that 51 percent was just US\$ 3.7 billion.

Table 1. Initial Conditions

Variable	Inflation (%)		GDP growth (%)		Primary fiscal result		Current account		Official debt		Adjusted debt		Central Bank's net worth		Black market FX Premia	
	Var. y/y ^a		Var. y/y ^a		% GDP		% GDP		% GDP		% GDP		USD Btl ^b		Annual average	
2011	22.80		6.00		0.20		-0.80		20.20		24.20		-32,642		5.90	
2012	24.40		-1.00		-0.20		-0.20		19.00		23.00		-47,000		32.50	
2013	27.80		2.40		-0.70		-2.00		20.00		27.00		-54,465		56.50	
2014	40.20		-2.50		-0.80		-1.40		19.50		30.00		-70,552		38.20	
2015	24.80		2.70		-3.80		-2.50		22.50		40.00		-92,971 ^c		41.50 ^d	

Sources: Provincial Statistical Institutes and Congress CPI, INDEC, Ministry of Finance, BCRA, Bloomberg.

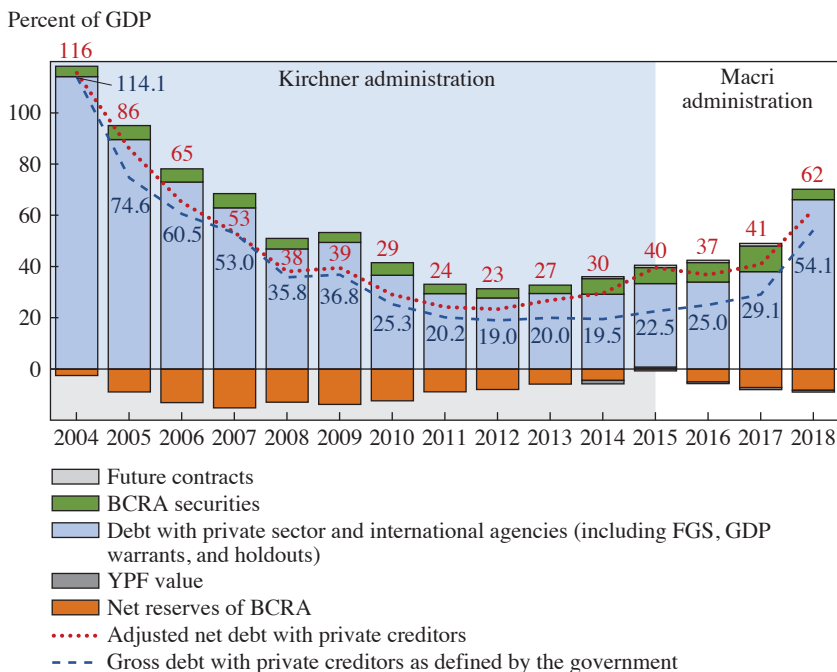
Notes: Inflation for 2011 and the first half of 2012 is an average between the San Luis Province CPI and Congress CPI; from the second half of 2012 to the end of 2015, an average between San Luis Province CPI and CABA CPI is used; CPI Dec/Dec variation. GDP growth is computed using the GDP measured in 2004 constant pesos. Fiscal result does not include Social Security Fund (FGS) and Central Bank transfers to the Treasury. Official debt refers to public debt with private creditors and international agencies. Adjusted debt is the author's elaboration; it is calculated as the official debt plus FGS's sovereign bonds, GDP warrants, debt with holdouts, and the Central Bank's securities, minus the Central Bank's net international reserves and the value of the shares held by the national government of the oil company YPF (nationalized in 2014).

^a Year-on-year variation

^b End of period

^c As of December 9, 2015

^d Until the liberalization of FX market

Figure 1. Adjusted Net Debt with Private Sector

Source: Author's elaboration based on BCRA, Ministry of Finance, INDEC, Bloomberg.

in assets and as such does not alter the government's net worth. In contrast, when the government nationalized the pension system, it absorbed the government debt that pension firms had accumulated over the previous decade, generating a sharp reduction in debt owed to third parties. But at the same time the government took over the liabilities with pensioners that this debt was supposed to finance. As a result, there was no change in net indebtedness (only a conversion from contractual debt into a government spending obligation). A third relevant adjustment to be considered is the role of the Central Bank's net reserves. If the government cancels debt using Central Bank reserves, it reduces both debt and assets, without a change in net worth. In fact, other countries report debt only net of Central Bank reserves.

Adjusting these changes in assets and liabilities is a difficult task. How should some of these liabilities be measured? For example, what is the net present value (NPV) of the future pensions that the government took over

when it nationalized the pension system? Can they be defaulted more easily or less easily than contractual debt? Does this affect the value of this liability?²

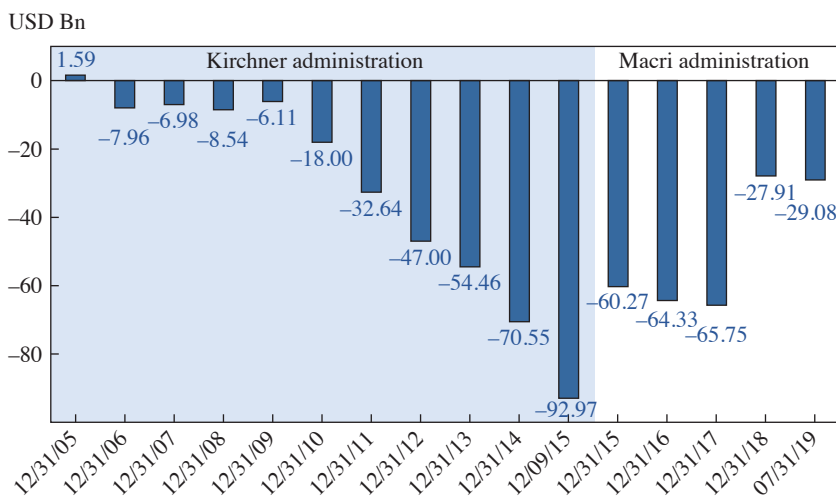
In order to address these issues, I have made five corrections to the official account that should be relatively uncontroversial. First, I net out Central Bank net international reserves. Second, I consider that the liabilities assumed by the government at the time of the nationalization of the pension system were equivalent to the debt that was nationalized (and its rollover). Third, I add the debt from the U.S. dollar future contracts issued in 2015 (using the actual cost paid in 2016). Fourth, I net out the value of YPF's assets. And finally, I include an estimate of the debt to holdouts (also using the numbers agreed on in 2016 to cancel these obligations). The results are shown in the column "Adjusted debt" in table 1 and the different components are identified in figure 1.

These corrections show that, until 2012, there was a substantial reduction in debt as a result from a restructuring in 2005, economic growth, fiscal surpluses, and the appreciation of the real exchange rate. Yet starting in 2012 debt began to creep up again. In fact, between 2012 and 2015, the debt-to-GDP ratio had increased from 23 percent to 40 percent. In conclusion, while the levels of debt remained low, they had increased significantly in the four years prior to the change in government.

Even more striking is the evolution of the Central Bank's balance sheet. During the previous years, the government had systematically paid back debt using Central Bank reserves. In exchange, the government stashed U.S. dollar-denominated *letras intransferibles*, that is, nonnegotiable notes, in the Central Bank. These notes paid a below market rate and had a ten-year maturity. The first was due in 2016, although the budget law enacted in 2015 had extended this maturity an additional decade.³ In short, the NPV of this bill was minimal at most and had zero liquidity. As a result, the quality of the Central Bank's balance sheet deteriorated very rapidly. Netting out the *letras intransferibles* and the domestic credit account (*adelantos transitorios*), the net worth of the Central Bank took a nosedive between 2006 and 2015, as shown in figure 2.

2. For a detailed discussion about this topic, see Levy-Yeyati and Sturzenegger (2007).

3. Law no. 27198.

Figure 2. Net Worth—Central Bank of Argentina

Source: BCRA.

II. The Plan and the Cleaning Up Phase

II.A. The Plan

During the year prior to taking office, a group of economists, business-people, and government officials gathered by Fundación Pensar, a think tank sponsored by Macri's political party, started working on a program in case Macri won the election. Only one constraint was imposed on the group: the reduction of the fiscal deficit had to be gradual. Beyond that limitation, the candidate left the team free to design the program as it seemed fit.

The definition of a “gradual” adjustment (*gradualism*, as it later became known) had both an economic and a political motivation. On the economic front, the consensus was that, as government debt was low, Argentina would be able to access international funding and that it is always better to smooth over economic adjustments.⁴

4. An early such approach was Thatcher's program of macroeconomic stabilization. Sargent (2013, 14) says: “A hallmark of Mrs. Thatcher's publicly announced strategy is gradualism . . . her government did not propose to execute any abrupt or discontinuous changes in aggregate government variables. . . . Instead, the Conservatives proposed to carry out a preannounced and gradual tightening of monetary and fiscal policies over a five-year period.”

But the main goal was political. The Macri administration carried the stigma of being a right-wing or center-right party, and as such it was anticipated that it would kick off its government with a large fiscal and monetary adjustment. However, the political team thought it was essential to remove this stigma. The argument was that if the Macri administration was seen as a different political object, this would build political capital which would allow greater policy flexibility in turbulent times. In other words, while gradualism entailed the risk of increasing the level of debt during the initial years, it was also argued that not taking this path involved the risk of weaker political support later on.⁵

Despite this mandate, the program (summarized in table 2) envisioned an initial budget correction of 1.5 percent to 2 percent of GDP, mostly from a reduction of subsidies (universally considered too large), with a slowly declining deficit thereafter. The program envisaged an annual growth rate of about 3 percent. With a tax burden of the national government of around 20 percent (Argentine Ministry of Treasury 2018), this entailed a 0.6 percent of GDP increase in fiscal resources each year. Thus, to the extent that real expenditure remained constant, the government could expect to keep the deficit relatively stable, as the resources derived from growth would allow the absorption of the biggest fiscal challenge facing the government: the fact that, as inflation decelerated, the real value of pension spending would grow as a result of backward indexation. At any rate, the team expected growth to be faster, so a sense of (maybe unwarranted) easiness regarding fiscal results was transmitted.

On the monetary front, the team selected an inflation targeting regime. The speed of disinflation, however, was determined by the need to coordinate monetary and fiscal policy, and therefore constrained by the agreement that part of the fiscal deficit would be monetized to diminish the need for debt financing during the transition to a healthier fiscal result. (In addition, it was believed that the money printing agreed upon to finance the deficit should not be sterilized, given the weakness of the Central Bank's balance sheet.) Naturally, this led to the idea of establishing multiyear inflation targets that were set on the basis of the resources to be transferred in each year. In all, the program assumed that, over the four years of Macri's administration, inflation would add up to 73 percent (table 2), though it was expected to be below 5 percent toward the end of his term.

5. The previous center-right experience, the de la Rúa presidency, had indeed started with a quick attempt at fiscal consolidation, which had met universal criticism. De la Rúa resigned just two years into his term.

Table 2. The Predictions of the Fundación Pensar Team in June 2015

<i>Variable</i>	<i>Units</i>	2015	2016	2017	2018	2019
GDP growth	%	2.7	-2.1	2.7	-2.5	-2.3
Inflation		2.0	1.0	4.0	3.0	3.0
	yoy average (%)	26.0	39.3	25.7	34.3	53.5
		28.5	38.2	12.5	6.9	4.1
Nominal exchange rate	USD vs. Arg \$	9.3	14.8	16.6	28.1	48.2
		9.3	15.6	16.0	16.9	17.0
Primary deficit	% GDP	-3.8	-4.2	-3.8	-2.6	-0.4
	Effective ^a	-3.8	-5.4	-4.1	-2.6	-0.4
	Projected	-4.6	-2.5	-2.5	-2.4	-2.2
Monetary base growth	Arg \$ Mn	161,325	197,775	179,449	407,864	313,528
		163,600	94,972	81,508	59,337	43,527
Monetary base growth	%	40.5	26.6	24.7	36.0	28.9
	Projected	35.4	15.3	11.3	7.4	5.1
Financial assistance of Central Bank to the Treasury	Arg \$ Mn	158,524	159,997	150,000	30,500	394,245
	Effective ^c	158,524	136,098	122,526	-21,283	317,000
	Projected ^e	158,524	94,972	81,508	59,337	43,527
Financial assistance of Central Bank to the Treasury	% GDP	2.7	1.9	1.4	0.2	1.8
	Effective ^c	2.7	1.7	1.2	-0.1	1.5
	Projected ^e	2.8	1.2	0.9	0.6	0.4
Official reserves of the Central Bank	USD Mn	25,563	39,308	55,055	65,806	43,785
	Projected	25,766	27,888	38,198	51,339	66,084
Nonmonetary liabilities of the Central Bank	% GDP	7.0	8.5	10.9	5.0	4.6
	Projected	7.0	7.6	9.1	11.1	12.8
Current account	USD Mn	-17,622	-15,105	-31,598	-28,003	-7,500
	Effective	-17,622	-11,958	-12,363	-16,289	-22,361
	Projected	-7,605				

Source: Author's elaboration based on INDEC, BCRA, and Ministry of Finance. Data for 2019 for the year, except reserves, monetary growth, and nonmonetary liabilities of the Central Bank, which go through December 15, 2019, the end of Macri's term.

^a Primary deficit including resources obtained from tax amnesty

^b Primary deficit excluding resources obtained from tax amnesty

^c Gross financial assistance to the Treasury

^d Financial assistance to the Treasury net of the interest generated by the government bonds held by the BCRA

It was also agreed that Argentina would pursue a floating exchange rate regime. The consensus on this was a legacy of Argentina's trauma over the final period of convertibility, a fixed exchange rate regime that had lasted a decade, between 1991 and 2001. While very successful in its initial years, its inability to adjust relative prices after the 1998 Russian default had plunged the economy into a four-year-long crisis that ended with a banking crisis and a dramatic fall in output. In addition, international experience had enshrined floating rates as the agreed upon standard, due to their ability to smooth out external shocks and deliver higher growth and lower volatility in output.⁶

In all, table 2 shows what the program envisioned at the start of the government (in italics), and what actually happened. The rest of this paper attempts to explain why the divergence was so big.

II.B. Capital Controls Liberalization

At the outset, the government faced significant challenges: net international reserves were negative, there were no liquid reserves to tap, and, as the government had campaigned on the promise to unify the exchange rate, both the market and exporters were expecting a depreciation of the currency, so exports had decreased sharply.⁷ Any attempt to delay a solution would have just postponed facing the issue, while the government would lose momentum and renege on one of its fundamental campaign promises. D-day was decided for a week later, December 17.

The relaxation of capital controls was not only a matter of economic freedom but also of economic efficiency. It eliminated a heavy burden on exporters and normalized their trade relationships: since they were not forced to convert their foreign proceeds into local currency almost immediately, they were able to offer credit to their clients abroad.

It was decided that capital controls would be lifted not suddenly but gradually. Two main reasons supported the view that a gradual relaxation should be undertaken. First, there was no clear idea of how money demand would react after four years of capital controls and forced peso savings.

6. There is extensive literature on the relative benefits of fixed versus floating rates. See, for example, Levy-Yeyati and Sturzenegger (2001, 2003, 2005, 2007, 2016), Di Giovanni and Shambaugh (2008), Schmitt-Grohé and Uribe (2012), and Calvo and Reinhart (2002).

7. On December 10, 2015, the first day of the new government, the Board of the Central Bank was about to approve a bank and exchange rate holiday, a move that was quickly averted by the incoming (not yet appointed) authorities. Commercial banks agreed to operate as a de facto exchange rate rationing mechanism until the controls could be dismantled. This allowed for a transition without disruptions in the functioning of the financial sector.

Second, there was allegedly a large stock of pending import payments and dividend distributions to be made. Nobody was sure to what extent this was true or not, or how real these requests were, but they posed a latent risk. In addition, to make the whole picture complete, net reserves were negative (see figure 9, panel b).

The desired impact on expectations would be achieved with two features: all commercial flows would be freed immediately and no authorization would be required to buy foreign exchange (FX) for up to US\$ 2 million per month. This number was so unexpected (some analysts expected the government to allow buying in the tens of thousands) that the team believed it would create the perception of a substantial change. Requests to pay for previous imports would be authorized gradually over time and were queued according to the original request day. The freeing of the demand for this purpose was expected to be fully completed by midyear.

At the same time, the Central Bank forced banks to sell their net FX exposure to the Central Bank on December 16, the day prior to the unification, allowing them to repurchase this exposure on December 17, only after the jump in the exchange rate. This implied a gain of about 7 billion pesos (1.2 percent of the money base) and served to compensate, at least partially, the losses the Central Bank was expecting from a large stock of dollar future liabilities accumulated in the previous administration.⁸ Simultaneously, floors in deposit rates and ceilings in lending rates were removed.

D-day was December 17. The night before, the Central Bank made an agreement with the People's Bank of China for an immediate disbursement of a US\$ 3.1 billion loan by converting the equivalent amount of yuan from a currency swap into U.S. dollars.⁹ In addition, grain exporters (who had hoarded grain in expectation of the exchange rate unification) had offered to sell US\$ 330 million per day on the market for three weeks, a very significant amount considering that the FX market operated at only about double this amount.¹⁰

Net reserves were negative, and liquid resources available to the Central Bank that day were just a mere US\$ 400 million. The market opened at 13.90 ARS/USD and closed at ARS 13.30, a price between the

8. See the BCRA's balance sheet for 2016, note 4.23.11.

9. See BCRA communication P50675.

10. See press conference <https://www.youtube.com/watch?v=1RcVAMJAjMM> and also <https://www.lanacion.com.ar/politica/el-gobierno-elimina-el-cepo-y-anticipa-una-devaluacion-del-orden-del-40-nid1854962>.

previous official price of ARS 9.83 and the black market price of approximately ARS 15.¹¹ The Central Bank did not intervene that day, nor in the following days, when the exchange rate moved freely around this value. In all, this was regarded as an unexpected first success of the government.

II.C. Futures, Holdouts, and Initial Steps in Monetary Policy

The Central Bank also faced the challenge that the previous government had sold a sizable number of future contracts falling due throughout June 2016 at off-market prices. The Central Bank's short position on FX futures was approximately US\$ 17,400 million, which, when comparing the fixing price and the informal exchange rate, delivered an expected cost of 62,750 million pesos (11.2 percent of the monetary base).¹²

Two things alleviated the burden. On the one hand, ROFEX, which was the market that traded these contracts, unilaterally decided to change the terms of contracts signed after September 29, 2015 (it was assumed that after this date participants had engaged only for "speculative reasons").¹³ This reduced the cost by about 11,085 million pesos. The cost of operations conducted over the counter by banks was partially compensated by purchasing the banks' FX position described above, which saved an additional 6.9 billion. All in all, the costs were reduced by nearly 18,000 million pesos, and the total effective cost of these futures for the BCRA ended at 53,719 million pesos (9.6 percent of the monetary base).¹⁴

At the same time, the government set out to solve the long-pending issue of Argentina's default. The saga had reached a dead end a few years earlier with a ruling in favor of the holdouts on the basis of a *pari passu* clause that precluded payments to current debt if payments were not made in full to holdouts. This had motivated the previous administration to default on the entire debt. The Treasury started working on this issue and reached an agreement in April. Given the complexity of this negotiation, the details are deferred to online appendix 1 of this paper. The overall

11. See <https://www.ambito.com/economia/primer-operacion-el-mulc-se-negocio-1390-us-1-millon-n3920252>.

12. See BCRA (2016c, exhibit 8).

13. See Rofex Comunicación, no. 657. <https://www.rofex.com.ar/upload/comunicaciones/Comunicaci%C3%B3n%20657%20-%20Declaraci%C3%B3n%20emergencia%20art%C3%ADculo%204%C2%B0%20Reglamento%20DLR.pdf>.

14. See the BCRA's balance sheet for 2016, note 4.23.11, and BCRA (2016c, exhibits 7 and 8).

payment to settle with the holdouts amounted to US\$ 9.3 billion. Together with the removal of capital controls and the resolution of the futures issue, this entailed a significant normalization of the economy.

The Central Bank kicked off with a strongly contractionary monetary policy to ensure a managed removal of capital controls. Money demand was uncertain after four years of capital controls, but money supply also became difficult to pin down. At the end of each year, reserve requirements in Argentina were averaged for the period December–February. However, in December, banks had stockpiled an unusually large amount of liquidity in anticipation of a run on deposits (BCRA 2015). These resources had not been used, given that the transition was smoother than expected, so they found themselves covering most of the reserve requirements through February. The result was that money supply in January and February could grow significantly, as the unused excess reserves in December could be allowed to run down reserve requirements in the following two months.

Somewhat unaware of this, in January and February, the Central Bank absorbed significant amounts of money at decreasing interest rates, misreading the fall in interest rates, while contracting the monetary base, as an improvement in credibility. So, while the Central Bank absorbed 25 percent of the money base, it allowed the interest rate to fall significantly (from 38 percent to 30.25 percent). The result was an immediate reaction of the exchange rate, which moved from 13.55 to 15.91.¹⁵ Attempts to smooth the exchange rate spike by using reserves (which had started to grow since the relaxation of exchange rate controls) were not successful and were quelled only when interest rates were increased to 38 percent at the beginning of March.

By then, the real amount of money had fallen by 16 percent, substantially more than what the government had anticipated. In hindsight, monetary policy should have been significantly tighter in these first months (yet this mistake in the initial months of the year would be repeated again in 2017, 2018, and 2019!). At any rate, the difficulties of these first months convinced the authorities that assessing money demand and supply movements would be too difficult and that a mechanism should be quickly implemented to smooth out these large swings.

During those initial months, inflation rates registered an increase of 5.0 percent in December, 3.8 percent in January, 3.4 percent in February,

15. Data for the exchange rate can be found at <http://www.bcra.gov.ar/Pdfs/Publicaciones/Estadisticas/com3500.xls>.

3.2 percent in March, and 5.2 percent in April, this last spike the result of the government having decided to bundle most tariff adjustments in April.¹⁶ Only after this did inflation decelerate.

III. The Inflation Targeting Regime

As a result of the difficulties of those first months, in March the Central Bank announced a convergence process to an inflation targeting (IT) regime. I organize the discussion of the regime around four main questions. First, was there a rationale for using inflation targeting in Argentina? Second, were the preconditions met to launch an IT regime? Third, what was the adequate speed of disinflation and how was it chosen? And finally, what were the results? On this last point, I discuss both the transmission mechanism and the policy response. I then briefly discuss the evolution of fiscal accounts and the Central Bank's balance sheet—two factors that built up tensions which ended up being relevant in the program's eventual undoing.

III.A. A Framework to Assess Inflation Targeting

A disinflation program requires a mechanism to coordinate expectations along the disinflation path. While consistent monetary and fiscal policies cannot be avoided, the alternatives include a plethora of possibilities: using the exchange rate as an anchor, using income policies, reverting to monetary aggregates targets, or the more conventional (at least at the time) framework of inflation targeting with floating exchange rates.

Recent experience shows that the instruments chosen vary across countries. Of the twenty-one countries that, having experienced inflation rates above 20 percent, implement an IT regime with a floating rate today (including Argentina at the time), nine chose to disinflate with a floating exchange rate, while twelve used an additional anchoring mechanism on the convergence path. This second group always used the exchange rate as an anchor; with a few exceptions like Israel (Bufman and Leiderman 1998; Frenkel 1996; Maman and Rosenhek 2008) and Iceland (Guðmundsson and Kristinsson 1997; Matthiasson 2008) that also resorted to income policies (wage and price freezes) and the Slovak Republic (Beblavy 2002; Nagy 2016) which also targeted

16. Due to lack of official statistics at the federal level, these numbers are derived from the average between the consumer price indexes (CPIs) of the City of Buenos Aires and San Luis Province.

monetary aggregates targeting. Interestingly, all programs implemented after 2000, with the exception of Kazakhstan, were implemented using a floating regime. (See online appendix 2 for a detailed description.)

Consistent with the diversity of experiences, there is extensive literature discussing the merits and benefits of each alternative. Exchange rates typically help to quickly coordinate expectations, something that had already been tested in many successful stabilization episodes in the 1980s and early 1990s (convertibility in Argentina, the Plano Real in Brazil, or Israel's stabilization program).¹⁷ In addition, a large body of literature suggests that exchange rate-based stabilizations lead to initial booms (Calvo and Végh 1993), thus helping build political support for reforms. Fixed exchange rates also provide a sign of commitment as well as an enforcement mechanism for fiscal discipline.

Barring the fact that using the exchange rate as an anchor requires holding sufficient reserves (or allowing a large initial depreciation), it also implies forgoing the exchange rate as a shock absorber, a trade-off between credibility and flexibility well understood in the literature on optimal currency areas and second generation currency crisis models. In fact, as countries improved the credibility of their macro frameworks, they increasingly relied on exchange rate flexibility as a shock absorber (Levy-Yeyati and Sturzenegger 2016). Thus, the question is to what extent policymakers were willing to forgo the initial benefits of exchange rate anchoring to build this adjustment mechanism. Tornell and Velasco (2000) turn on its head the notion of exchange rate anchoring as a credibility device. According to them, floating rates signal unsustainable policies earlier on, therefore providing stronger commitment incentives.

In the case of Argentina, I acknowledge, in Sturzenegger (2016a), these trade-offs and argue that it was worth paying the short-term costs of not having the initial boom and an easier coordination of expectations in order not to forgo the use of the exchange rate as a shock absorber, which was perceived as necessary to build a more resilient framework. Of course, the protracted recession of 1998–2001 under a fixed exchange rate weighed heavily in this conclusion. It was also believed that credibility would be enhanced by using a framework that was mainstream. This was also the reason why the use of incomes policies was discarded. In addition to the fact that among recent stabilization experiences it had

17. See, for example, Bruno and others (1988), Calvo and Végh (1999), and Fischer (2001).

been used only in two cases (one of which was Iceland, whose output performance had been poor; see figure 4). In addition to not being standard practice, incomes policies had been the bread and butter of recurrently failed populist experiences of yesteryear, making them an unattractive option.¹⁸ The government also believed that it would dilute its power if it had to sustain an ongoing debate with the traditional political establishment at the decision table, more so if that decision table were to implement policies similar to those implemented by the previous administration, from which the current administration wanted to differentiate itself. Important in this assessment was that wage indexation, one of the main issues tackled by incomes policies, was forbidden, so wage negotiations could be forward-looking and, in fact, ended up being so (see footnote 33). At any rate, inflation and inflation expectations fell very quickly at the beginning of the program. Therefore, to the extent that incomes policies are suggested as a mechanism to help coordinate expectations, it seems this was not the main difficulty faced by the stabilization effort.¹⁹

Barring the use of the exchange rate and incomes policies, the team faced the alternative of using monetary aggregates or inflation targets as anchors (the latter implemented by using an interest rate policy). Frankel, Smit, and Sturzenegger (2008) help to understand some of the trade-offs involved. Consider an output equation that depends on demand and supply shocks (d and s), as well as on monetary shock ($m - m^d$):

$$y = d + s + \beta(m - m^d)$$

and an inflation equation, which also depends on the same three shocks:

$$\pi = m - m^d - \omega s + v d.$$

Here all shocks have zero mean, so the issue at stake is volatility (β , ω , and v are response parameters). Let us assume two possibilities: an

18. See Dornbusch and Edwards (1991) for a survey.

19. One point, however, where it may have helped, was that half of government spending was indexed to past inflation, therefore some sort of agreement as to how to deal with the impact of disinflation on actual spending would have been useful. This effect was disregarded.

IT regime where m is chosen to make $\pi = 0$, and another possibility—monetary aggregates—where $m = 0$. Under inflation targeting (assuming all covariances are equal to zero) we have:

$$\sigma_{\pi}^2 = 0$$

$$\sigma_y^2 = \sigma_d^2 (1 - \beta v)^2 + \sigma_s^2 (1 + \beta \omega)^2,$$

while under monetary aggregates, these volatilities are:

$$\sigma_{\pi}^2 = \sigma_{m^d}^2 + \omega^2 \sigma_s^2 + v^2 \sigma_d^2$$

$$\sigma_y^2 = \sigma_d^2 + \sigma_s^2 + \beta^2 \sigma_{m^d}^2.$$

Inflation targeting delivers a more stable inflation, obviously, but output volatility depends on the relative strength of supply shocks (which an IT regime amplifies) and demand and money demand shocks (which an IT regime smoothes).

I confront this basic framework with the data in the following way. In order to identify the volatility in money demand, I look at periods of constant interest rates in various IT regimes. Given that money supply is endogenous, changes in money stock can only be associated with changes in money demand, so this procedure provides a valid identification mechanism for money demand shocks.²⁰ In order to avoid volatility arising from seasonality, I take the period in which this identification can be made in Argentina and compare it to similar periods for other countries where this condition is also met. For supply shocks, I use the volatility in the prices of regulated goods, assuming that this is a valid proxy for changes in the supply conditions of these goods. The results are summarized in table 3, which shows that Argentina exhibits an unusually high volatility both in money demand and in supply shocks.

The fact that *both* shocks are larger in Argentina means that we cannot reach a conclusion on the relative benefits of either regime, though this makes clear that dealing with the volatility of money demand presents a

20. While there are several estimates of money demand—see, for example, Benati and others (2016), Gay (2005), Aguirre, Burdisso, and Grillo (2006), Ahumada and Garegnani (2002)—we believe this approach avoids the need to side with a specific specification.

Table 3a. Money Demand Volatility Compared across Countries

$\sigma_{\ln(M_2/P)}$	Country	Years
0.0431	Argentina	2016–17
0.0416	Peru	2011–12
0.0325	Peru	2004–5
0.0285	Chile	2012–13
0.0282	Chile	2002–3
0.0223	Chile	2017–18
0.0186	U.S.	2010–11
0.0180	Brazil	2015–16
0.0177	Peru	2012–13
0.0160	Chile	2014–15
0.0159	Colombia	2014–15
0.0158	Mexico	2009–10
0.0157	Mexico	2010–11
0.0119	Mexico	2014–15
0.0105	U.S.	2011–12
0.0102	Mexico	2011–12
0.0081	U.S.	2012–13
0.0080	U.S.	2013–14
0.0076	U.S.	2014–15
0.0059	U.S.	2009–10

Source: Author's elaboration based on the statistical institutes and central banks of the respective countries.

Notes: The table compares the standard error of M_2/P across different Latin American countries and the United States for comparable periods of stable monetary policy rate since 2000. The comparison is established for the same months in which the monetary policy rate was fixed in Argentina, that is, from December 2016 to March 2017 and from May 2017 to October 2017.

Table 3b. Regulated Price Volatility Compared across Countries, 2016–18

Country	$\sigma_{\ln(\text{Reg. Prices/CPI})}$	
	Housing, water, electricity, gas, and other fuels	Transport
Argentina	0.1307	0.0428
Brazil	0.0596 ^a	0.0087
Peru	0.0319 ^a	0.0091
Mexico	0.0198	0.0412
Chile	0.0155	0.0136
U.S.	0.0095	0.0178
Colombia	0.0081	0.0227

Sources: National statistical institutes of the respective countries.

Notes: The table compares the volatility in the ratio of regulated prices to the headline consumer price index for the same countries from 2016 to 2018. It uses the COICOP standardized division in the countries in which it is available; for the cases of Brazil and Peru, the categories used are fuels and transport, as defined by their national statistical institutes.

^a Only fuels

particular challenge in Argentina.²¹ Regarding supply shocks, they were very high in 2016 but were about half as much in 2017, when they were more in line with those of other countries.²² The large size of supply shocks and the challenge they posed to the IT framework were mentioned repeatedly.

While the benefits of smoothing over monetary shocks are clear, a drawback of an IT regime is that the inflation rate is not under full control of the authorities, so transitory shocks that deviate inflation from the trajectory have a more detrimental effect on credibility than in a monetary aggregates regime, as it is more difficult to assess if monetary authorities are sufficiently committed to fighting inflation.²³ This credibility effect would later turn out to be a drawback.

Another weakness of the regime arises from the fact that money supply is endogenous, so if expectations are not tamed, the inflation process remains unanchored unless there is a strong policy reaction.²⁴ While inflation expectations declined almost constantly during the IT regime and signaled disinflation going forward, they also remained above the inflation targets, undermining credibility.

III.B. Preconditions for Inflation Targeting

The challenges of implementing IT starting at high inflations are not unknown and in fact have been the source of much debate. Mishkin and Schmidt-Hebbel (2002) discuss at length the mitigating factors for the risk of credibility losses, which are likely to occur during the disinflation path. In particular, they suggest four ways of dealing with these issues: (a) a gradual formalization of inflation targeting over time, (b) a path of disinflation with multiyear targets, (c) avoiding a range in the inflation targets,

21. Money demand is particularly volatile in Argentina because twice a year, salaries receive a 50 percent extra payment, leading to large seasonal swings, and public sector deposits are a relatively large fraction of the financial sector and exhibit substantial volatility. Financial innovation, incentivized by the Central Bank itself, led to a sizable fall in the demand for cash, compounding the volatility in base money demand.

22. During the first four months of 2016, electricity prices were increased by 250 percent, natural gas prices by 195 percent, water distribution by 300 percent, and transportation by 100 percent (BCRA 2016a).

23. An alternative view is that inflation targeting must be understood as “flexible inflation targeting,” meaning that an inflation shock does not need to be reversed later on. In this case, supply shocks need not elicit the reaction assumed in the previous model, as a deviation arising from a supply shock is just explained and not necessarily undone, tilting the balance even more so in favor of inflation targeting. However, if these shocks are larger than expected and require permanent explanations for the deviation from targets, they eventually undermine credibility, a feature that was underestimated.

24. See Sargent and Wallace (1975), Cochrane (2011), and Neumeyer and Nicolini (2011).

and (d) having a reasonable pace of disinflation. The Central Bank tried to take into consideration these recommendations by initially allowing for a transition to IT, though it was announced it would be short (less than a year), and by setting multiyear targets with a pace associated to the agreed upon transfers to the Treasury.²⁵ Contrary to the recommendation, a range was established, which in fact became useless, as expectations converged on the upper bound (this was changed briefly in 2018).²⁶

There is extensive literature that also discusses the conditions required for effective inflation targeting.²⁷ Among these, the typical five pillars are the absence of other nominal anchors, an institutional commitment to price stability, the absence of fiscal dominance, Central Bank autonomy, and policy transparency and accountability.²⁸

The team believed that to coordinate expectations it was necessary for the Central Bank to take ownership of the fight against inflation and to be totally committed to that objective. Regarding the absence of other nominal anchors, there is substantial consensus that this works well once economies have reached their long-term inflation objectives (Agénor and Pereira da Silva 2019), but as to the need to use another anchor during the disinflation phase, opinions are divided. As discussed in the previous section, there were roughly as many countries that deemed it necessary to have an additional anchor (typically the exchange rate) as countries that did not share this view. In the case of Argentina, this debate lingered throughout the IT regime, particularly because of the relevant role that was ascribed to the exchange rate in setting prices and inflation expectations. The Central Bank argued the opposite: that in order to lower pass-through levels it was important for the Central Bank to state that it did not care about the exchange rate at all (Sturzenegger 2016b). I will confront these two views with the data below.²⁹

25. The Central Bank of Argentina announced in detail the transition to IT in a conference on April 28, 2016; see http://www.bcra.gov.ar/Pdfs/Prensa_comunicacion/PresentacionPoliticMonetarias2016.pdf.

26. One issue was specific to Argentina: when the program was launched, there were no official inflation statistics, as the inflation numbers had been significantly tampered with and the new authorities were trying to relaunch a credible inflation statistic. The first available number came in May. Prior to that, the inflation rate of the City of Buenos Aires and San Luis Province were used.

27. See Masson, Savastano, and Sharma (1997), Mishkin (2000), and Mishkin and Savastano (2001).

28. For a recent review of these issues, see Agénor and Pereira da Silva (2019).

29. There is also literature on the role of FX in the reaction function. See Morón and Winkelried (2005), Céspedes, Chang, and Velasco (2014), De Paoli (2009), García, Restrepo, and Roger (2011), and Pourroy (2012).

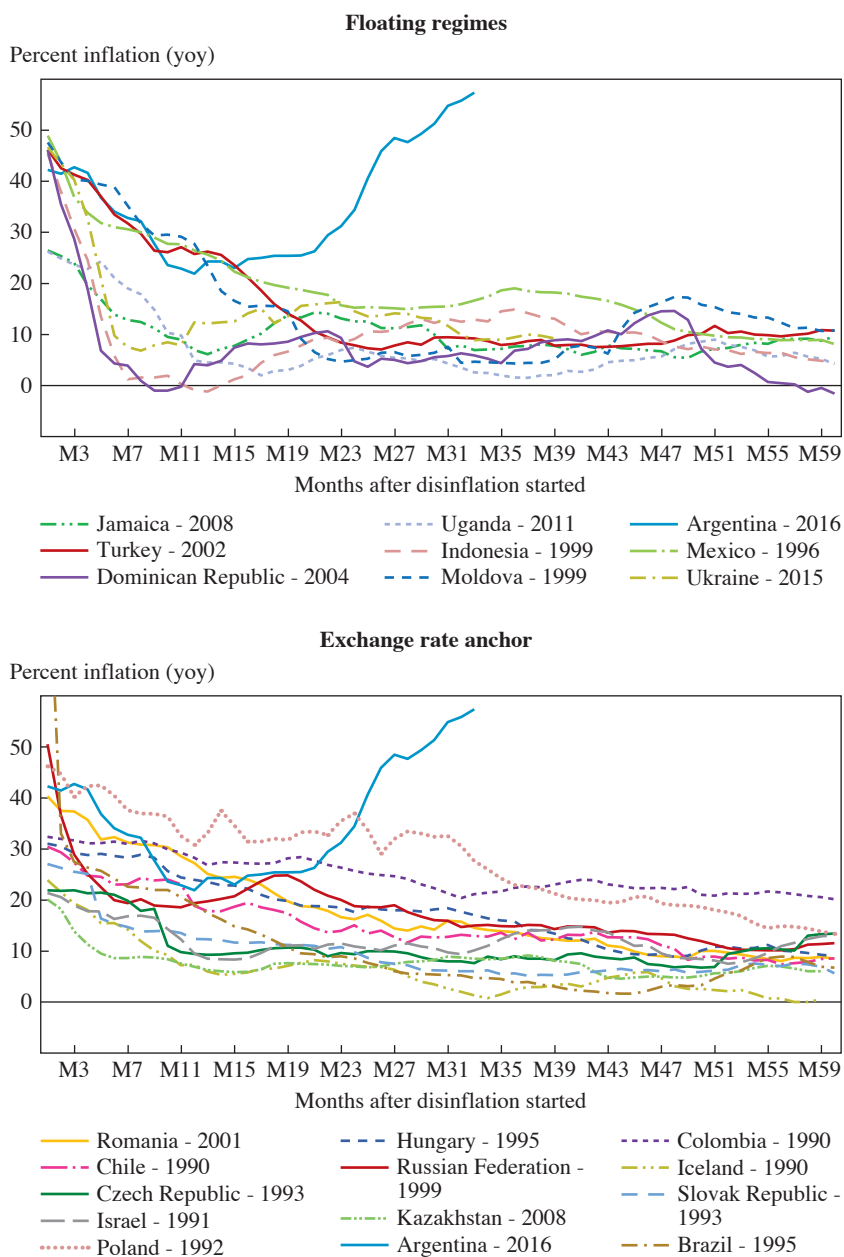
By allowing a floating rate and committing to inflation as the main priority of the Central Bank while implementing policy transparency and accountability (well-defined targets, prescheduled communiqués, and press conferences), the authorities thought most of the preconditions were met. Fiscal dominance was contained by anticipating a path for transfers from the Central Bank to the government, and while these announcements initially met little credibility, it built up pretty quickly as the government stuck to the framework. One important flaw, which would eventually turn lethal, was that the regime lacked Central Bank independence, as the president could easily remove the Central Bank governor. The team believed that an institutional framework was not enough to offer protection from the lack of consistent fiscal and monetary policies, so they relied on delivering results to strengthen their independence, postponing an institutional improvement to a later time when it would also be more sustainable (I will argue below that this was a mistake).

What can be said regarding two hotly debated issues: that Argentina started its disinflation program with a relatively high inflation rate and that it should have used the exchange rate as an alternative anchor?

Figure 3 tries to shed light on these questions.³⁰ It shows all countries that implemented IT or eventually converged to IT but had inflation rates above 20 percent at least once since 1990. For each country, the figure shows disinflation from the last time inflation was above 20 percent, and for those coming from higher rates, from the time they reach a 45 percent yearly inflation rate. In short, the sample attempts to illustrate the final phases of disinflation in each case.

The reason why the graph includes a period prior to the formal launch of IT is that the denomination of the regime changed over time. In the 1990s and 2000s, many central banks focused on disinflation by implementing most of the features of IT regimes but only named their regime as such later in the process, when the denomination became popular. If we focused on the later part, we would be missing most of the picture. Furthermore, once

30. The countries were selected from the IMF report (IMF 2019). The Slovak Republic was included because of having adopted an IT framework before joining the euro area in 2009; see Novák (2011). Data were retrieved from the International Financial Statistics (IFS) of the IMF. The classification of floating regimes and nominal anchor regimes was established with a case-by-case narrative analysis (see online appendix 2). Using a *de facto* classification of exchange rate regimes, such as that in Levy-Yeyati and Sturzenegger (2016), Israel, Colombia, the Czech Republic, and Poland would be classified as floats. The Russian Federation and Kazakhstan would also be classified as floats at the beginning of the disinflation process.

Figure 3. The Path of Disinflation in Countries that Implemented IT

Sources: IMF, San Luis Statistical Office, Buenos Aires Statistical Office, INDEC.

the name started to be used, many countries split the disinflation process into two: a pre-inflation targeting period and a full-fledged inflation targeting. However, this did not cause a relevant change in policies; it simply allowed a larger degree of initial flexibility. Leaving out this initial period would also be a methodological mistake.

The graph does distinguish those cases that implemented disinflation through a pure float and those that used some sort of exchange rate anchor during the initial phases of the disinflation period (in this latter group, I include Iceland, Israel, and the Slovak Republic, which used other anchors as well).

Figure 3 shows that countries choosing either a floating regime or alternative anchors engineered consistent disinflations (online appendix 2 provides a case-by-case analysis). Those that opted for a floating rate started typically at inflation rates similar to those of Argentina. Countries with lower inflation rates used the exchange rate tool but, contrary to the idea that exchange rate-based stabilization achieved faster disinflation, they had slower stabilizations, probably because the gradual adjustment in the exchange rate conditioned the rate of disinflation. In some cases, by enabling sharp appreciations, the float made it possible to accelerate stabilization, as in the case of Indonesia, where the rupiah appreciated from 14,900 to approximately 7,000 per U.S. dollar, or the Dominican Republic, where the Dominican peso appreciated from 48.67 to 28.55 per U.S. dollar.

III.C. The Discussion on Speed and Other Implementation Details

The speed of disinflation embedded in the inflation targets was, somewhat surprisingly, the source of much debate. Some argued that it would have been better to finance a larger share of the deficit through money printing and inflation to avoid a debt buildup; others argued that the targets were too aggressive for Argentina, given its history of inertia and chronic inflation, and would lead to output costs.³¹

31. Di Tella (2019), in his comments on this paper, defines aggressiveness as the ratio between the inflation rate at the launch of formal IT and the target set for the first year. I believe this is misguided on two counts. First, this definition excludes the initial phases of disinflation as discussed in the previous section. Second, by looking arbitrarily at yearly inflation at the time of the launch, Di Tella may include shocks that may be irrelevant to inflation dynamics when the IT regime is implemented. Argentina is an obvious case. At the beginning of 2017, year-on-year inflation was close to 40 percent, but this was due to the large transitory shock that took place a year earlier, when capital controls were removed. If the six-month period before the launch had been chosen, when inflation had already fallen to 18.5 percent (the annualized inflation of the second half of 2016), the Argentine program would have been classified as one of the *least* aggressive. Similar caveats can be applied to Indonesia and Ukraine.

Uribe (2016) provides a normative analysis. In his perfect foresight infinitely lived agent model, the optimal policy is to aim directly for the long-run inflation rate, even if this implies a higher sterilization effort and a higher steady-state inflation.³² Yet the weakness in the balance sheet of the Central Bank made this tax smoothing approach too risky. Therefore only part of the fiscal deficit was financed with money printing (full financing would have led to very high inflation rates), but then none of these transfers was sterilized. Thus the amount of financing to the deficit would determine how much the money base would grow in each year, and this, in turn, would roughly determine what the target should be. Barring big changes in money demand, inflation should align with this number (only a 10 percent fall in money demand was expected in the first year, according to Fundación Pensar estimates). For example, the first year the Central Bank would transfer the equivalent of 25 percent of the money base; the second year, 17 percent, then 12 percent, and then 6 percent, roughly in line with the upper bound of the inflation targets.³³ Matching exactly the targets with the Central Bank's money transfers did, however, reduce to a minimum the Central Bank's margin to improve its balance sheet throughout the process. This would eventually become a heavy burden.

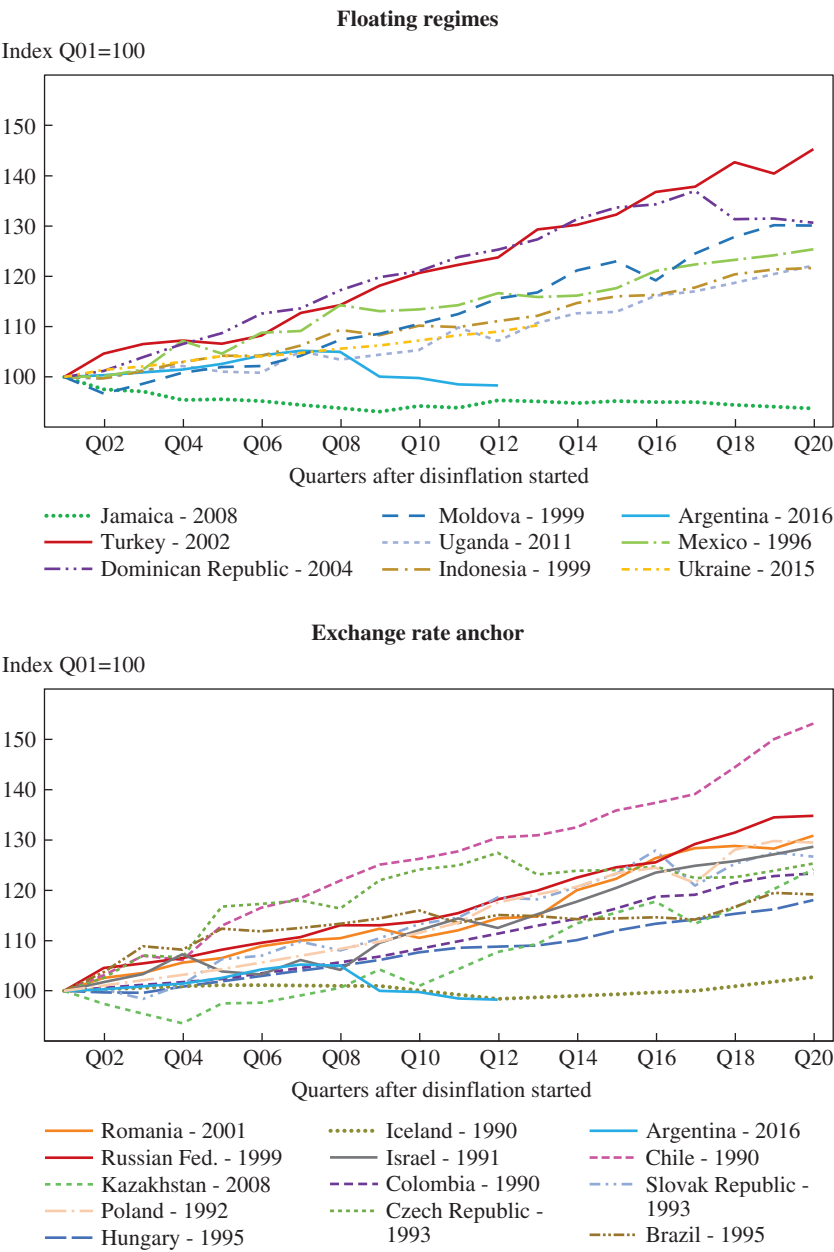
The upper limits of the path (25 percent/17 percent/12 percent/6.5 percent) appeared to be quite in line with those of other disinflation experiences starting at similar rates. Among them were the cases of Chile (20 percent/16 percent/12 percent), Mexico (42 percent/20.5 percent/15 percent), Turkey (35 percent/20 percent/12 percent), and Ukraine, which, starting at 25 percent, set its initial targets at 12 percent/8 percent, leaving the first year undefined (see online appendix 2).

Figure 4 addresses another issue that was hotly debated: the output cost of stabilization. It shows what could be expected in terms of output

32. The long-run inflation rate is a version of the tax smoothing principle of Barro (1979). Manuelli and Vizcaino (2017) provide a similar model with incomplete credibility.

33. A point of contention was the targets for 2016. The team anticipated a fall in the demand of money that would take the inflation rate initially to the 40 percent range, thus a commitment of 25 percent for the year seemed too aggressive and risked undermining the credibility of the Central Bank from the start. The Central Bank suggested that the inflation targets should be set once money demand was stabilized in April or May. However, the executive announced the targets in January. Eventually, the Central Bank did not endorse the 2016 target and just announced that it would try to approximate it as much as possible. However, considering that the targets for the following years matched those announced, the Central Bank suffered in terms of credibility, as it could never reverse the idea that it had committed to a 25 percent target for the first year.

Figure 4. The Output Effect of Disinflations



Sources: IMF, World Bank, INDEC, Eurostat.

from similar disinflation experiences. Splitting the sample between floaters and non-floaters, the graph again delivers a uniform message: disinflations implemented within (or on the way to) the IT framework are simultaneous with sustained economic recoveries (Iceland and Jamaica being the only two outliers), rendering the debate on the costs of stabilization rather moot. Argentina would fit this mold, as the disinflation of the first two years came with a sustained recovery in economic activity, which reversed only when the program was abandoned.

However, two decisions concerning the targets became a problem. The first was to use overall inflation and not core inflation as the objective. As we will see later, core inflation declined smoothly over the first year and a half of the program, while overall inflation had larger fluctuations. At the time, some countries, such as Thailand, had moved away from core to overall inflation arguing that this is a measure more easily identified by the population (IMF 2017, box 2). Yet large disinflations that need considerable changes in relative prices may be better served by using core inflation (the Czech Republic, where authorities created a special index where all regulated prices were excluded, is perhaps the clearest example; see Adrian, Laxton, and Obstfeld 2018). So, while overall inflation is a more palpable measure for the target, it is more volatile, which makes it more difficult to control and to build credibility.

In addition, setting targets for a fixed calendar year also becomes a problem. If the initial months of the year were above target, this represented a drag throughout the year, inflicting a loss of credibility if the Central Bank was not willing to undershoot its target in order to compensate for past deviations. Maybe a better system would have been to look at twelve-month forward expectations, more in line with the current view that central banks should target inflation expectations and not inflation *per se* or have a rolling target (many countries set targets on a yearly basis). However, Gibbs and Kulish (2017) provide a model of disinflation in an inflation target framework with imperfect credibility. Their findings suggest that announcing a path of disinflation reduces the sacrifice ratio even at low levels of credibility. At a minimum, having an institutional mechanism to set and even review the targets would have avoided sending out such a negative signal if the targets at any point were changed. Alternatively, the targets could have been interpreted more loosely (as a projection rather than an objective), thus reducing their coordination power but diluting the credibility costs in case they were not reached. All these issues suggest that implementing targets requires meticulous attention.

III.D. Results of the Inflation Targeting Regime

In March 2016, the Central Bank announced a transition to an IT regime that would start the following year, with inflation targets of 12 to 17 percent for 2017, 8 to 12 percent for 2018, and 3.5 to 6.5 percent for 2019. After launching the program, inflation came down quickly, and inflation expectations started at relatively low levels, that is, the program started with a substantial amount of credibility. After many years with inflation ranging between 23 and 40 percent, the first measurement of inflation expectations in June 2016 reported an expected inflation of 19 percent for 2017 and 15.7 percent for two years ahead. In October 2016, when the Central Bank survey asked for a multiyear inflation expectation, the results were 19.7 percent for 2017, 14.8 percent for 2018, and below 10 percent for 2019.³⁴ Figure 5 shows that twelve-month forward inflation expectations decreased systematically.³⁵

Month-over-month inflation was 5.2 percent in April, 4.2 percent in May, 3.1 percent in June, 2.0 percent in July, and 0.2 percent in August, when some of the April tariff hikes were temporarily reversed.³⁶ Inflation remained subdued in the second half of the year, amounting to 8.9 percent, averaging 1.4 percent per month. Inflation in December and January was 1.2 percent and 1.6 percent.

Disinflation met with continuous criticism from the Treasury regarding interest rates. This discussion was particularly serious between March and May, when the interest rate stood at 38 percent, but disagreements did not abate even after the Central Bank started reducing interest rates more sharply in the second half of the year. In addition, in July the Treasury managed to secure a presidential decree requesting US\$ 4 billion from Central Bank reserves, which the Central Bank blocked.³⁷ In all, these conflicts helped the Central Bank gain credibility and reaffirm its independence and commitment to lowering inflation.

34. BCRA Market Expectations Survey, June 2016, p. 2; <http://www.bcr.gov.ar/Pdfs/PublicacionesEstadisticas/REM160630%20Resultados%20web.pdf>.

35. Due to the lack of a national (core and general) price index at the beginning of Macri's administration, the reported series uses the expected inflation for the metropolitan area of Buenos Aires until June 2017 and the national expected inflation from July 2017 to the present. Data retrieved from BCRA Market Expectations Survey (REM).

36. If the effect of the tariff reversal had not been considered, headline inflation of August would have been 0.9 percent (as explained in BCRA 2016b, section titled "Prices").

37. Decree 834/2016; see <http://servicios.infoleg.gob.ar/infolegInternet/anexos/260000-264999/263233/norma.htm>.

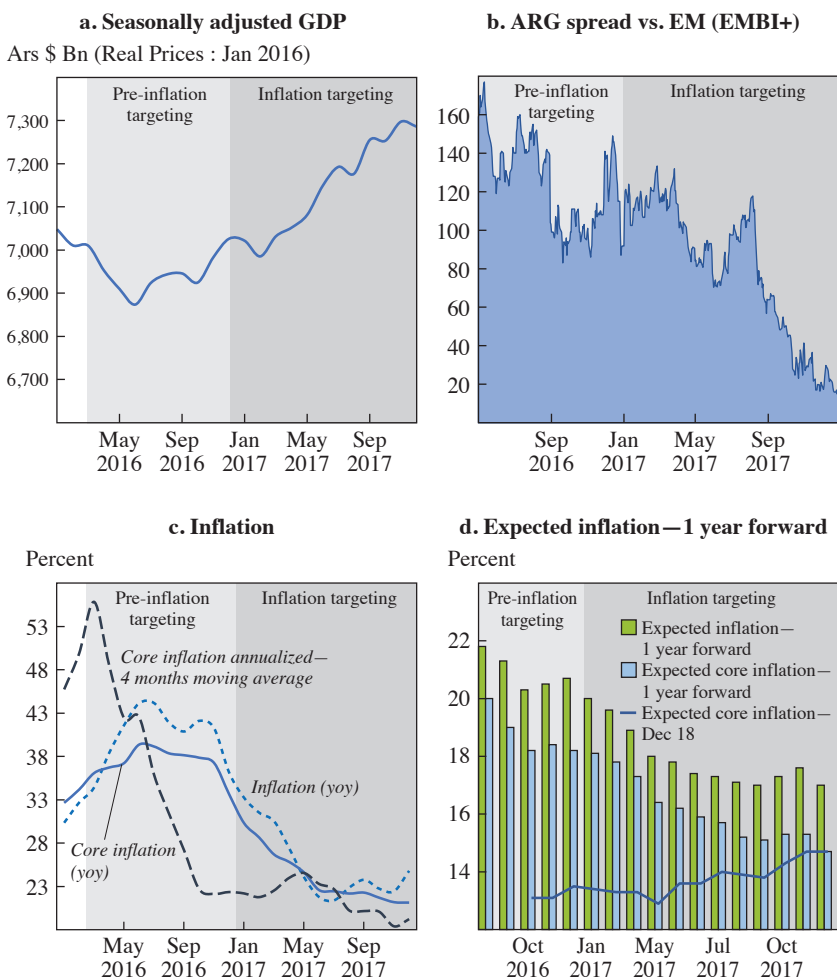
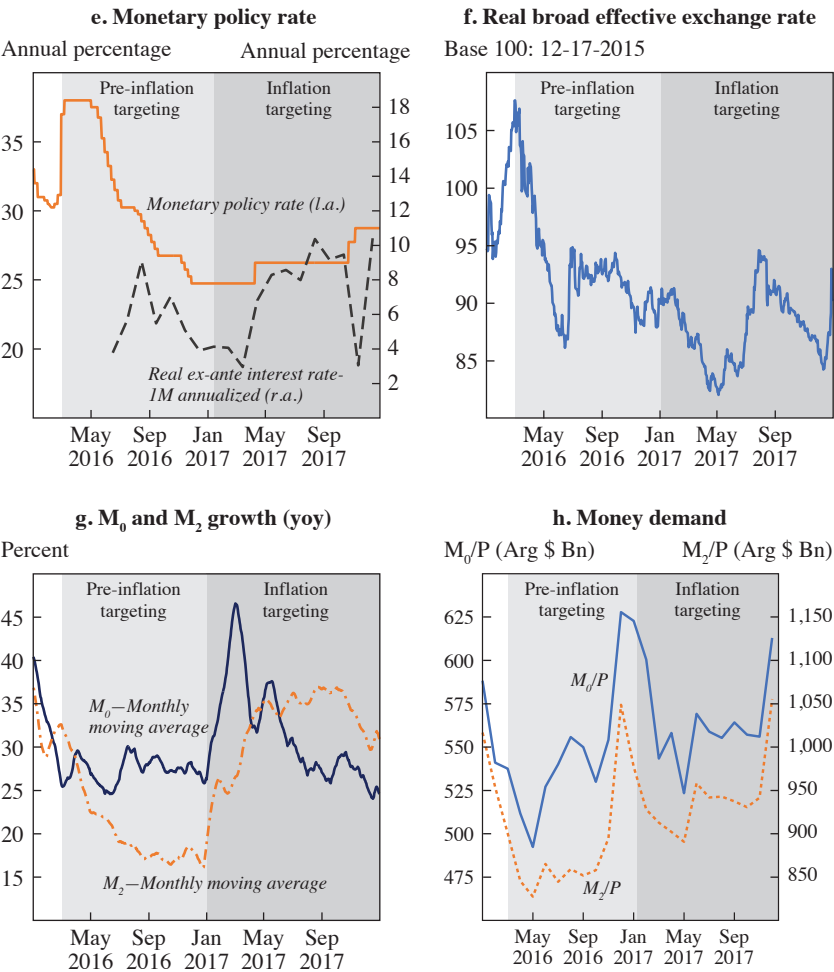
Figure 5. The Economy during the IT Phase

Figure 5. The Economy during the IT Phase (Continued)



Sources: INDEC, BCRA, JP Morgan, San Luis Statistical Office, Buenos Aires Statistical Office.

During this period, the Central Bank pushed for a further opening of the capital account. In fact, in April 2016, ahead of schedule, the U.S. dollar demand for past imports and dividend payments was fully freed.³⁸ In addition, in May 2016 the US\$ 2 million cap for FX purchases was increased to US\$ 5 million and eliminated altogether in August.³⁹

In September 2016, the Central Bank announced the formal launch of the inflation targeting regime starting in 2017. In fact, not much would change, except that the policy instrument would stop being the 35-day Lebac and would become the midpoint of the 7-day repo rate. This change attempted to align the operational framework of the Central Bank with that of standard procedures in central banking and build a more direct link with rates in the financial sector.

The fall in inflation during this period had an impact in output and the bond market. Figure 5 shows that the economy started growing in the third quarter and country risk continued to fall. In October 2016, Argentina placed US\$ 8.3 billion in peso bonds at five, seven, and ten years at nominal annual rates of 18.2 percent, 16 percent, and 15.5 percent, which showed confidence in the stabilization program. This issue would have been unimaginable a few months earlier.⁴⁰

Despite the fears of inertial inflation, the fall in inflation was rather quick, though year-on-year numbers remained big due to the big spike of earlier months. Perhaps the only sour spot in this process was that core inflation did remain somewhat higher, at 10.8 percent, in the second half of 2016 (1.7 percent monthly).⁴¹

WHAT WAS THE DISINFLATION MECHANISM? Despite the fall in the inflation rate, a debate ensued on whether the interest rate was enough to reduce inflation and on the role of utility price adjustments, inertia, and the FX in the inflationary process.

Due to the lack of data, little research in Argentina has focused on the role of expectations in the inflation process. As shown in figure 6, prices, expectations, the FX, and regulated prices all move together. Thus, it is easy to see how any of these variables could be interpreted as fueling

38. BCRA communication A5955; <http://www.bcr.gov.ar/Pdfs/comytexord/A5955.pdf>.

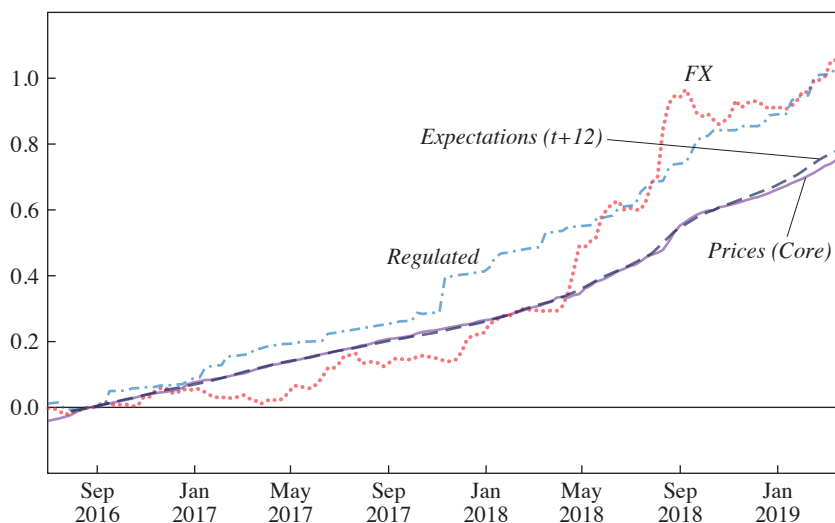
39. See BCRA communication A5963, <http://www.bcr.gov.ar/Pdfs/comytexord/A5963.pdf>, and BCRA communication A6037, <http://www.bcr.gov.ar/Pdfs/comytexord/A6037.pdf>, respectively.

40. See, for example, <http://www.telam.com.ar/notas/201610/166886-bonos-gobierno-nacional-financiamiento-secretaria-de-finanzas.html>, <https://www.ambito.com/economia/inedito-bono-10-anos-pesos-salio-tasa-fija-del-155-anual-n3958711>, or <http://www.telam.com.ar/notas/201609/165084-bonos-financiamiento-ministerio-de-hacienda-y-finanzas.html>.

41. IPC-GBA INDEC, the only core inflation index available until 2017.

Figure 6. The Co-movement of Prices and Expectations

Log sep-16=0



Sources: Pricestats, Elypsis, BCRA, INDEC.

inflation. But how does each variable play out when taking the others into account? In particular, is it true that the FX has such a determinant role in price dynamics as is typically believed?

I address this question by running a vector error correction model (VECM) of weekly core prices, FX, regulated prices, and inflation expectations, not with the intention to provide a model for inflation but to check how these variables interact and react to each other. Online appendix 3 describes the methodology. Table 4 shows the coefficients of the cointegrating regression.⁴² In the first column for each sample period, only FX and regulated prices are taken into account, while the second and third columns include inflation expectations at a one-month and a twelve-month horizon. The results show that during the IT period, once expectations are included,

42. All the regressions start in August 2016 because that is the first month in which the BCRA reported core inflation expectations in its Market Expectations Survey (REM). The first time period ends in November 2017 because December 2017 expectations were collected after the conference on December 28. The second time period ends in March 2018, the month before the sudden stop of capital flows began (it began on April 25, when the BCRA had to sell US\$ 1.5 billion in order to prevent the currency from depreciating). The last time period ends in April 2019, the last data point available when these calculations were carried out.

Table 4. VEC Model for Inflation in Argentina: Cointegrating Vector

Period	August 2016–November 2017			August 2016–March 2018			August 2016–April 2019		
	Weekly			Weekly			Weekly		
Frequency of data	(I)	(II)	(III)	(I)	(II)	(III)	(I)	(II)	(III)
Prices									
FX	1 -0.3566** (0.1270)	1 -0.0268 (0.0153)	1 -0.0194 (0.0157)	1 -0.3268 (0.3692)	1 -0.0235* (0.0111)	1 -0.0233* (0.0109)	1 -1.1840** (0.4395)	1 -0.0822** (0.0263)	1 -0.1831** (0.0478)
Reg	-0.7186** (0.0812)	0.0275 (0.0574)	0.0030 (0.0521)	-0.6434** (0.2322)	-0.0006 (0.0167)	-0.0373 (0.0201)	0.0753 (0.4764)	-0.0612 (0.0451)	-0.1759* (0.0815)
Exp (t+1)		-1.0356** (0.0784)			-0.9978** (0.0244)			-0.7991** (0.0774)	
Exp (t+12)			-1.0141** (0.0728)			-0.9517** (0.0286)			-0.5739** (0.1380)
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Sources: CPI reported by Pricestats, FX: ARS/USD exchange rate reported by com.A3500 of BCRA, Reg: regulated prices reported by Elypsis, Inflation expectations reported by BCRA.

Notes: Standard deviation in parentheses, Exp (t+1): core inflation expectations one month forward, Exp (t+12): core inflation expectations twelve months forward. Cointegration of Johansen test (maximum eigenvalue test). Each equation is cointegrated at 1 percent of significance.

*Significant at 5 percent; **significant at 1 percent.

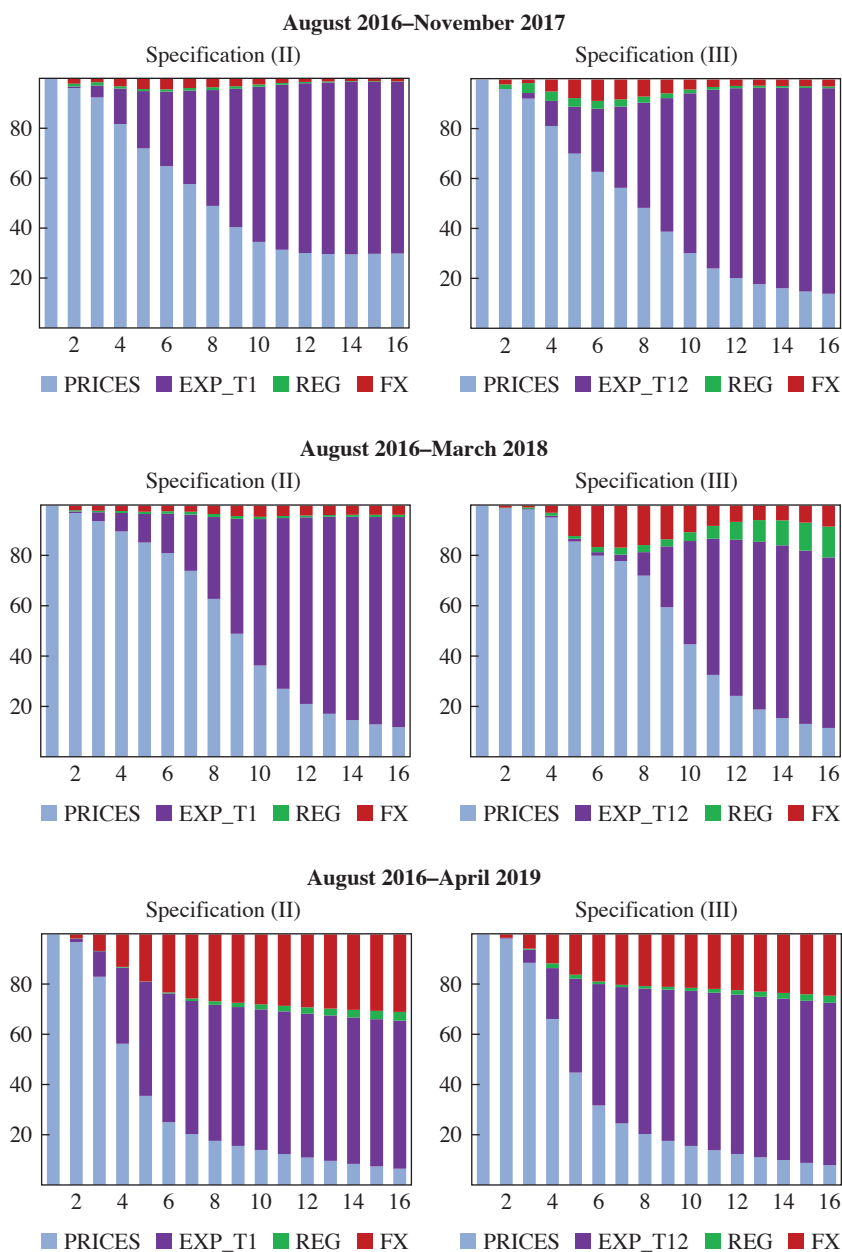
the statistical relationship between prices with FX and utility prices virtually disappears. This result reverses if the sample is extended to 2019, when the inflation process had become unanchored and inflation targeting was abandoned. These results also apply to the short-run pricing behavior (results in online appendix 3). Noticeably, during the IT regime, shocks to the FX had no effect on pricing behavior, a result that also reverted once the regime was abandoned. These results show that pass-through coefficients typically considered large had been quickly reduced (actually eliminated) as a result of the new monetary regime. Figure 7 shows the variance decompositions and portrays the same results from a different angle. It shows that inflation has an inertial component, but again, for the IT period, expectations appear to have been the fundamental driver of price dynamics while the exchange rate became relevant only when the regime was abandoned. Other results (see online appendix 3) show that during the IT regime, while moot in the long run, jumps in regulated prices did affect pricing in the short run.⁴³

The estimation is not without problems, and the samples are small, as discussed in online appendix 3, but the result is relatively robust for different econometric specifications. These results are included here to note that it is necessary to include expectations as a relevant driver of the inflationary process, something that has been lacking in the empirical work on inflation in Argentina. Certainly, further research on this topic is required.

These estimates address the fundamental question of the transmission mechanism to achieve disinflation in the IT regime. It appears that expectations coordination played a fundamental role in the disinflation process and that the traditional channel from exchange rates to inflation expectations and pricing behavior had weakened, if not altogether disappeared, indicating a quick adjustment to the new monetary regime. These results were probably aided by the fact that Argentina has no formal indexation of contracts, which reduces inertia. In fact, wage negotiations were quite forward looking. For example, consider the transition from 2016 to 2017. Inflation ended at 36.1 percent in 2016, and the Central Bank inflation target for 2017 focused on the upper limit of 17 percent. Wage negotiations ended in the 20 to 25 percent range, which was consistent with the inflation target.⁴⁴ Thus, to some extent, the inflation target acted as a substitute for income

43. A result found also in Navajas (2019) and consistent with Alvarez and others (2018).

44. See BCRA (2016b), where it is shown that in a disinflation process wage negotiations that keep the real wage constant equal the average of the next year inflation and the past year inflation, thus reaching a higher value than the future inflation rate.

Figure 7. Variance Decompositions (using Cholesky factors)

Source: Author's elaboration based on Pricestats, Elypsis, BCRA, INDEC.

policies. On the other hand, inflation expectations remained consistently around 5 percent above the upper limit of the inflation targets in every year, a result reminiscent of a Barro-Gordon bias: as if players expected the Central Bank to be willing to tolerate a deviation from its target, which expectations anticipated.⁴⁵

THE POLICY REACTION The quick fall in the inflation rate triggered a gradual reduction in the policy rate. By the end of 2016, the rate had been cut from 38 percent (in May) to 24.75 percent. In January 2017, when the transition to a formal IT regime was made, a technical problem emerged. Repos paid a local city tax which the Lebac did not, and as the policy rate was kept constant at the previous Lebac rate, this led to an abrupt fall in the Lebac rate that had neither been anticipated nor desired by the authorities. The Central Bank delayed a solution, allowing a *de facto* easing of monetary policy.

In addition, in January 2017 a new Treasury minister eliminated the last remaining vestiges of capital controls: a four-month minimum holding period on peso investments. The four-month stay imposed a sizable amount of currency risk on any bet on the Argentine peso. The Treasury decided to collapse this period to zero, thus freeing all capital flows in practice. The Central Bank seconded this move, as it allowed eliminating the last vestiges of capital controls, which consisted of a required registration (needed to be able to track this four-month period).⁴⁶ As a result, capital flows started to increase, thus resulting in a moderate peso appreciation. The Central Bank read the ensuing real appreciation as a consolidation of the disinflation of the second half of 2016. For a second time, reading inflation signals at the beginning of the year turned out to be difficult.

In February, as the government resumed utility price adjustments, inflation picked up again, signaling the Central Bank that easing had gone too far.⁴⁷ In fact, by the end of February, inflation seemed to be above the levels needed to attain the 17 percent target for the year. Thus, in late February the Central Bank started tightening monetary conditions

45. See, for example, http://www.bcra.gov.ar/PublicacionesEstadisticas/Relevamiento_Expectativas_de_Mercado.asp; http://www.bcra.gov.ar/PublicacionesEstadisticas/Relevamiento_Expectativas_de_Mercado_i.asp; and <http://www.bcra.gov.ar/Pdfs/PublicacionesEstadisticas/REM161229%20Resultados%20web.pdf>.

46. BCRA communication A6150; <http://www.bcra.gov.ar/Pdfs/comytexord/A6150.pdf>.

47. Electricity prices were increased by 90 percent, natural gas prices by 30 percent, and water distribution by 20 percent between February and April (BCRA 2017a).

by pushing the Lebac curve upward and then in April moving the policy rate upward.⁴⁸

Inflation increased somewhat in the February–April period, but by mid-2017 monetary tightness appeared to be working again and inflation started abating pretty quickly. By July, yearly inflation had fallen to 21.4 percent, the lowest in seven years, while wholesale prices had increased 13.9 percent in the previous year. In the second half of 2017, while overall disinflation stalled, core inflation continued to decrease. Core inflation, which had been 1.7 percent monthly in the second half of 2016, fell to 1.5 percent in the second half of 2017, and fell further to 1.4 percent in the last quarter. For 2018, the expected core inflation was just 14.9 percent. However, overall inflation, which had been 1.4 percent in the second half of 2016, was 1.8 percent in the second half of 2017 (1.6 percent if excluding the large increase in December resulting from a large regulated price jump engineered after the midterm elections). Inflation expectations for 2018 had increased 2.3 percentage points (pp) in the previous fourteen months, which, considering that the target for 2017 would be missed, led to continued doubts about the success of the disinflation program.

Throughout this period, as inflation decreased, output recovery had been quite consistent and had strengthened in 2017, which ended with a growth rate of 4 percent (figure 5, panel c), capping seven quarters of sustained growth. Credit growth had also accelerated in 2017, reaching 20 percent growth in real terms by the end of the year, allowing investment to grow at double digits. The growth in credit responded to a series of deregulation measures taken to improve the operation of the financial sector. The question of whether this in turn jeopardized the disinflation process was again disregarded at the time by the Central Bank on the argument of the endogeneity of money, although it may also have played a role in somewhat slowing the disinflation path. The combination of high growth and falling inflation worked to sharply bring down poverty levels. The end result was a landslide victory for the government during the midterm elections.

48. Monetary growth had also picked up at the end of the previous year, hand in hand with a tax amnesty for nondeclared capital abroad which required funneling tax payments through the financial sector. This, combined with an abnormal reduction in the money base in February of the previous year, briefly propelled the year-on-year money growth rate to nearly 50 percent (see figure 5, panel g), before normalizing at a 34 percent year-on-year rate by the end of May. The Central Bank disregarded these numbers under the argument that money demand was endogenous, but this nonetheless stirred renewed criticism against the Central Bank for carrying out a monetary policy that was considered inconsistent with the disinflation path.

After the midterm elections, even though core inflation had decreased, as inflation remained above the target, the Central Bank implemented a significant monetary policy tightening—with two hikes, one of 150 basis points (bps) and one of 100 bps two weeks later. Its intention was to keep the disinflation process moving ahead. What the Central Bank did not know is that, by doing so, it had triggered resistance to its policies within the government, which would shortly after unravel the program.

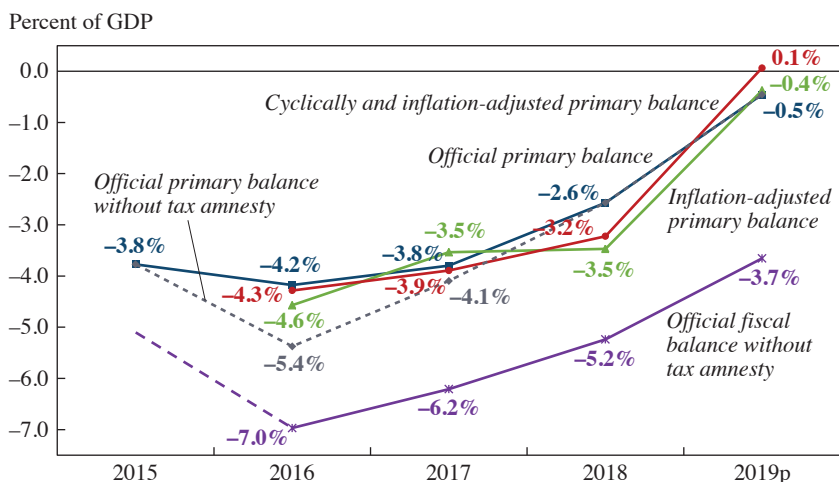
III.E. The Evolution of Fiscal Accounts

So far, we have focused on monetary policy, but to understand why disinflation eventually conflicted with fiscal policy, we need to discuss the evolution of fiscal accounts. As mentioned, the government inherited a large fiscal problem and expected some fiscal convergence, initially from a reduction in subsidies, but was not ambitious (see table 2). However, even this lax plan got quickly off track for three main reasons: output did not grow as expected, taxes were cut, and expenditures were increased beyond what had been planned.

That the fiscal situation would be challenging became clear when, a few days before taking office, the Supreme Court granted a favorable ruling to three provinces on a tax dispute (which the government later extended to other provinces).⁴⁹ Galiani (2018) estimates that there was an impact of 1.6 percent of GDP on the government's accounts between 2016 and 2018, and a steady state annual impact of 1 percent. In addition, export taxes were eliminated across the board, followed by a series of other tax cuts, such as those to small and medium-sized enterprises and to the automobile industry. Toward the end of 2016, the government also increased the minimum income required to pay the income tax and indexed this amount. This cost an additional 0.6 percent of GDP. In all, tax reductions added up to 2.2 percent of GDP (Galiani 2018).

In addition to the weakening of the income stream the government implemented an increase in pension payments to settle litigation for the lack of indexation of pensions during the years 2002–2006. This added an annual expense of about 1 percent of GDP to government spending, plus the obligation to repay the accumulated debts with pensioners

49. Argentine Supreme Court ruling 338:1356, November 24, 2015. (<https://sjconsulta.csjn.gov.ar/sjconsulta/documentos/verDocumentoByIdLinksJSP.html?idDocumento=7268292&cache=1579496165473>).

Figure 8. The Evolution of Fiscal Accounts

Source: Author's elaboration based on Ministry of Finance, BCRA, INDEC.

originating from that absence of indexation, which added an additional stock of 1.4 percent of GDP.⁵⁰

While utility price adjustments provided additional resources, rather than decreasing, the deficit actually *increased* from 3.8 percent to 5.4 percent (figure 8)! The 2016 tax amnesty provided some relief, but just enough to avoid a marked deterioration of the fiscal situation (it added 1.2 percent of GDP in 2016 and 0.3 percent in 2017).⁵¹

Before moving on, we need to point out a critical feature of fiscal accounts in Argentina: the backward indexation of pensions and social expenditure. As Argentina returned to high inflation in the 2000s after a decade of stability, it was forced to reindex pensions that had been frozen during the convertibility period. However, at the time, there were doubts about the reliability of inflation statistics, so the government indexed pensions to a combination of tax collection and nominal wages.⁵² In reality, this represented

50. According to the figures reported by the Fondo de Garantía de Sustentabilidad (FGS) in its accountability report to the Congress in October 2016 and official information provided by Casa Rosada retrieved from www.casarosada.gob.ar/36439-programa-nacional-de-reparacion-historica.

51. See the monthly reports made by the Treasury Ministry: <https://www.argentina.gob.ar/sites/default/files/presentacion-metas-2018-vfinal.pdf> and <https://www.argentina.gob.ar/sites/default/files/seguimiento-resultado-diciembre-2018.pdf>.

52. Law no. 26417.

an indexation of pensions to nominal GDP, thus triggering an unsustainable dynamic, particularly if Argentina were to start growing again.

Thus, in order to analyze the evolution of fiscal performance during this period more objectively, it is useful to implement two adjustments. The first is aimed at correcting the cyclical movements of the economy.⁵³ The second adjustment corrects the fact that pension and social aid are formally indexed backward so that their real value is reduced when inflation accelerates and increases in a context of disinflation. A rough estimate is that the budget improves (deteriorates) about 0.4 percent for each increase (fall) of 10 percent in yearly inflation. Thus, a relevant concept in Argentina is the cyclically adjusted inflation-constant budget deficit. Figure 8 shows the results (online appendix 4 discusses the methodology).

With this estimation at hand, we can see that in 2017, after a new Treasury minister took over, the government started tackling the fiscal imbalance. In fact, in the inflation-constant measure, the budget improved by 1.1 percent in 2017. This was a significant reduction. However, the headline budget deficit moved only from a 4.2 percent deficit to 3.8 percent: disinflation had increased the real value of pensions, undoing most of the fiscal effort. It was this divergence which prompted the Treasury to attempt to slow down the disinflation process in order to avoid a repeat of these dynamics in 2018.

Confident that the government would strengthen after the elections later that year, the markets did not appear overly concerned with the slow pace of fiscal improvement, and country risk continued to fall despite the large deficits (figure 5, panel b). Indeed, after its success in the midterm elections, the government made additional moves at fiscal consolidation by passing a tax and pension reform as well as by hiking up utility prices (December 2017 saw the largest increase in regulated prices for the whole period; see figure 6). But the tax reform, while improving the efficiency and distributive impact of taxes, implied a *reduction* of taxes going forward.⁵⁴ The only

53. We follow the standard methodology detailed in Escolano (2010). See also Girouard and André (2005), Daude, Melguizo, and Neut (2010), Larch and Turrini (2010), and Fedelino, Ivanova, and Horton (2009).

54. The tax reform included a reduction in corporate income tax (though increasing taxes on the distribution of dividends), the introduction of a tax on financial investment income, and a tax-exempt minimum income, which reduced the incidence of labor taxes for the lower half of the income distribution. A tax on bank movements would progressively be considered as a withholding of income tax. The provinces agreed to reduce the maximum rates of the turnover tax (though some provinces which were below these maximum rates used the opportunity to increase taxes). In all, the tax reform anticipated a gradual reduction of the tax burden, which would reach 2.9 percent of GDP by 2022 (Argentine Ministry of Treasury 2018).

cost-saving features came from the pension reform.⁵⁵ One of the law's provisions was that workers were to be allowed to stay an extra five years in their jobs if they so decided. As this was voluntary, it did not create much controversy. In practice, it extended the working age approximately three years (women were previously allowed to retire at between 60 and 65 years old, and the average retirement age was 63). The other provision was that the government pushed for a change in the indexation formula, which attempted to move it to a more sustainable dynamic, increasing the weight of prices and shortening the adjustment lags. This change, however, met fierce resistance and significant union mobilization, which cast doubts on the ability of the government to push further with other reforms.

To summarize, figure 8 shows that the government tried to move in the direction of fiscal consolidation in 2017, but the effort was undermined by disinflation, which led the Treasury to become a strong advocate of slowing the stabilization program. In fact, the data for 2018, when inflation accelerated, show the opposite dynamic. At a constant inflation rate, there was no progress in the fiscal numbers (the devaluation forced the government to increase energy and transportation subsidies), but the acceleration of inflation made a sharp reduction in the real value of pension and social programs, which allowed for a reduction of 1.2 percent in the headline primary deficit. It was only in 2019 that all measures coincide to signal a significant reduction in the deficit.

The lack of adjustment in the fiscal accounts (for whatever reasons) in the first two years, plus a reduction in the private sector's savings, led to a significant deterioration of the current account. By the end of 2017, there were growing concerns regarding the external imbalance. With political power consolidated in the midterm elections, the markets considered that the time had come for the government to start delivering on the fiscal front, but nobody was prepared for what was about to happen.

III.F. The Central Bank's Balance Sheet and the Issue of Lebacs

The program started with a weak Central Bank (figure 2), with a mind-boggling negative net worth of US\$ 93 billion, net of *letras intranferibles* and *adelantos transitorios*. The Central Bank balance carried remunerated liabilities for 5.6 percent of GDP in Lebacs and repos, a number that grew

55. Law no. 27426.

to 6.9 percent in March 2016, when the Central Bank sterilized the bulk of issuance arising from dollar futures liabilities and at least part of the monetary overhang.⁵⁶

After the agreement with the holdouts, the economy started experiencing a capital inflow process from two sources. One was the external financing of the budget deficit (of both the national government and provinces), which was primarily financed abroad. The second was private sector inflows. While the Central Bank removed the Euroclearability of Lebac's early on in an attempt to fend off private speculative capital inflows, once the Treasury removed the stay period on local investments at the beginning of 2017, inflows increased.⁵⁷

Panels g and h in figure 9 show the relative importance of both sources of capital inflows, making it clear that the lion's share was the government's sector indebtedness. Private sector flows were nonexistent in 2016 and relatively small in 2017. In 2018, the private sector outflows were larger than the inflows of the two previous years, as a large portion of these outflows were from residents. In summary, and contrary to what is believed, the challenge posed by capital flows had more to do with government indebtedness than with hot money (hot money flows were probably contained due to the fact that the exchange rate floated).

The Central Bank confronted government sector indebtedness with an aggressive program of reserves accumulation, buying reserves that were sterilized by issuing peso liabilities (Lebac's).⁵⁸ By doing so, the currency mismatch of the consolidated government balance sheet and the exchange rate appreciation resulting from the inflows were both reduced, but the inflation objective was made conditional on an exchange rate objective.

56. In the first weeks, the Central Bank and the Treasury agreed to exchange US\$ 16 billion of *letras intransferibles* for marketable government bonds (see the BCRA's press note, December 28, 2015, http://www.bcra.gob.ar/Pdfs/Prensa_comunicacion/Nota_Prensa_28-12-15.pdf), somehow compensating part of the deterioration in the balance sheet of previous years (see figure 2). However, there was an agreement that this debt would not be used for open market operations. As a result, while it significantly improved the balance sheet, it did not preclude the need to issue Central Bank securities for monetary policy.

57. Resolution E 1/2017 of the Ministry of Treasury. The transfer of Lebac's to Euroclear was banned in May 2016.

58. For a justification for reserve accumulation by comparing reserves to those of other Latin American countries, see Sturzenegger (2019). The Central Bank decided to buy these reserves as the government required, not timing the purchases to the developments of the FX market. As a result, these purchases were not disruptive of the functioning of the FX market, which made it possible to sustain a floating exchange rate regime despite large FX purchases.

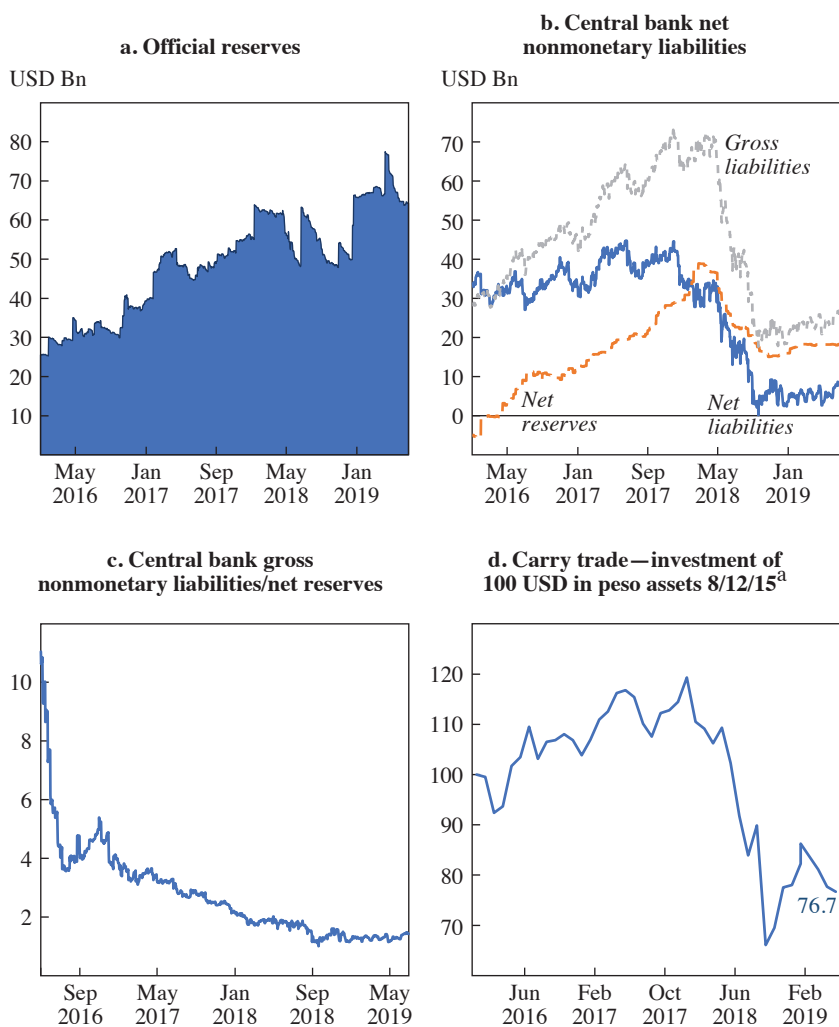
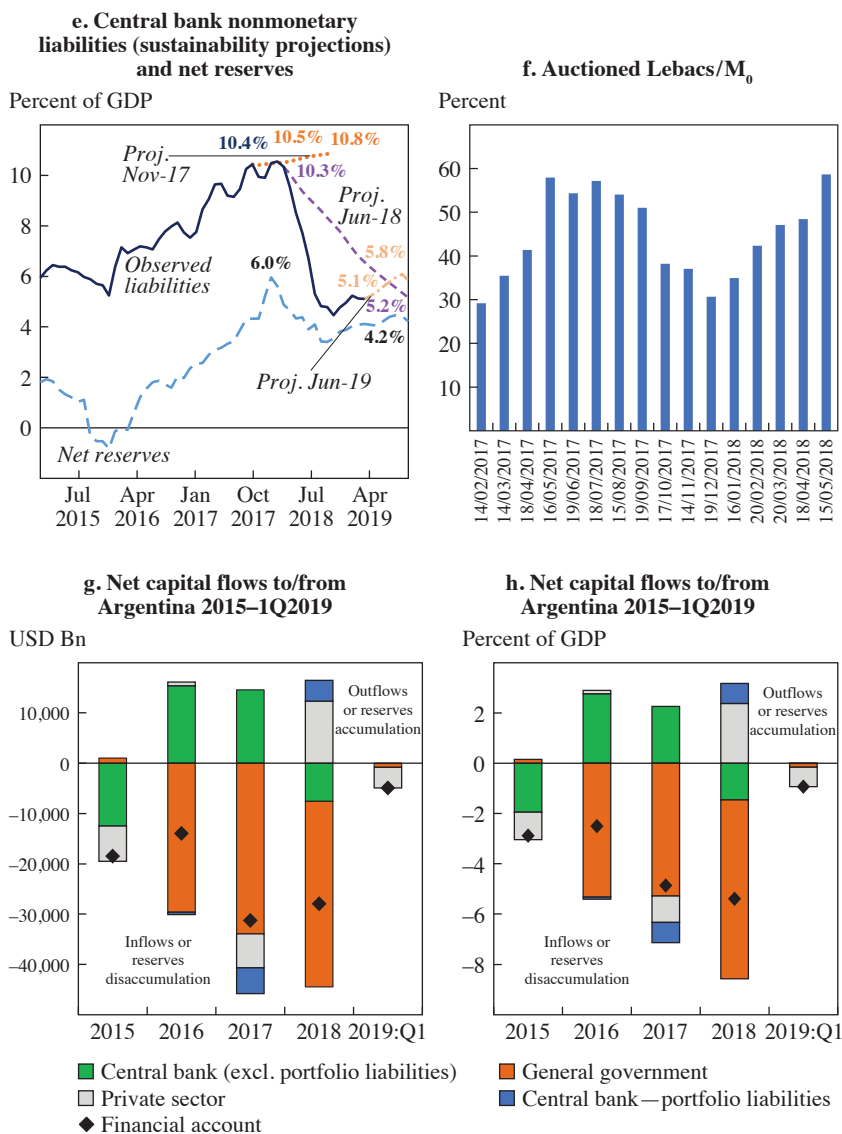
Figure 9. The Parallel Growth of Reserves and Central Bank Liabilities

Figure 9. The Parallel Growth of Reserves and Central Bank Liabilities (Continued)

Sources: BCRA, INDEC.

^a Based on an investment of USD 100 in 35-day Lebac from 12/18/2015 to 11/30/2018 and in LECAP (30-day constant maturity) since then.

The growth in Lebacs had its counterpart in the accumulation of reserves, but a debate emerged regarding the growth in the Central Bank's balance sheet, even though, as shown in figure 9, panel c, the ratio of FX backing of Central Bank interest-bearing liabilities improved steadily throughout the process. The debate heated up when the real exchange rate appreciated, as this resulted in the Central Bank paying a cost (ex post) in terms of carry that increased the larger the reserves. Figure 9, panel d, shows that, by the end of 2017, the cumulative ex post return in dollars paid to sterilize reserves reached a maximum of about 20 percent for the two-year period.

There is extensive literature on reserve accumulation, even when reserves are borrowed, as in this case. Rodrik (2006) argues that the cost is not large relative to the insurance benefits, while Levy-Yeyati (2006, 2019) argues that the costs are smaller because of their positive effect in country risk. Additionally, historical evidence (de la Torre, Levy-Yeyati, and Pienknagura 2013) suggests that central banks typically gain from such purchases because they tend to buy reserves at moments of FX appreciation and to sell in moments of turbulence, so that the cost is further decreased by a natural timing to the market of purchases and sales.

In this case, however, given that the financing for reserves was denominated in pesos and not in U.S. dollars, the discussion was whether the stock was unsustainable or whether it was sustainable only in a high inflation/devaluation scenario, along the lines of Calvo (1988, 1991). Alternatively, the discussion was framed as if the interest on Lebacs were a source of inflation itself. According to this view, if the growth in the Lebacs became "money," it could trigger an increase in the inflation rate, as in interest peg runs discussed by Bassetto and Phelan (2015).

Three arguments suggest that the eventual reduction of these Central Bank liabilities needed not be done through inflation. Firstly, central banks' balance sheets do not acknowledge their strongest asset: the net present value of future seigniorage. An estimate of this seigniorage by the Central Bank (BCRA 2017b) placed it at 30 percent of GDP, much larger than the stock of Lebacs (which reached 11 percent at its maximum). Second, assuming no further purchases of reserves and using market expectations for interest rate, growth, and inflation, the stock of Lebacs had stabilized by the end of 2017 (as shown in figure 9, panel b), which suggested a rollover was feasible. Finally, the reserves themselves could be used to cancel these liabilities. For these reasons, the Central Bank considered that the situation was sustainable, a view that was shared by the markets but not by most analysts. Of course, even if inflation were not a foregone result, there was

still a latent risk that at some point the government may *decide* to pay for them with inflation.

The question of whether Argentina would have fared better if these reserves and liabilities were not accumulated is not a settled issue. We will come back to this in the final section of this paper.

A final but relevant point refers to the maturity of Central Bank liabilities. During the second half of 2017, concerned with rollover risk, the Central Bank had extended maturities by increasing long rates on Lebacs (see figure 9, panel f, which shows that Lebacs maturing each month had fallen from around 60 percent to around 30 percent of the money base).⁵⁹ A long body of literature, starting with Cole and Kehoe (1996) and including the Greenspan-Guidotti rule, pays attention to the relationship between short-term debt and reserves as key for avoiding multiple equilibria.

IV. The Unraveling of the Program

IV.A. *The Change in Targets and Start of the Crisis*

In July 2017, inflation was decreasing relatively quickly, prices had risen by 21 percent in the previous year (a fall of more than 15 pp relative to six months before) and wholesale prices had increased just shy of 14 percent. Because of backward indexation of half of government expenditure, this quick reduction in inflation represented a challenge to fiscal accounts as explained above; hence, the Treasury started pushing for setting inflation targets higher to ensure a slower disinflation path.⁶⁰ In addition, the Central Bank had tightened monetary policy in the aftermath of the midterm election, which rallied other actors who believed monetary policy was too tight against the Central Bank. As 2017 was coming to an end, the Ministry of Finance started doubting whether Argentina would be able to finance the stubborn deficit abroad. The Central Bank's effort to extend maturities and reduce rollover risk had come at the price of increasing longer rates, which made local financing more expensive. By the end of the year, most voices (the Treasury wanting slower disinflation for fiscal reasons, the Ministry of Finance wanting cheaper domestic financing, and other members of the cabinet wanting lower interest rates) were challenging the Central Bank's policy.

59. This strategy was also followed with success by Chile in 2003, reducing exposure to rollover risk. For an analysis of the maturity of central bank securities, see Mohanty and Turner (2005) and Gray and Pongsaparn (2015).

60. It was unclear who determined the inflation targets. But, as in 2015 the executive had announced the initial targets, the Treasury believed it could unilaterally change them again.

Toward the end of the year, the executive decided to move ahead and change inflation targets, even though the leitmotiv at the Central Bank had been “to change a target is to have no target” (BCRA 2017a). The president had decided to fire the governor if necessary. The change was a risky gamble. At the time, inflation expectations were 17 percent for 2018 (with expectations of core inflation at 14.9 percent) and 11 percent for 2019, so the disinflation program was pretty consolidated. In fact, the province of Cordoba had concluded the first wage agreement of 2018 with an 11 percent annual increase.⁶¹ Economic growth also was expected to continue, with an expected growth rate of about 3 percent for both 2018 and 2019.⁶² Before the change, the economic outlook for the remainder of Marci’s presidency was positive.

The change was announced on December 28, 2017, in a relatively bizarre twist, as that is the day Argentina celebrates Fools’ Day. To communicate the change, the government staged a press conference where it announced that it wanted *more* inflation.⁶³ In an attempt to counter the impact on credibility, the executive also announced a 50 percent reduction in transfers from the Central Bank to the Treasury in 2019 and to the equivalent of seigniorage starting in 2020.

Many countries repeatedly miss their targets (Colombia and Mexico, for example, did not attain their targets during the first six years of their stabilization programs), particularly during disinflation episodes. Yet the targets operate as an anchor for expectations regardless of whether they are achieved or not. In recent times, there are three cases of increases in inflation targets: Indonesia in 2005, Brazil in 2003, and Turkey in 2008.⁶⁴ The cases of both Indonesia and Brazil occurred after a large devaluation that had gotten the inflation process off track, causing a significant increase in inflation relative to the previous year. In the case of Indonesia, inflation went up from 6.4 percent in 2004 to 17 percent in 2005, so the targets for 2006 and 2007 were moved upward while keeping the 5 percent

61. See <https://www.infobae.com/politica/2017/12/21/cordoba-cerro-la-primera-paritaria-de-2018-11-de-aumento-para-estatales-y-clausula-gatillo-por-inflacion/>.

62. BCRA Market Expectations Survey, November 2017; <http://www.bcra.gov.ar/Pdfs/PublicacionesEstadisticas/REM171130%20Resultados%20web.pdf>.

63. The press conference can be seen at https://www.youtube.com/watch?v=9_ccA9XonWk.

64. See OECD economic surveys for the cases of Indonesia (OECD 2008a, 32) and Turkey (OECD 2008b, 112). For the case of Brazil, see de Campos Meirelles (2003), which is a letter to the minister of finance explaining the deviations from the inflation target, and Garcia (2006). For additional information about Turkey, see Kara (2008, 2017). Romania in 2018 might be considered an additional case, but the change was not significant, so in practice it is not comparable to these cases.

longer-run objective fixed. In Brazil, inflation had moved from 5 percent in 2000 to 12.6 percent in 2002 (when the target was 3.75 percent); thus the target was adjusted for 2003. In neither case was there a change in monetary policy. While Indonesia converged to its long-term inflation relatively unscathed, Brazil struggled to reach its targets later on (twelve years later, inflation was still above 10 percent). The case of Turkey is similar to that of Argentina because the inflation target was changed in the middle of a successful disinflation program. Turkey started its disinflation program with inflation running at 70 percent, when it set an initial target of 35 percent, and three years later it had inflation below 10 percent. But the target of 4 percent after 2007 became difficult to reach. Thus, the target was reset for 2009, almost doubling it from 4 percent to 7.5 percent. The targets for 2010 and 2011 were also raised to 6.5 percent and 5.5 percent. The change tried to make the targets more realistic while signaling a continued commitment to stabilization. The result was the opposite: this change had a lasting negative impact on credibility, and Turkey is struggling with a two-digit inflation rate still today.

In summary, the precedents for such a move were not auspicious. Thus, it was not surprising that the market's initial response was one of disbelief. When two weeks after the December 28 announcements the Central Bank reduced the interest rate by 75 bps, from 28.75 percent to 28 percent, the news was received with a sense of relief, as it was sufficiently moderate to be read as an affirmation of the independence of the Central Bank. The peso appreciated, spreads stabilized, and the government managed to squeeze what would be its final bond issue for US\$ 9 billion in international markets (BCRA 2018a, 12).

However, when the Central Bank implemented an additional reduction of 75 bps two weeks later, arguing it was the natural response to a softening of the targets, the market reacted as if there had been a large institutional shift. The peso depreciated, and the spread on dollar-denominated government bonds increased. By the end of January the spread of Argentine debt relative to emerging markets had quadrupled. Inflation expectations for 2018, which at the end of 2017 stood at 17.4 percent, jumped to 19.4 percent in January, a bigger increase than that of the previous 14 months combined. In fact, even when no further cuts in interest rates were implemented, core inflation continued to increase, and the spread on government bonds continued to climb. The loss of credibility had become a permanent shock.

Figure 10 shows how prices and expectations became unanchored after December 28. It also shows that country risk started escalating after the

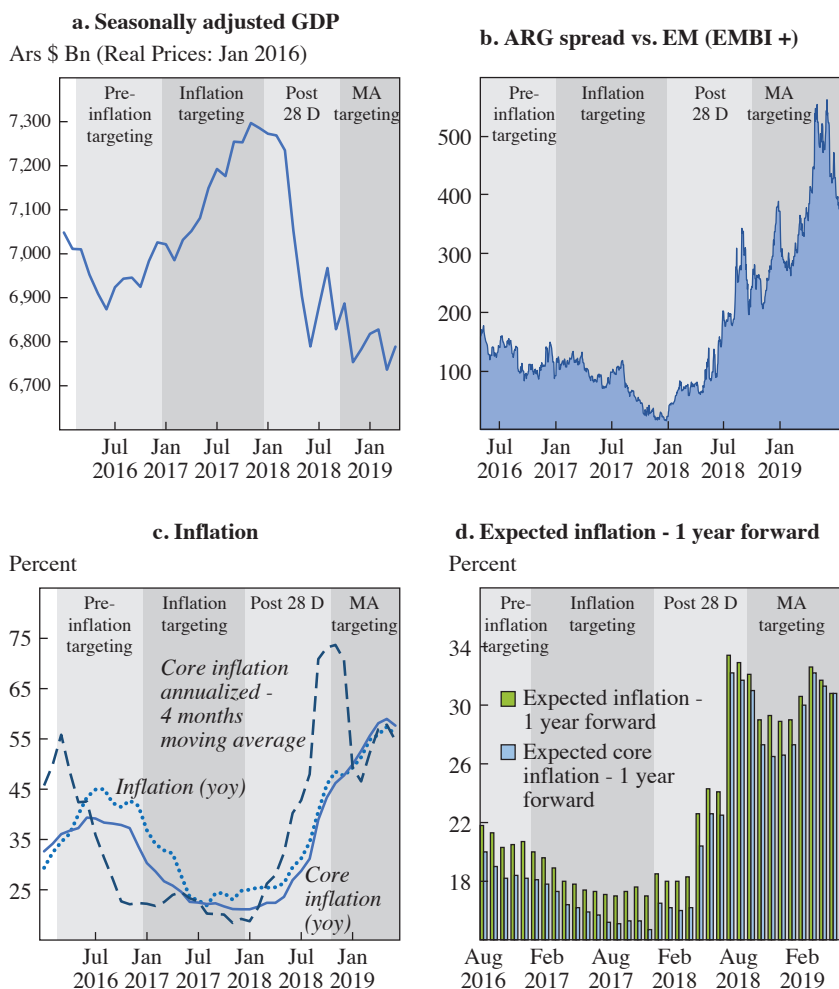
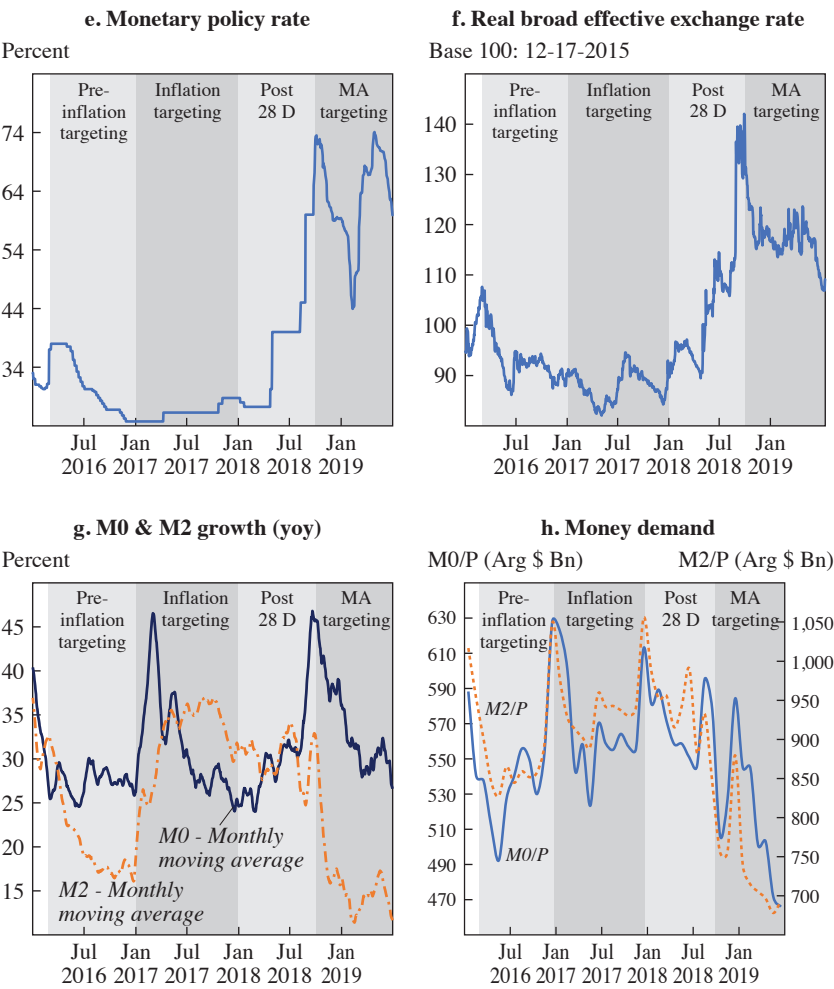
Figure 10. Main Variables after December 28, 2017

Figure 10. Main Variables after December 28, 2017 (*Continued*)



Sources: INDEC, BCRA, JP Morgan, CPI CABA, and CPI San Luis.

change in targets, indicating that the announcement had been read as a change in both fiscal and monetary policy. The markets had been willing to finance the government while it built political support, but with the mid-term elections behind, there were no excuses for further procrastination. The announcement then cast doubts on the intentions of the government to pursue fiscal consolidation.

On December 28, the Central Bank reduced the interest rate on longer Lebac (also as a result of the softening of the targets) and in April announced that it would not issue Lebac with a maturity longer than five months.⁶⁵ Both facts started piling up the maturities in the short end, reversing the liability management that the Central Bank had achieved in the second half of 2017 and increasing the rollover risk of Lebac. As can be seen in figure 9, panel f, Lebac auctions had been reduced from about 60 percent of the money base to about 30 percent by December 2017, but this process was fully reversed in the first months of 2018. This would turn out to be a costly mistake. In fact, while this had been a policy decision, market participants believed it could only be the response to difficulties in rollover, which worsened market sentiment.

Facing dwindling credibility, the Central Bank and the executive decided to try to restore it by focusing on the objective that wage negotiations should close in line with the new 15 percent inflation target, as well as containing the exchange rate, which it perceived as having now a stronger impact on price dynamics, leading to intervention in the FX market during most of March. The Central Bank hoped that the market would read the support of the exchange rate as a precommitment on future monetary policy. However, after two years of almost free floating, the interventions only added to the confusion about the monetary regime. In fact, expectations continued to anticipate a significant loosening of monetary policy. Rates remained unchanged, but this was not enough to change this view.

As uncertainty on the economic program mounted, worries grew on Argentina's ability to roll over its debt. Most indebtedness had been incurred in external debt denominated in dollars, thus making the fiscal situation itself vulnerable to a large devaluation. In this unfavorable context, on April 24 a new tax on financial income, approved as part of the fiscal reform at the end of the previous year, came into effect.⁶⁶ The first

65. BCRA communication P50902; <https://www.bcra.gob.ar/Pdfs/comytexord/P50902.pdf>.

66. National Tax Agency's General Resolution 4227/2018; <http://servicios.infoleg.gob.ar/infolegInternet/anexos/305000-309999/308760/norma.htm>.

tranche was a tax on nonresidents, on all instruments, including Central Bank securities. The result was a massive exit from government paper and Lebac. The Central Bank interpreted this as a specific portfolio shift and decided to redeem the Lebac in exchange for dollars, avoiding an exchange rate jump. The Central Bank sold US\$ 1.5 billion on April 25 and US\$ 5.3 billion in the first week of the crisis.⁶⁷ The stock of Lebac fell by 137 billion pesos, roughly an equivalent amount.

Concerned with the inflationary process, the initial sales were made at the ongoing exchange rate. The Central Bank argued that the peso had depreciated significantly relative to other currencies since the end of 2017, so it was not clear that a further adjustment would be necessary. In this view, the sale of reserves was a way of accommodating the portfolio shift, avoiding excessive volatility in the exchange rate. It took less than a day for the Central Bank to realize that much more was at stake, as other currencies, particularly the Brazilian real and the Turkish lira, also came under attack, probably in response to tightening interest rates in the United States.

This put the Central Bank in a bind: it was using the exchange rate as a substitute anchor, given that its credibility had been worn out by the December 28 announcements, but that conflicted with the need to adjust the exchange rate in a deteriorating context, where two exogenous factors became more visible—a severe drought, the worst in 70 years, coupled with the hike in interest rates in the United States.⁶⁸ Therefore, the Central Bank moved to a strategy of leaning against the wind in an attempt to smooth the exchange rate market, while not necessarily going against an adjustment of the real exchange rate that it would not be able to put off. Simultaneously, along the way, it would use the sale of reserves as a way of canceling Central Bank liabilities. This strategy continued until October, when the Central Bank exited the FX market. By then, it had sold US\$ 13.5 billion of reserves and reduced its Lebac stock by 617 billion pesos (figure 9, panel b), about half the stock that the Central Bank had a few months earlier.

The combination of the peso depreciation, the increase in country risk, and the drought led to a sharp contraction in economic activity.

67. See BCRA daily statistics; www.bcra.gov.ar/Pdfs/PublicacionesEstadisticas/seriee.xls.

68. See the Rural Society of Rosario, press note, February 19, 2018; <https://ruralrosario.org/detalle/10599/Comunicado-de-Prensa-19-02-18-La-sequia-mas-importante-de-los-ultimos-70-anos.html>.

By May 2018, as the exchange rate continued to search for a new equilibrium, the sudden stop was aggravated. The lack of clarity in exchange rate policy did not help align expectations. With the access to markets cut off, as was made clear by a couple of unsuccessful government debt auctions, the government acted swiftly and sought help from the International Monetary Fund (IMF). Yet the announcement of this move did little to calm the market.

In the meantime, the policy rate was increased to 40 percent with only partial success. During this time, the Central Bank continued to sell dollars against Lebac. In the weeks that followed, however, the climate continued to deteriorate, and the rollover of Lebac became a source of concern. In order to calm expectations, on May 14 the Central Bank committed US\$ 5 billion at a rate of 25 ARS/USD (a value more than 40 percent above the level of mid-December), thus imposing an upper band to the exchange rate.

This commitment brought some relief and allowed for a new issue of US\$ 3 billion in peso-denominated bonds on May 16, which were mostly bought by foreign investors. It was decided that the dollars thus obtained would be sold by the Treasury rather than bought by the Central Bank, as had been the case throughout the first two years. But these resources quickly dwindled, while the authorities of the Central Bank tried to bridge the time gap to an agreement with the IMF minimizing Central Bank FX intervention.

Two sources of concern started mounting, both related to the ongoing discussions with the IMF. First, it was believed that the IMF thought a much higher exchange rate was needed to deal with the sudden stop; second, it was understood that the IMF would constrain the use of Central Bank reserves. In that context, it was believed that the policy of redeeming Lebac with reserves could be discontinued. Both ideas increased the run on Lebac and the pressure on the FX market in anticipation of the IMF deal.

While the Central Bank had piled up reserves, a concern had been that reserves may be used for purposes other than the backing of the Lebac, forcing the Central Bank to monetize its liabilities. In reality, the opposite occurred. A strong social and media pressure developed to “protect” the reserves, as if society preferred to reduce its liabilities through inflation rather than relinquishing this asset. Thus, as the Central Bank continued to reduce the stock of Lebac against the sale of reserves, it received growing criticism. This added to the arguments suggesting that the Central Bank may eventually stop selling reserves and accelerated the run. Paradoxically, the accumulation of reserves did not serve to ease fears of potential

instabilities, but neither did the reduction in the liabilities that were the source of concern in the first place.

IV.B. The IMF Program

The IMF believed that Argentina had suffered a sudden stop as a result of slow fiscal consolidation, together with an institutional deterioration in monetary institutions as a result of the December 28 announcements. Thus, naturally, the focus was placed on improving fiscal accounts and recovering the Central Bank's credibility.

The agreement with the IMF led to relatively timid adjustments in fiscal numbers (primary deficits of 2.7 percent of GDP in 2018 and 1.3 percent in 2019 were allowed, only reaching equilibrium in 2020), while transfers from the Central Bank would be forbidden. To avoid further interference with the Central Bank, a new bill enshrining the independence of the Central Bank would be sent to Congress. In addition, the government committed to buying back some of the debt issued to the Central Bank to strengthen its balance sheet. The expected impact on the evolution of Lebac's is shown in figure 9, panel e.

The program was sufficiently large to allow Argentina to roll over most of its debt and finance its transitory deficit, and it became the largest program in the IMF's history, committing US\$ 50 billion. It maintained the main tenets of the macro framework: inflation targeting and floating rates. However, given the acceleration of inflation, as in the case of Ukraine, no inflation target was established for the first year of the program. The target for 2019 would be 17 percent, the original upper bound of the 2017 target. There would be minimal intervention in the exchange rate market, and if needed, it would be implemented through transparent auctions.

The Central Bank intervened sporadically to keep the exchange rate in check until the program was launched, then at the start it eliminated the cap on the exchange rate at 25 pesos per dollar and exited the exchange rate market. The exchange rate experienced a significant jump that day, which was considered unacceptable to the executive and led to the governor's replacement.

IV.C. Monetary Experiments

The new governor had two views. The first was that the exchange rate could be placed at whatever level the authorities desired, irrespective of monetary policy or expectations. All that was required was a smart way of intervening in the market, squeezing the shorts out of their positions and disciplining traders with surprise interventions. His second belief was that

the government could aid in the sterilization efforts so that, with appropriate coordination, Lebacs could be paid back in pesos and replaced by government debt.

There is extensive literature on exchange rate interventions, and there is evidence that intervention through reserve accumulation affects the real exchange rate in the short and medium term.⁶⁹ It has also been shown that intervention may help reduce the volatility of exchange rate fluctuations. Carstens (2019) provides a recent review. But there is little literature, if any, that focuses on intraday intervention, which was the tool the Central Bank argued would be used to affect exchange rate dynamics.

In fact, interventions became somewhat self-defeating: the irruption of the Central Bank as an additional player tended to dry liquidity, as market participants retrenched until they could better assess what this “large” player intended to do. In fact, to avoid this, the IMF argued that interventions should occur through auctions, since transparent interventions would be less disruptive to the market.

In order to address the run on Lebacs, the Central Bank increased interest rates further, eliminated the upper band of the repo corridor, and increased reserve requirements (3 pp on June 21, 3 pp on July 2, and 2 pp on July 18). In addition during 2018 the government partially honored its commitment to cancel some of its debt with the Central Bank (39.4 billion pesos).⁷⁰

However, the turning point occurred in August, when the Central Bank designed an ill-conceived strategy to reduce the stock of Lebacs.⁷¹ The idea was that the government would issue debt to “sterilize” the money printed, as Lebacs were paid out at a preestablished pace (the strategy was ill-conceived because government debt does not sterilize increases in money supply). The Central Bank was ready to sell dollars if necessary to contain money supply growth. In addition, banks were not allowed to renew their Lebac holdings, forcing them to move to Leliqs, another Central Bank liability, although these had a seven-day maturity and could only be held by financial institutions.⁷²

69. A good survey of literature on exchange rate interventions is Chamon and others (2019); see also Agénor and Pereira da Silva (2019).

70. See the BCRA's sheet “Base Monetaria,” column F; www.bcra.gov.ar/Pdfs/PublicacionesEstadisticas/serie.xls.

71. BCRA press note, August 13, 2018; <https://www.bcra.gob.ar/Institucional/DescargaPDF/DownloadPDF.aspx?Id=756>.

72. From then onward, investments in pesos had to be done through financial institutions, which later bought the Leliqs. This implied that the volatility of carry trade was transferred to the financial sector. Toward the end of the term, this became a source of concern.

On August 15, the Central Bank allowed 100 billion pesos (US\$ 3.3 billion) to mature, but then sold only US\$ 1 billion in the FX market to compensate the monetary effect. The released stock of pesos represented a jump in the monetary base of 16 percent that day, which shortly after fueled a run on the exchange rate, jumped from 30 ARS/USD to 39.60 ARS/USD in the month, and further unanchored prices (see figure 10, panel c). The end result was a reduction in the real value of Lebac's through an inflation shock.

As the FX depreciated, the value of Central Bank liabilities in dollars decreased from about US\$ 70 billion to about US\$ 20 billion in December. This resulted from a reduction in the sale of reserves (US\$ 15.9 billion) and from the devaluation itself (US\$ 35.4 billion). The combination wiped out the full stock of unbacked liabilities, as seen in figure 9, panel b, dramatically improving the balance sheet of the Central Bank (see figure 2).

As a result of the large monetary shock, inflation moved a step upward. It had been higher than 3 percent since June but reached 6.5 percent in September and 5.4 percent in October. The combination of the de-anchoring of prices, the jump in the exchange rate, and continued discretionary interventions in the FX market in violation of the agreement with the IMF led to the ousting of the governor, as the government realized it needed to implement a new revision in the program with the IMF to calm expectations. However, the decision to reduce the burden of peso liabilities through a significant jump in prices would create a lingering cost: by undermining credibility, the market requested extremely high nominal and real interest rates going forward, thus thwarting any possibility of economic recovery.

IV.D. The IMF II Program

The new program with the IMF agreed on a faster disbursement of funds, in exchange for tighter monetary and fiscal policy. The target for the primary fiscal result for 2019 was improved from -1.3 percent to 0 percent, which would come mostly from tax hikes.⁷³ On the monetary side, the program fixed monetary aggregates. As discussed in section II, fixing monetary aggregates faces the challenge of dealing with the volatility in money demand, which appears to be exceptionally high in the case of Argentina.⁷⁴ These uncertainties imply that any program focused on stabilizing monetary aggregates could face substantial deviations in terms of its objective to achieve disinflation.

73. See, for example, the IMF first review under the standby arrangement; <https://www.imf.org/~media/Files/Publications/CR/2018/cr18297-ArgentinaBundle.ashx>.

74. See table 3.

The program was marketed as one where base money growth would be zero, but it started immediately after the big shock in money supply in August and allowed an additional increase in money supply in December for seasonal reasons, which need not be reversed later on. Therefore, the initial monetary conditions turned out to be relatively lax. The program nevertheless was an initial success. Inflation dynamics not only stabilized but reversed, as reflected by a sharp drop in running weekly inflation, as well as in inflation expectations (figure 10, panels c and d). According to weekly data, inflation in November was only slightly above 1 percent (considering a comparison between the end of November and the end of October).⁷⁵ At the same time, the interest rate, now endogenous, jumped above 70 percent when the program was implemented. As the economy persisted in its deep recession, the conditions for quick disinflation were in place.

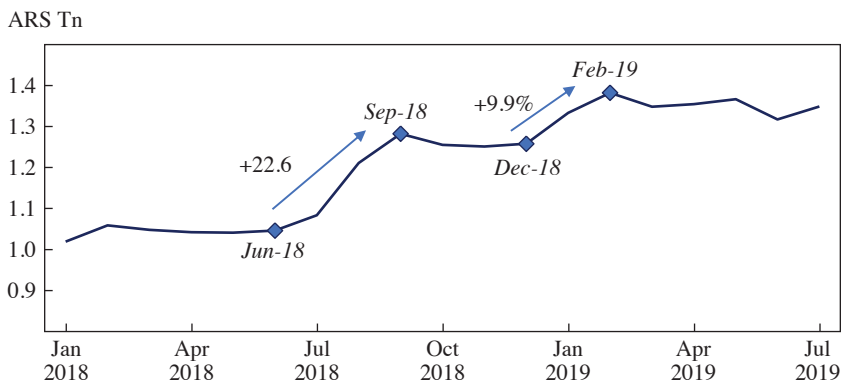
A wide band was established within which exchange rate fluctuations would be allowed, but with a monthly depreciation trend of 3 percent.⁷⁶ For a couple of weeks, the government seemed to buy into the program by stating that wage negotiations would be free but that agents should take into consideration the fact that the money supply would not grow the following year. However, shortly after, it started suggesting wage negotiations in the 20–25 percent range, inconsistent with the monetary target. In fact, Central Bank officials commented that after the November disinflation, the Treasury had asked the Central Bank to increase the inflation rate to avoid the lagged effect on pensions that could compromise the fiscal objective (a discussion on the speed of disinflation reminiscent of the one that led to the change in inflation targets a year before). Thus, the Central Bank extended the high rate of depreciation for the first quarter of the year (2 percent monthly).⁷⁷ The confirmation of this large expected depreciation into 2019 was very detrimental to expectations (see figure 10), as it implied that the Central Bank itself did not believe disinflation was possible.

The large jump in money supply in August and December was not reversed in January and February, when money demand usually falls. The

75. Elypsis; <http://elypsisweb.com/en/>.

76. See the speech by Guido Sandleris, governor of the BCRA, on September 26, 2018, when this new program was launched; <https://www.bcra.gob.ar/Institucional/DescargaPDF/DownloadPDF.aspx?Id=799>.

77. Monetary Policy Committee (COPOM) decision on January 2, 2019; <http://www.bcra.gov.ar/Noticias/Comunicado-2-enero-2019.asp>.

Figure 11. Seasonally Adjusted Monetary Base

Source: BCRA; seasonal adjustment by the author.

fact that the Central Bank allowed the interest rate to plunge (it fell from 59.25 percent at the end of 2018 to 44.21 percent on February 15, 2019) implied that it did not absorb this overhang, leading to a sharp increase in money supply (deseasonalized) in January and February (see figure 11). The result was a sharp depreciation in March and April and a very steep increase in inflation, which reached 4.7 percent in March. This caused a political earthquake and seriously compromised the government's prospects for an election that was now only six months away.

By early March, and as political uncertainty increased, the Central Bank realized that its monetary targets were too lax and started contracting the money supply and increasing the interest rate regardless of the target. In April, it froze the exchange rate bands through the rest of the year, while committing to freeze the money supply until December.⁷⁸ At the same time, it started sustaining a more stable path for the interest rate. Within a few months the Central Bank had come back full swing to a program with exchange rate targeting and interest rates as its primary policy instrument.

However, the exchange rate remained unstable. On April 29, the Central Bank announced that it had obtained a waiver from the IMF and had been allowed to intervene within the exchange rate band. However, the Central

78. Monetary Policy Committee (COPOM) decision on March 14, 2019; <http://www.bcra.gov.ar/Noticias/Comunicado-140319.asp>.

Bank made sure that no intervention was necessary by keeping rates high. As inflation remained high, the resulting increase in money demand clashed with a program that required keeping the money supply constant. In June, the Central Bank reacted by reducing reserve requirements.⁷⁹ This allowed it to keep compliant with the program (which only fixes base money), though easing monetary policy. At the beginning of July, it further reduced reserve requirements to deal with the high positive seasonality of money demand but simultaneously committed to reducing the monetary targets by an equivalent amount two months later.⁸⁰ However, when it was unable to meet the monthly target, it announced that the target would become bimonthly.⁸¹ Later, it increased the target for September and October. These permanent changes in the monetary framework hindered the recovery of credibility and, as a result, interest rates remained very high. The open primaries in August delivered a heavy blow to the government and increased uncertainty. With that, the end of the four-year term was marked by an abandonment of monetary restraint, unchecked monetary printing, a sharp depreciation of the peso, and accelerating inflation, which forced the government, in an almost ironic turn of events, to resort again to capital controls and a default on local debt.

V. Lessons Learned

In a nutshell, the Macri administration implemented a lax fiscal program financed with short-term external debt, together with an IT program with a flexible exchange rate. While the inflation targets had been set to be consistent with fiscal needs, fiscal consolidation lagged and disinflation compromised further improvements in fiscal results as lagged indexation of about half the spending entailed an increase in real spending. This led to a conflict between the Central Bank and the Treasury that was settled with a change in inflation targets. The uncertainties this created in the macroeconomic framework coincided with a tightening of rates in the United States and a severe drought. Combined, these factors produced the ingredients for a sudden stop that led to a sharp recession and an abrupt adjustment of the exchange rate, while the government, slowly at first, but decidedly in 2019, tackled fiscal consolidation. While the consolidation of fiscal policy

79. BCRA communication A6703, <http://www.bkra.gov.ar/Pdfs/comytexord/A6703.pdf>, and BCRA communication A6706, <http://www.bkra.gov.ar/Pdfs/comytexord/A6706.pdf>.

80. Monetary Policy Committee (COPOM) decision on July 1, 2019; <http://www.bkra.gov.ar/Noticias/Decisiones-del-Comite-de-Pol%C3%ADtica-Monetaria-010719.asp>.

81. Monetary Policy Committee (COPOM) decision on July 22, 2019; <http://www.bkra.gov.ar/Noticias/Decisiones-del-Comite-de-Pol%C3%ADtica-Monetaria-220719.asp>.

provided a chance at stabilization, lax monetary policy and the withdrawal of political support in the primary elections, combined with doubts about the policies of the future government, precipitated the economy again into turmoil toward the end of Macri's presidency.

From a policy perspective, these four years pose a number of questions. Was fiscal gradualism a mistake? Was fiscal policy adequate? Was IT too fast and aggressive? Was the change in targets justified? Was aiming for a floating rate a mistake? Was the accumulation of reserves (and Lebac's or Leliq's) excessive? Was the financing structure of fiscal deficits correct? Was the reaction to the sudden stop adequate? Were the poor results derived from domestic or external factors, or were they just a product of bad luck? This paper has tried to provide evidence and an analysis with these questions in mind. In what follows, I summarize possible answers to these questions.

Was gradualism a mistake? As mentioned, gradualism was more of a political choice than an economic one. The risks of gradualism—higher debt and a larger risk of a credit event—were well understood. The goal of gradualism was to build political capital, which could be handy in times of need. The markets approved the strategy, and country risk actually decreased throughout the first two years, reaching a minimum after the midterm elections. Thus, gradualism provided a feasible path for reform. Yet, after the midterm elections, when the political thesis had been proven correct, the government relaxed both fiscal and monetary policies. This led to a quick reversal of expectations, which was responsible for the turnaround, not gradualism per se.

Was fiscal policy adequate? Even if gradualism may have been the correct strategy, fiscal policy was shown to have actually moved in the opposite direction. Rather than implementing a gradual deficit reduction, the deficit initially *increased* (with unclear political and economic benefits). Even though markets were complacent with this situation, it built significant risks. It not only required stronger actions down the road, but the sustained weakness in fiscal policy was ultimately responsible for the change in inflation targets, undermining the credibility of the whole program. Fiscal dominance regarding monetary policy was contained by fixing the transfers to be received from the Central Bank, yet a different sort of fiscal dominance emerged: the need for a slower path of disinflation to avoid a large fiscal effect from backward indexation. The inconsistency between the speed of disinflation and fiscal needs led to a reversal of the two stabilization programs: first in the form of a change in the inflation targets, and second, after the IMF II, by setting a large rate of depreciation.

In this sense, lack of progress on the fiscal front played a key role in undermining stabilization attempts. In short, it is difficult not to point to fiscal policy as the main reason for the program's collapse.

Was inflation targeting too fast and aggressive? The analysis of section III addresses this issue. Other countries implemented IT or a path to IT at inflation rates similar to those of Argentina, and the path of disinflation chosen was very much in line with the international experience. A framework with floating rates (the norm after the 2000s) in some cases even accelerated the disinflation by allowing large appreciations.

Some analysts have suggested that IT was too aggressive because interest rates were too high, leading to an exchange rate appreciation that meant that the successful disinflation of 2016–2017 was unsustainable. But this view is contradictory with inflation expectations for 2018 and 2019, which, prior to the change in targets, suggested the disinflation (and growth) process would continue into the future.⁸²

I did, however, point out several drawbacks in implementation. Three-digit utility price adjustments spiked inflation, which led to continuously missing the target and undermining credibility, particularly when overall inflation, rather than core inflation, had been chosen. There was no institutional framework to correct the inflation targets, and while disinflation was steady, monetary policy ended up being not as tight as required to achieve the targets, leading to deviations. Trying to show its commitment to disinflation, the Central Bank focused on these misses, without realizing that, in doing so, it was eroding its own credibility.

A point not to be missed is that IT regimes in particular, and disinflation in general, presuppose central banks' independence and a lack of fiscal dominance. In fact, had the Central Bank been independent, the turnaround in policies and unanchoring of expectations following December 28 would not have occurred, and the turmoil of the final months of the administration would have also been avoided as nobody would have thought that there would be big changes in monetary policy as a result of an election outcome. However, the failed experiences of these two disinflation attempts do not seem to have convinced the general public regarding the need for an independent Central Bank.

Therefore, one possible conclusion is not that the inflation program was excessively ambitious but that neither the fiscal nor the institutional

82. This also holds for inflation expectations computed from bond prices. Corso and Matarrelli (2019) show that by end of 2017, inflation expectations for 2019 were close to 10 percent, similar to that of analysts.

preconditions were present. Of course, this does not mean that another disinflation program would have performed better. It simply indicates that those preconditions should have been addressed more forcefully. In fact, in our opinion, the main lesson from this experience going forward is that it is key to create a much stronger institutional framework for macroeconomic policy: an independent Central Bank and some sort of fiscal rule, perhaps along the lines of the structural fiscal surplus that Chile implemented in the 1990s.

Was the change in targets justified? Much of this paper's analysis placed the change in targets as central to the turnaround in expectations, as it meant a debasement of the Central Bank's credibility. This debasement, in turn, unanchored the disinflation process and, sooner rather than later, required higher interest rates, aborting the economic recovery and opening the room for multiple equilibria. Of course, had fiscal consolidation not occurred, the program would eventually have had to face a financing reckoning. But the change of targets virtually exhausted any remaining buffer that the market was willing to provide, thus precipitating the crisis.

Was aiming for a floating rate a mistake? An issue of much discussion was whether a floating exchange rate was an appropriate choice, particularly in a country with such a long history of inflation and dollarization. I discussed this from different perspectives. On the one hand, other countries floated their exchange rates in disinflation processes similar to that of Argentina, which typically helped accelerate disinflations. On the other hand, I demonstrated that the exchange rate played a limited role in price dynamics, particularly during the IT regime period, when expectations drove most of the process. This can be considered a success of the IT framework and confirms that Argentina is normal in all possible ways: faced with a credible monetary policy, pricing behavior immediately changed, even relative to decade-long practices.

At the same time, a floating rate may have provided a buffer both in the period of capital inflows and in the sudden stop. In fact, toward the end of the term, employment was growing, even amid a protracted recession, thus suggesting that the depreciation was helping reduce the impact of the shocks in the labor market. While my analysis suggests that seeking a floating rate may not have been an unreasonable choice, by implementing a floating rate, the government also gave away the benefits of an economic boom it could have profited from with an exchange rate-based stabilization. Whether this boom would have provided more room for implementing reforms or accelerating fiscal convergence remains an open question. However, this idea can be turned upside down, arguing that the problem

was that the government did not implement a *sufficiently* floating rate. If the Central Bank had not purchased reserves in the face of the inflows driven by the fiscal deficit, the exchange rate would have plunged; this could have provided a quicker success on the inflation front, which may have also helped provide political support for reforms.

Before moving on, it is worth mentioning another relevant advantage of flexible rates: the flexibility it provides is not only economic, but also institutional. A fixed exchange rate, being a government commitment, creates a sense of obligation to compensate losers if a devaluation occurs, which is not present with floating rates. Thus, it is much easier to adjust to shocks “without changing the rules of the game” with floating rates than with fixed rates. Argentina was able to go through a large sudden stop in 2018 and 2019 without fundamentally changing contracts, something that may help build confidence and reduce risks going forward.

Was the accumulation of reserves (and Lebacs) excessive? During the initial phase of the program, the Central Bank acquired the dollars bought by the government to finance its deficit, issuing short-term Central Bank paper to sterilize the monetary effect of these purchases. Was this a mistake? While *prima facie* it would seem obvious that without reserves some should be accumulated, the fact that they were purchased with short-term peso debt increased the temptation of an inflationary dilution. Calvo (1988, 1991) provides a simple specification. In his model, government finances debt in local currency. In the absence of a precommitment the market chooses the interest rate and the government decides whether to default or not on the debt. His main idea is that there are multiple equilibria, depending on how the government internalizes costs and benefits for default. At low interest rates, the cost of servicing the debt is low, and the unique equilibrium is no default. At very high rates, taxes required to service the debt are larger, and the government may find an incentive to default.

During 2018, several developments increased the possibility of a bad equilibrium. On the one hand, the size of reserves and debt had increased; on the other, the December 28 announcements had broken the precommitment equilibrium by signaling that the government assigned a lower cost to inflation than previously expected. As a result, the private sector asked for a higher rate *ex-ante*, and the higher rate increased the incentives to default. In that sense, the initial increase in the interest rate to 40 percent (and subsequent increases) was a double-edged sword. It was necessary to reduce the required sales of reserves, but it also created multiple equilibria.

The accumulation of reserves also hindered a quicker disinflation. Had the Central Bank not intervened, would a larger appreciation and maybe a faster disinflation have occurred? Would this have allowed for more political support and a faster convergence to a low inflation equilibrium? Would it have allowed the Central Bank to achieve its inflation target, thus improving credibility and easing the disinflation process? We will never know the answer to these counterfactual exercises. Regarding the incentives for fiscal imbalance, had the Central Bank not purchased the reserves, the government probably would have found a limit to its indebtedness earlier on. This may have pushed for faster fiscal consolidation and, through that channel, it may have induced a better outcome.

Is this enough to conclude that the process of reserve accumulation was too large or inconvenient? This remains an open question. The reserve accumulation reduced vulnerabilities, and the possibility of facing the sudden stop without reserves would also have to be evaluated, and the prospect of such a scenario appears daunting. The accumulation of international reserves also contained the exchange rate appreciation resulting from the government deficit, reducing the current account deficit, which even *with* the intervention was considered a source of concern.

While it is difficult to assess the relative benefits and costs, toward the end of the presidential term everything seemed to hinge on the availability of reserves, thus suggesting that accumulating them earlier on may have provided a valuable insurance mechanism.

Was the financing structure of fiscal deficits correct? The financing of the deficit was done with short-term external debt in foreign currency, which led to substantial vulnerabilities: a larger real exchange rate appreciation, a bigger current account deficit, a currency mismatch in case of a real exchange rate depreciation, and high rollover risk. While the Central Bank tried to reduce the currency mismatch by accumulating dollars (a policy that worked as expected, producing a significant reduction in its liabilities in 2018 and 2019), the reversal of its 2017 strategy to extend maturities on Central Bank paper added to the rollover risk of the consolidated public sector debt. While the Treasury attempted some domestic currency issues, these became unfeasible as instability mounted, and there were no serious attempts to reprofile the debt, including some obvious alternatives, such as transforming debt owned by the public sector into peso-indexed debt with longer maturities and lower rollover risk. In all, the financing structure added significant volatility. And, as mentioned above, focusing on the domestic market would have shown the limits to debt financing earlier on and would have led to more fiscal discipline.

Table 5. Effects of Sudden Stops

OLS	Dependent var.: $GDP_t - GDP^*$		OLS	Dependent var.: $GDP_t - GDP^*$	
	(1)	(2)		(1)	(2)
Floating	0.0196** (0.0078)	0.0186** (0.0080)	Floating	0.0301*** (0.0093)	0.0291*** (0.0094)
Deposit rate	-0.0017*** (0.0002)	-0.0016*** (0.0002)	Deposit rate	-0.0016*** (0.0002)	-0.0016*** (0.0003)
World exports	0.0719** (0.0311)	0.0710** (0.0321)	World exports	0.0846** (0.0366)	0.0861** (0.0390)
Terms of trade	0.0963** (0.0379)	0.0971** (0.0397)	Terms of trade	0.0953** (0.0432)	0.0949** (0.0460)
Openness	0.0131 (0.0083)	0.0125 (0.0100)	Openness	0.0121 (0.0085)	0.0115 (0.0101)
Regional dummies	No	Yes	Regional dummies	No	Yes
Observations	81	81	Observations	64	64
Sample: Countries that experienced a financial account contraction (yoy) larger than one standard error below its sample mean and larger than 3 percent of GDP and an adjustment of the current account of more than 2 percent of GDP in the same year, the following year, or accumulated between those two years.			Sample: Countries that experienced a financial account contraction (yoy) larger than one standard error below its sample mean and larger than 5 percent of GDP and an adjustment of the current account of more than 2 percent of GDP in the same year, the following year, or accumulated between those two years.		

Sources: IMF and World Bank.

Notes: " $GDP_t - GDP^*$ " stands for variation of real GDP (yoy) minus the long-run trend of real GDP from 1970 to 2018. "Floating" indicates the dummy variable = 1 in countries with floating exchange rate regime, as defined in Levy-Yeyati and Sturzenegger (2016) for 2001–13, and IMF (2019) for 2014–18. "Deposit rate" is the annual change in the interest rate of deposits. "World exports" is the year-on-year variation. "Terms of trade" are logarithmic difference of terms of trade. "Regional dummies" are the regions considered: Latin America, Africa, Asia, and "others" (which includes countries of the Pacific Ocean, Eastern Europe, and the Middle East). Robust standard errors.

*Significant at 10 percent; **significant at 5 percent; ***significant at 1 percent. Standard deviation in parentheses.

Was the reaction to the sudden stop the adequate one? Once faced with the sudden stop, it is necessary to decide the best way to deal with it.⁸³ Table 5 shows performance in a sudden stop as a result of policy responses. The dependent variable is the change in output, and the explanatory variables are global growth, terms-of-trade shocks, interest rates, openness, and the exchange rate regime.⁸⁴ The results here are relatively

83. See Cavallo (2019) for a recent review.

84. See Guidotti, Sturzenegger, and Villar (2004).

standard. Floating rates and lower interest rates provide the best recipe for dealing with the sudden stop, in line with Ortiz and others (2009); the ability to implement countercyclical fiscal and monetary policy in those events improves output performance.⁸⁵

How do these results help us understand Argentina's experience? Once the sudden stop began, because prices had become unanchored due to the December 28 announcements, the Central Bank initially did not allow the exchange rate to fully float and sharply increased the interest rate. This policy response was suboptimal. The first IMF program was thought to provide room for a better response: to avoid an excessively procyclical fiscal policy and to recover credibility as a way of allowing the exchange rate to do its job. But the program failed to deliver this change of expectations. In 2019, fiscal policy became very contractionary and, while its effects were somewhat buffered by the floating exchange rate, the economy could not recover.

Finally, were the poor results derived from history, self-created mistakes, external factors, or just bad luck? While the macroeconomic heritage received by the government was not ideal, it is difficult to blame the results on it. The start of the program was relatively successful, and the economy experienced healthy growth in the first two years. In fact, by the end of the second year, growth expectations were solid at 3 percent per year for the remaining two years.⁸⁶ If heritage did not hinder such a positive start, why would it constrain what happened afterward? Luck played its role, primarily in the guise of a large drought that shaved off 2 percent of GDP in early 2018 (BCRA 2018b, 28), which in turn coincided with a tightening of external conditions due to the interest rate hikes associated to the reversal of quantitative easing policies in the United States. However, this shock was limited in size and affected many countries without the same consequences. Thus, it is difficult to associate the bad performance with luck or external conditions.

In the end, the blame resides in the policies that were introduced: fiscal policy deterioration at the beginning of the administration and betting on short-run growth, even at the expense of monetary institutions and inflation. Slackening the fight against inflation appears to have been a costly and obvious political mistake in a country that rewards stabilization

85. For an analysis of the effects of the exchange rate policy, see Levy-Yeyati (2019); for an analysis of sudden stops dynamics, see Calvo (1998).

86. BCRA Market Expectations Survey, December 2017, p. 13; <http://www.bcr.gov.ar/Pdfs/PublicacionesEstadisticas/REM171228%20Resultados%20web.pdf>.

in the polls. This mistake seems paradoxical for a team that had showed significant professionalism in its evaluation of political risks and benefits and had seen the political benefits of disinflation in the midterm elections of 2017.

At the end, quite ironically, Macri's presidency failed from an excess of populism: lax fiscal policies and an inability to build macroeconomic institutions, in particular, weakening the Central Bank. It is somewhat paradoxical that it was this excess of populism that undermined Macri's attempt to prove populism wrong. In the end, the experience suggests that institutional buildup is an essential prerequisite for a successful stabilization and growth process. Even in this basic lesson Argentina is conventional.

ACKNOWLEDGMENTS Paper prepared for the Fall 2019 Brookings Papers on Economic Activity Conference. I thank Alberto Ades, Daniel Artana, Santiago Barraza, Nicolas Catena, Domingo Cavallo, Eduardo Cavallo, Marcelo Delmar, Florencia Gabrielli, Corso Galardi, Ricardo Lopez Murphy, Lucas Llach, Mauricio Macri, Andy Neumeyer, and seminar participants at Johns Hopkins, Universita Bocconi, IADB, the Peterson Institute, Universidad de San Andrés, and UTDT, as well as Janice Eberly, Rafael Di Tella, and Andres Velasco for their useful comments. I also thank Federico Forte, Santiago Cesteros, and Tomás Vilá for their useful research assistance. I also thank Luciano Cohan and Alberto Cavallo for making high-frequency price data available. Any remaining errors are mine.

References

- Adrian, Tobias, Douglas Laxton, and Maurice Obstfeld. 2018. *Advancing the Frontiers of Monetary Policy*. Washington, D.C.: International Monetary Fund.
- Agénor, Pierre-Richard, and Luiz A. Pereira da Silva. 2019. *Integrated Inflation Targeting: Another Perspective from the Developing World*. Basel: Bank for International Settlements.
- Aguirre, Horacio, Tamara Burdisso, and Federico Grillo. 2006. "Hacia una estimación de la demanda de dinero con fines de pronóstico: Argentina, 1993–2005" [Toward an estimation of money demand with forecasting purposes: Argentina 1993–2005]. *Ensayos Económicos* [Essays in Economics] 45: 7–44.
- Ahumada, Hildegart, and María Lorena Garegnani. 2002. "Understanding Money Demand of Argentina: 1935–2000." Paper prepared for Seventh Conference on Monetary and International Economics, National University of La Plata, La Plata, Argentina, May 2002.
- Alvarez, Fernando, Martin Beraja, Martín Gonzalez-Rozada, and Pablo Andrés Neumeyer. 2018. "From Hyperinflation to Stable Prices: Argentina's Experience with Menu Costs." *Quarterly Journal of Economics* 134, no. 1: 451–505.
- Argentine Ministry of Treasury. 2018. *La Reforma Tributaria Argentina de 2017* [The 2017 tax reform of Argentina]. Secretariat of Economic Policy.
- Banco Central de la República Argentina (BCRA). 2015. *Monetary Policy Report*. December. http://www.bcra.gov.ar/PublicacionesEstadisticas/Informe_macroeconomico_y_de_politica_monetaria_i.asp.
- Banco Central de la República Argentina (BCRA). 2016a. *Monetary Policy Report*. May. http://www.bcra.gov.ar/Pdfs/PoliticaMonetaria/IPM_Mayo_2016_i.pdf.
- Banco Central de la República Argentina (BCRA). 2016b. *Monetary Policy Report*, October. https://www.bcra.gob.ar/Pdfs/PoliticaMonetaria/IPOM_Octubre_2016_i.pdf.
- Banco Central de la República Argentina (BCRA). 2016c. *Monetary Policy Report*, July. http://www.bcra.gov.ar/Pdfs/PoliticaMonetaria/IPOM_Julio_2016_i.pdf.
- Banco Central de la República Argentina (BCRA). 2017a. *Monetary Policy Report*, April. http://www.bcra.gov.ar/Pdfs/PoliticaMonetaria/IPOM_April_2017_i.pdf.
- Banco Central de la República Argentina (BCRA). 2017b. *Monetary Policy Report*, July. https://www.bcra.gob.ar/Pdfs/PoliticaMonetaria/IPOM_July_2017_i.pdf.
- Banco Central de la República Argentina (BCRA). 2018a. *Monetary Policy Report*, January. http://www.bcra.gov.ar/Pdfs/PublicacionesEstadisticas/IPOM_Enero_2018_i.pdf.
- Banco Central de la República Argentina (BCRA). 2018b. *Monetary Policy Report*, October. http://www.bcra.gov.ar/Pdfs/PoliticaMonetaria/IPOM1018_i.pdf.
- Barro, Robert J. 1979. "On the Determination of the Public Debt." *Journal of Political Economy* 87, no. 5: 940–71.
- Bassetto, Marco, and Christopher Phelan. 2015. "Speculative Runs on Interest Rate Pegs." *Journal of Monetary Economics* 73: 99–114.

- Beblavy, Miroslav. 2002. "Exchange Rate and Exchange Rate Regime in Slovakia: Recent Developments." Working Paper 5. International Center for Economic Growth.
- Benati, Luca, Robert E. Lucas Jr., Juan Pablo Nicolini, and Warren Weber. 2016. "International Evidence on Long Run Money Demand." Working Paper 22475. Cambridge, Mass.: National Bureau of Economic Research. <https://www.nber.org/papers/w22475>.
- Bruno, Michael, Guido Di Tella, Rudiger Dornbusch, and Stanley Fischer, eds. 1988. *Inflation Stabilization: The Experience of Israel, Argentina, Brazil, Bolivia, and Mexico*. Cambridge, Mass.: MIT Press.
- Bufman, G., and L. Leiderman. 1998. "Monetary Policy and Inflation in Israel." Working Paper 04/1998. Bank of Israel.
- Calvo, Guillermo A. 1988. "Servicing the Public Debt: The Role of Expectations." *American Economic Review* 78, no. 4: 647–61.
- Calvo, Guillermo A. 1991. "The Perils of Sterilization." *IMF Staff Papers* 38, no. 4: 921–26.
- Calvo, Guillermo A. 1998. "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops." *Journal of Applied Economics* 1, no. 1: 35–54.
- Calvo, Guillermo A., and Carmen M. Reinhart. 2002. "Fear of Floating." *Quarterly Journal of Economics* 117, no. 2: 379–408.
- Calvo, Guillermo A., and Carlos A. Végh. 1993. "Exchange-Rate Based Stabilisation under Imperfect Credibility." In *Open-Economy Macroeconomics*, edited by Helmut Frisch and Andreas Wörgötter. London: Palgrave Macmillan.
- Calvo, Guillermo A., and Carlos A. Végh. 1999. "Inflation Stabilization and BOP Crises in Developing Countries." In *Handbook of Macroeconomics*, edited by J. B. Taylor and M. Woodford, edition 1, volume 1, chapter 24, pages 1531–1614. Amsterdam: Elsevier.
- Carstens, Agustín. 2019. "Exchange Rates and Monetary Policy Frameworks in Emerging Market Economies." Lecture given at the London School of Economics, London, May 2.
- Cavallo, Eduardo A. 2019. "International Capital Flow Reversals (Sudden Stops)." In *Oxford Research Encyclopedias, Economics and Finance*. New York: Oxford University Press.
- Céspedes, Luis Felipe, Roberto Chang, and Andrés Velasco. 2014. "Is Inflation Targeting Still on Target? The Recent Experience of Latin America." *International Finance* 17, no. 2: 185–208.
- Chamon, M., David Hofman, Nicolás E. Magud, and Alejandro Werner, eds. 2019. *Foreign Exchange Intervention in Inflation Targeters in Latin America*. Washington, D.C.: International Monetary Fund.
- Cochrane, John H. 2011. "Determinacy and Identification with Taylor Rules." *Journal of Political Economy* 119, no. 3: 565–615.
- Cole, Harold L., and Timothy J. Kehoe. 1996. "A Self-Fulfilling Model of Mexico's 1994–1995 Debt Crisis." *Journal of International Economics* 41, nos. 3–4: 309–30.

- Corso, Eduardo A., and Constanza Matarrelli. 2019. "Expectativas de Inflación Implícitas en la Curva de Rendimientos: Argentina 2017–2018" [Implicit inflation expectations in the yield curve: Argentina 2017–2018]. Technical Note 3/2019. Buenos Aires: Banco Central de la República Argentina. https://www.bcr.gov.ar/Pdfs/PublicacionesEstadisticas/NotasTecnicas/Nota_Tecnica_n3.pdf.
- Daude, Christian, Ángel Melguizo, and Alejandro Neut. 2010. "Fiscal Policy in Latin America: Countercyclical and Sustainable at Last?" Working Paper 291. Paris: Organisation for Economic Cooperation and Development. https://www.oecd-ilibrary.org/development/fiscal-policy-in-latin-america_5km8zdc7j41-en.
- de Campos Meirelles, Henrique. 2003. "Como é do conhecimento de Vossa Excelência" [Mr. Minister, As you know . . .]. Letter from the governor of Banco Central do Brasil, to the minister of finance, January 21. <https://www.bcb.gov.br/htms/relinf/carta2003.pdf>.
- de la Torre, Augusto, Eduardo Levy-Yeyati, and Samuel Pienknagura. 2013. "La desaceleración en América Latina y el tipo de cambio como amortiguador" [The slowdown in Latin America and the exchange rate as a buffer]. *LAC Informe Semestral* [LAC Semiannual Report], October. Washington, D.C.: World Bank. https://www.worldbank.org/content/dam/Worldbank/Feature%20Story/lac/AM_LAC_es.pdf.
- De Paoli, Bianca. 2009. "Monetary Policy and Welfare in a Small Open Economy." *Journal of International Economics* 77, no. 1: 11–22.
- Di Giovanni, Julian, and Jay C. Shambaugh. 2008. "The Impact of Foreign Interest Rates on the Economy: The Role of the Exchange Rate Regime." *Journal of International Economics* 74, no. 2: 341–61.
- Di Tella, Rafael. 2019. Comment on "Macri's Macro" by Federico Sturzenegger. In the present volume of *Brookings Papers in Economic Activity*.
- Dornbusch, Rudiger, and Sebastian Edwards, eds. 1991. *The Macroeconomics of Populism in Latin America*. Chicago: University of Chicago Press.
- Escolano, Julio. 2010. "A Practical Guide to Public Debt Dynamics, Fiscal Sustainability, and Cyclical Adjustment of Budgetary Aggregates." IMF Technical Notes and Manuals 10/02. Washington, D.C.: International Monetary Fund, Fiscal Affairs Department.
- Fedelino, Annalisa, Anna Ivanova, and Mark Horton. 2009. "Computing Cyclically Adjusted Balances and Automatic Stabilizers." IMF Technical Notes and Manuals 09/05. Washington, D.C.: International Monetary Fund, Fiscal Affairs Department.
- Fischer, Stanley. 2001. "Exchange Rate Regimes: Is the Bipolar View Correct?" *Journal of Economic Perspectives*, American Economic Association, 15, no. 2: 3–24, Spring.
- Fondo de Garantía de Sustentabilidad (FGS). 2016. *Accountability Report to the Congress*. October.
- Frankel, Jeffrey, Ben Smit, and Federico Sturzenegger. 2008. "Fiscal and Monetary Policy in a Commodity-Based Economy." *Economics of Transition* 16, no. 4: 679–713.

- Frenkel, Jacob. 1996. "Israel's Experience with Inflation." In *Economic Policy Symposium Proceedings: Achieving Price Stability*. Jackson Hole, Wyo.: Federal Reserve Bank of Kansas City.
- Galiani, Sebastian. 2018. "La herencia y el esfuerzo fiscal" [The inheritance and fiscal effort]. Blog post, December 7, Foco Económico. <http://focoeconomico.org/2018/12/07/la-herencia-y-el-esfuerzo-fiscal/>.
- Garcia, Carlos J., Jorge E. Restrepo, and Scott Roger. 2011. "How Much Should Inflation Targeters Care about the Exchange Rate?" *Journal of International Money and Finance* 30, no. 7: 1590–1617.
- Garcia, Márcio. 2006. "Inflation Targeting in Brazil: Evaluation and Policy Lessons for Latin American Countries." Working Paper. http://www.economia.puc-rio.br/mgarcia/Artigos/Infl_Targ_Brazil_MGarcia_060113%20v02.pdf.
- Gay, Alejandro. 2005. "Money Demand in an Open Economy Framework: Argentina (1932–2002)." Paper prepared for Tenth Conference on Monetary and International Economics, National University of La Plata, La Plata, Argentina, May 12–13, 2005.
- Gibbs, Christopher G., and Mariano Kulish. 2017. "Disinflations in a Model of Imperfectly Anchored Expectations." *European Economic Review* 100: 157–74.
- Girouard, Nathalie, and Christophe André. 2005. "Measuring Cyclically-Adjusted Budget Balances for OECD Countries." Working Paper 434. Paris: Organisation for Economic Cooperation and Development. https://www.oecd-ilibrary.org/economics/measuring-cyclically-adjusted-budget-balances-for-oecd-countries_787626008442.
- Gray, Simon, and Runchana Pongsaparn. 2015. "Issuance of Central Bank Securities: International Experiences and Guidelines." Working Paper 15/106. Washington, D.C.: International Monetary Fund. <https://www.imf.org/external/pubs/ft/wp/2015/wp15106.pdf>.
- Guðmundsson, Már, and Yngvi Örn Kristinsson. 1997. "Monetary Policy in Iceland during the Nineties." In *Monetary Policy in the Nordic Countries: Experiences since 1992*. Basel: Bank for International Settlements.
- Guidotti, Pablo E., Federico Sturzenegger, and Agustín Villar. 2004. "On the Consequences of Sudden Stops." *Economia* 4, no. 2: 171–214.
- International Monetary Fund (IMF). 2017. *Thailand: 2017 Article IV Consultation—Press Release; Staff Report; and Statement by the Executive Director for Thailand*. Washington, D.C.: Author. <https://www.imf.org/en/Publications/CR/Issues/2017/05/31/Thailand-2017-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-44948>.
- International Monetary Fund (IMF). 2019. *Annual Report on Exchange Arrangements and Exchange Restrictions*. Washington, D.C.: Author. <https://www.imf.org/en/Publications/Annual-Report-on-Exchange-Arrangements-and-Exchange-Restrictions/Issues/2019/04/24/Annual-Report-on-Exchange-Arrangements-and-Exchange-Restrictions-2018-46162>.
- Kara, A. Hakan. 2008. "Turkish Experience with Implicit Inflation Targeting." *Central Bank Review* 1: 1–16.

- Kara, A. Hakan. 2017. "Turkish Experience with Inflation Targeting." Presentation prepared for the International Financial Congress, St. Petersburg, July 12–14. <http://ibcongress.com/upload/iblock/593/593f1c9dabf32e0c5ee5babc2bb50dac.pdf>.
- Larch, M., and Alessandro Turrini. 2010. "The Cyclically Adjusted Budget Balance in EU Fiscal Policymaking: Love at First Sight Turned into a Mature Relationship." *Intereconomics* 45, no. 1: 48–60.
- Levy-Yeyati, Eduardo. 2006. "The Cost of Reserves." Working Paper 2006-10, Universidad Torcuato Di Tella.
- Levy-Yeyati, Eduardo. 2019. "Exchange Rate Policies and Economic Development." In *Oxford Research Encyclopedias, Economics and Finance*. New York: Oxford University Press.
- Levy-Yeyati, Eduardo, and Federico Sturzenegger. 2001. "Exchange Rate Regimes and Economic Performance." *IMF Staff Papers* 47: 62–98.
- Levy-Yeyati, Eduardo, and Federico Sturzenegger. 2003. "To Float or to Fix: Evidence on the Impact of Exchange Rate Regimes on Growth." *American Economic Review* 93, no. 4: 1173–93.
- Levy-Yeyati, Eduardo, and Federico Sturzenegger. 2005. "Classifying Exchange Rate Regimes: Deeds vs. Words." *European Economic Review* 49, no. 6: 1603–35.
- Levy-Yeyati, Eduardo, and Federico Sturzenegger. 2007. "A Balance-Sheet Approach to Fiscal Sustainability." Working Paper 150. Boston: Center for International Development at Harvard University. <https://www.hks.harvard.edu/centers/cid/publications/faculty-working-papers/cid-working-paper-no.-150>.
- Levy-Yeyati, Eduardo, and Federico Sturzenegger. 2016. "Classifying Exchange Rate Regimes: 15 Years Later." Working Paper 319. Boston: Center for International Development at Harvard University. <https://www.hks.harvard.edu/centers/cid/publications/faculty-working-papers/classifying-exchange-rate-regimes>.
- Maman, Daniel, and Zeev Rosenhek. 2008. "The Contested Institutionalization of Policy Paradigm Shifts: The Adoption of Inflation Targeting in Israel." *Socio-Economic Review* 7, no. 2: 217–43.
- Manuelli, Rodolfo E., and Juan I. Vizcaino. 2017. "Monetary Policy with Declining Deficits: Theory and an Application to Recent Argentine Monetary Policy." *Federal Reserve Bank of St. Louis Review* 99, no. 4: 351–75.
- Masson, Paul R., Miguel A. Savastano, and Sunil Sharma. 1997. "The Scope for Inflation Targeting in Developing Countries." Working Paper 97/130. Washington, D.C.: International Monetary Fund. <https://www.imf.org/en/Publications/WP/Issues/2016/12/30/The-Scope-for-Inflation-Targeting-in-Developing-Countries-2356>.
- Mathiasson, Thorolfur. 2008. "Spinning Out of Control: Iceland in Crisis." *Nordic Journal of Political Economy* 34, no. 3: 1–19.
- Mishkin, Frederic S. 2000. "Inflation Targeting in Emerging-Market Countries." *American Economic Review* 90, no. 2: 105–9.
- Mishkin, Frederic S., and M. A. Savastano. 2001. "Monetary Policy Strategies for Latin America." *Journal of Development Economics* 66, no. 2: 415–44.

- Mishkin, Frederic S., and Klaus Schmidt-Hebbel. 2002. "A Decade of Inflation Targeting in the World: What Do We Know and What Do We Need to Know?" In *Inflation Targeting: Design, Performance, Challenges*, edited by Norman Loayza and Raimundo Soto. Santiago: Banco Central de Chile.
- Mohanty, M. S., and Phillip Turner. 2005. "Intervention: What Are the Domestic Consequences?" In *Foreign Exchange Market Intervention in Emerging Markets: Motives, Techniques, and Implications*. Basel: Bank for International Settlements.
- Morón, Eduardo, and Diego Winkelried. 2005. "Monetary Policy Rules for Financially Vulnerable Economies." *Journal of Development Economics* 76, no. 1: 23–51.
- Nagy, László. 2016. "From Independent Slovakian Central Bank Policy to the Monetary Policy of the Euro Area." *Public Finance Quarterly* 1: 49.
- Navajas, Fernando. 2019. "High-Frequency Data on Prices: Do Worry, Don't Be Happy." Presentation given at Argentina's 2019 Economic Outlook with FIEL Chief Economists, New York, May 2. <https://www.as-coa.org/events/argentinas-2019-economic-outlook-fiel-chief-economists>.
- Neumeyer, Pablo A., and Juan Pablo Nicolini. 2011. "The Incredible Taylor Principle." Slides.
- Novák, Zsuzsanna. 2011. "Alternative Monetary Strategies before EMU Membership in Central Europe." *Global Business and Economics Anthology* 2, no. 2: 414–24.
- Organisation for Economic Cooperation and Development (OECD). 2008a. *OECD Economic Surveys: Indonesia 2008: Economic Assessment*. Paris: Author.
- Organisation for Economic Cooperation and Development (OECD). 2008b. *OECD Economic Surveys: Turkey 2008: Economic Assessment*. Paris: Author.
- Ortiz, Alberto, Pablo Ottonello, Federico Sturzenegger, and Ernesto Talvi. 2009. "Monetary and Fiscal Policies in a Sudden Stop: Is Tighter Brighter?" In *Dealing with an International Credit Crunch: Policy Responses to Sudden Stops in Latin America*, edited by Eduardo Cavallo and Alejandro Izquierdo. Washington, D.C.: Inter-American Development Bank.
- Pourroy, Marc. 2012. "Does Exchange Rate Control Improve Inflation Targeting in Emerging Economies?" *Economic Letters* 116, no. 3: 448–50.
- Rodrik, Dani. 2006. "The Social Cost of Foreign Exchange Reserves." *International Economic Journal* 20, no. 3: 253–66.
- Sargent, Thomas J. 2013. "Stopping Moderate Inflation: The Methods of Poincaré and Thatcher." In *Rational Expectations and Inflation*. Princeton, N.J.: Princeton University Press. Originally published May 1981.
- Sargent, Thomas J., and Neil Wallace. 1975. "'Rational' Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule." *Journal of Political Economy* 83, no. 2: 241–54.
- Schmitt-Grohé, Stephanie, and Martín Uribe. 2012. "Pegs and Pain." Working Paper 16847. Cambridge, Mass.: National Bureau of Economic Research. <https://www.nber.org/papers/w16847>.

- Schmidt-Hebbel, Klaus, and Matías Tapia. 2002. "Inflation Targeting in Chile." *North American Journal of Economics and Finance* 13, no. 2: 125–46.
- Sturzenegger, Federico. 2016a. "Los primeros 100 días de un Banco Central que vuelve a ocuparse de sus objetivos primordiales" [The first 100 days of a Central Bank that returns to its primary objectives]. Speech given at the Bloomberg Argentina Summit 2016, Buenos Aires, April 5. http://www.bcra.gob.ar/Pdfs/Prensa_comunicacion/Disertaci%C3%B3n_de_Sturzenegger_en_Bloomberg-Argentina%20Summit.pdf.
- Sturzenegger, Federico. 2016b. Speech given at the 13th Conference of Monetary and International Economy, National University of La Plata, La Plata, Argentina, August. http://www.bcra.gov.ar/Pdfs/Prensa_comunicacion/Sturzenegger_UNLP.pdf.
- Sturzenegger, Federico. 2019. "Reserve Management: A Governor's Eye View." In *HSBC Reserve Management Trends 2019*, edited by Nick Carver and Robert Pringle. London: Central Banking.
- Tornell, Aaron, and Andrés Velasco. 2000. "Fixed versus Flexible Exchange Rates: Which Provides More Fiscal Discipline?" *Journal of Monetary Economics* 45, no. 2: 399–436.
- Uribe, Martín. 2016. "Is the Monetarist Arithmetic Unpleasant?" Working Paper 22866. Washington, D.C.: National Bureau of Economic Research.

Comments and Discussion

COMMENT BY

RAFAEL DI TELLA Sturzenegger's paper details Argentina's transition to an orthodox, center-right government that employed experts like himself to stabilize the economy following 13 years of populist administrations. Four years later, and with inflation about twice the level inherited from the populists, there is widespread disappointment with Macri's handling of the economy. What went wrong? According to Sturzenegger, the key mistake was the change in the inflation target in the middle of a "successful disinflation program." While this is an intriguing claim, the paper does not explain why Macri and other members of the government failed to appreciate all this progress and changed course. It would be ironic if all we could conclude from this episode is that Macri's Achilles' heel was, in the end, just old-style populist shortsightedness.

A more plausible explanation is that Argentina's macroeconomic performance was poor, that there was no significant disinflation relative to where the Kirchners left off, and that Sturzenegger's surprising program failed to convince the skeptics. In brief, his plan embraced simultaneously fiscal gradualism and a pure form of inflation targeting (IT) that promised to keep the exchange rate freely floating at all times. The plan covered three distinct periods: an initial "informal" phase when restrictions on capital flows would be lifted, relative prices would be adjusted, and inflation would actually go up; a second phase when there would be disinflation to "normal" levels; and a third and final stage when economic cycles would take place around a rate of inflation that was lower than the one inherited from the Kirchners. The plan can be described as surprising because pure IT, with a floating exchange rate and no room for the use of other tools, such as income policies, is an extremely unusual approach to stabilization (phase two) and because absence of fiscal dominance is a well-known

precondition for IT. The plan can be seen as unconvincing because it made assumptions that went against conventional wisdom (for example, contrary to what most Argentines believe, Sturzenegger's plan assumed that there was no pass-through from the exchange rate to local prices). This simpler explanation would certainly be consistent with the rest of the information presented in this paper.

It is worth starting out by noting how unexpected Sturzenegger's plan really was. Table 1 suggests that Argentina had a reasonable fiscal performance in the years leading to the 2015 presidential election, registering a primary fiscal deficit of less than 0.4 percent per year on average for 2011–14. Then, during Cristina Kirchner's last year it jumped to 3.8 percent. Sturzenegger and his team expected (in June 2015) this deficit to shrink to 2.5 percent during 2016, which appears reasonable given that one-year changes might not be costly to undo. Some may see the projected adjustment as insufficient, but this is not obvious since, as emphasized by Sturzenegger at the time, a case could be made that debt levels were not large. A more pertinent observation is that larger adjustments might have been feasible, particularly if we note that government spending under the Kirchners had dramatically increased relative to historic levels. But overall, I don't see the proposed fiscal path as obviously unsustainable, even if not particularly amenable to a pure IT regime. Indeed, the absence of fiscal dominance is a well-known precondition for effective IT, and the paper explains that the expectation was to contain it "by anticipating a path for transfers from the Central Bank to the government." The question of how successful such containment was likely to be in practice given Argentina's context is moot because a series of highly visible "gifts" (income tax reductions, increases in pensions, and so on) soon turned fiscal gradualism into a robust fiscal *expansion* that took the 2016 primary deficit to 5.4 percent of GDP (or 4.2 if one includes the revenues from the one-off tax amnesty). It is reasonable to expect that Argentines, having lived through hyperinflations and several episodes of debt default, give considerable weight to the consistency of fiscal plans in deciding whether to believe the monetary authority. Thus, Sturzenegger's plan to use IT in the presence of fiscal gradualism seems initially risky and, by the end of 2016, hard to justify.¹

1. The paper's epigraph is a quote from Dornbusch dismissing explanations that are specific to particular countries, which is strange given the number of specific explanations that are later included in the paper, starting with the volatility of money demand in Argentina. A more relevant Dornbusch passage criticizes stabilization plans with inconsistent fiscal policy, explaining that there are "many thousand years of failed experiments" (4) since Diocletean, and calls "poets" and "magicians" those that implement programs "without paying attention to the *sine qua non* of fiscal correction" (Dornbusch and Simonsen 1987, 4, emphasis in the original).

Sturzenegger states that fiscal gradualism was a constraint decided by the political authority.² Even if one accepts this, there are two ways to read it. One is that it reflects a political rationale that is exclusively attached to the fiscal deficit by some *deus ex machina* and that there is not much else to discuss. The second is more natural and simply assumes that Sturzenegger is referring to a broad set of political constraints facing a weak government, and he provides some hints in this direction when he explains that fiscal gradualism would help the government avoid the stigma of being right-wing. But this opens up more questions. For example, were there any political gains when the first year's projected fiscal adjustment turned into a strong expansion? Was there a plan to spend this political capital in ways that supported the economic program? The paper doesn't explain. Furthermore, the rest of the program included many nongradual policies, such as the decision to reduce the income tax or to allow a sharp increase in regulated prices (see below). Are we supposed to view these policies as left-wing? Or is it that political constraints are irrelevant at the time of making these decisions? Political constraints in Sturzenegger's paper are a bit like the Cheshire cat in *Alice in Wonderland*: now you see them, now you don't.

The decision to embrace a pure version of IT for the three periods ahead was particularly surprising given the country's historical love affair with the dollar. As is well known, macroeconomists have extensively explored the pros and cons of exchange rate-based stabilization programs, and the class of problems they address differs drastically from the class of problems discussed in models of IT. To my knowledge, work on IT does not offer answers to the central challenges addressed in the stabilization literature, including the fact that sometimes changes in the price of the dollar represent much more than just a change in a relative price or the presence of considerable inflation inertia (through contracts or other formal and informal institutions). A key challenge in stabilization episodes is to keep the real interest rate low as inflation levels fall, and the use of IT seems to introduce forces pulling in the opposite direction, making it less credible.

2. Given the centrality of fiscal weakness in Sturzenegger's account of the crisis, it is a pity that this claim is not well documented. One insider's account of Macri's campaign directly contradicts it, portraying Sturzenegger's optimism as an exogenous enabler of the gradualist approach. He cites a meeting where Sturzenegger rejects the need for privatizations, cuts in pensions, cuts in social subsidies, and cuts in other items and notes that Marcos Peña, Macri's future chief of staff, seemed "pleasantly surprised" (quoted in Iglesias Illa 2016, 152–53, author's translation).

The paper does not really answer the critics who argued in favor of income policies, exemplified by the temporary freeze in wages, pensions, and prices observed during several successful stabilization episodes.³ After dismissing these policies as not mainstream and part of old politics, Sturzenegger concludes that they weren't needed because "inflation expectations fell very quickly." Since he doesn't discuss the role of the appreciation of the exchange rate in this part of the paper, it is hard to evaluate this particular claim.

Similarly, the paper does not offer a clear response to critics who advocated including the dollar in the Central Bank's objective function.⁴ Of course, there are limits to what the monetary authority can achieve with very few reserves at hand, but that is a different argument. Besides, there were several episodes of intervention in the market for dollars that, without some framework or guideline, appeared haphazard, and one wonders how they affected credibility. Sturzenegger does mention the inconvenience of fixing the exchange rate following the experience of the convertibility plan, and he has emphasized, both now and in the past, that there are no theoretical reasons to expect pass-through (Sturzenegger 2016). He has also offered empirical exercises demonstrating low pass-through. This is a very lucky coincidence, but, given that there is lots of evidence suggesting otherwise, one wonders if optimism is not playing a role here.⁵ At a minimum, I note that the assumptions that the program employed are at the top range of the distribution of optimism regarding macroeconomic constraints. And this opens up a broader question in political economy, namely, the selection of optimists and pessimists into public office (and perhaps also into the different political parties).

Perhaps the paper's most extreme claim concerns the suitability of IT to engineer a disinflation process in Argentina in 2015. Two aspects stand out. The first is that the mechanism through which IT was supposed to work is never spelled out. There is no place in the paper where we get an explanation of the channels through which an increase in the

3. See, for example, the discussion in Dornbusch and Simonsen (1987), where they emphasize the requirements of consistent fiscal plans.

4. Sturzenegger states: "The Central Bank argued the opposite: that in order to lower pass-through levels it was important for the Central Bank to state that it did not care about the exchange rate at all," which is perhaps relevant during phase three but seems to have the priorities backward during a stabilization phase.

5. See Cavallo, Neiman, and Rigobon (2019), who find extremely high levels of pass-through in Argentina.

interest rate could be expected to moderate prices in tandem with the available evidence, either during the initial disinflation phase or later on. The paper emphasizes that “expectations coordination played a fundamental role in the disinflation process.” The challenge is to square it with the evidence that was becoming available. In June 2015 Sturzenegger’s team expected growth to be 2 percent for the year and 1 percent for 2016 as inflation was expected to come down. Growth by the end of 2015 was somewhat higher at 2.7 percent, but for 2016 it was *negative* 2.1 percent. Of course, rapid reductions in inflation without Phillips curve costs have long been known to be possible in models with rational expectations. Sargent (1981) defends their applicability to “moderate” inflations, but he explains how changes in regime have to be widely accepted and understood if they are to be effective. This seems to differ drastically from the context in which Sturzenegger’s costless disinflation was supposed to happen, so there is a question of the applicability of these ideas in a politically divided context.⁶ And when negative growth numbers came in for 2016, the authorities presumably had evidence that it was common knowledge that any convergence on lower inflation expectations was the result of other, more traditional channels (real exchange rate appreciation, recession, and so on) and that we were more in Thatcher’s world rather than Poincaré’s. This is not to claim that one cannot find particular slices of the sample period where there is growth, and Sturzenegger engages in this activity.⁷ But the point here is that it became clear early on that the costless disinflation mechanism envisaged in Sargent (1981) was not in play and that monetary policy was very contractive. In brief, it was soon clear that any disinflation observed was taking place through other, costlier, channels than what was claimed by the Central Bank, and one wonders how this affected its credibility.

6. Sargent (1981, 7) describes how the stabilization of the French franc in 1926 took place after it was “universally recognized the country was in trouble again and all political parties, except the socialists and communists, gathered behind Poincaré. Five former premiers joined the government. There was a political truce.” In Sturzenegger’s case, it is precisely political weakness that is behind the only gradual fiscal adjustment constraint. Note also the strength of political support for the populists (in the 2015 ballottage they had obtained 49 percent versus Macri’s 51 percent) and the fact that Macri’s administration rejected calls for broadening the government coalition.

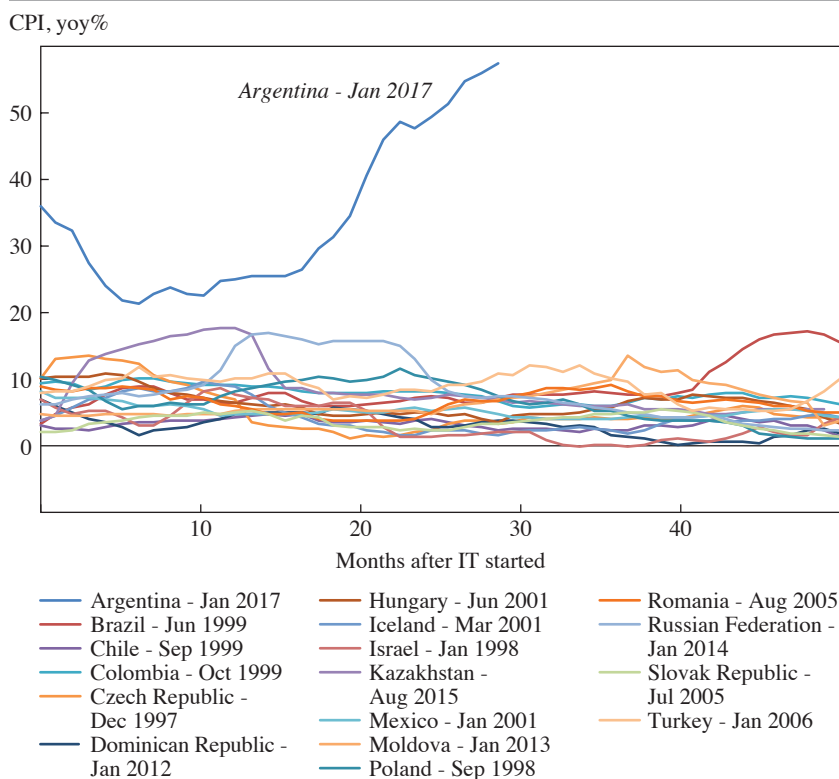
7. I stay with the data presented in the paper, both for simplicity and because they are likely to be the ones that are relevant for forming expectations. I note that seasonal adjustments or other partitions of the sample period, for example, yield slightly different magnitudes, without affecting the conclusions.

The second controversial aspect is Argentina's very high initial rate of inflation. Well-known examples of countries with a successful IT framework achieved disinflation through other means and only then adopted a full-fledged IT framework. One good example is the United Kingdom, a country where the big disinflations were achieved through a combination of monetarism during Thatcher and exchange rate targeting (the European Exchange Rate Mechanism in 1990–92, after inflation revived from the mid-1980s).⁸ In other words, it wasn't that IT was used to bring down inflation, but rather that IT was a way of cementing in the fall in inflation that was achieved through other, more painful mechanisms. In contrast, Sturzenegger claims that his strategy of stabilizing through IT is standard and presents data on a sample of countries that "implemented IT or eventually converged to IT." In the current version of the paper he divides countries into floaters and fixers and doubles down on his stand, claiming that "countries with lower inflation rates used the exchange rate tool" and that they had slower disinflations. Sturzenegger makes the interesting methodological point that we should look at the policies in place, regardless of the name given to the regime.

I have three different reactions to this. First, countries judged by Sturzenegger to be purely floating in the period that precedes IT used other policies during the disinflation.⁹ Thus, these countries cannot be used to describe Sturzenegger's approach as standard. Second, it is informative to separate the period leading to IT from the full IT regime. Thus, I repeat Sturzenegger's exercise in figure 1, but I include countries only from the time that they focused exclusively on IT, and compare them to Argentina in January 2017 when Argentina's Central Bank adopted full-fledged IT. For example, in the case of Mexico, this date is 2001, five years later than the date Sturzenegger uses. This picture tells a very different story: looking at countries only from when they rely only on IT, Argentina's inflation rate is about 3.6 standard deviations higher than the mean of the other countries. Third, it is possible to derive a measure of

8. De Gregorio (2019) makes the point that IT is not a useful disinflation strategy. There is the question of whether applying IT at high levels of inflation is just unhelpful or if it is itself a significant source of new problems. Argentina seems to be an example of the latter. There is a parallel with the use of IT when inflation is below its steady-state level; see Pill (2019) for a discussion.

9. For example, the same source used by Sturzenegger to classify Turkey as purely floating states that "incomes policy will continue to play an important role in the program" and "any other intervention in the foreign exchange market will be strictly limited to the smoothing of short-term fluctuations" (Dervis and Serdengeçti 2001, n.p.).

Figure 1. Disinflation in Countries That Implemented IT (5-Year Horizon)

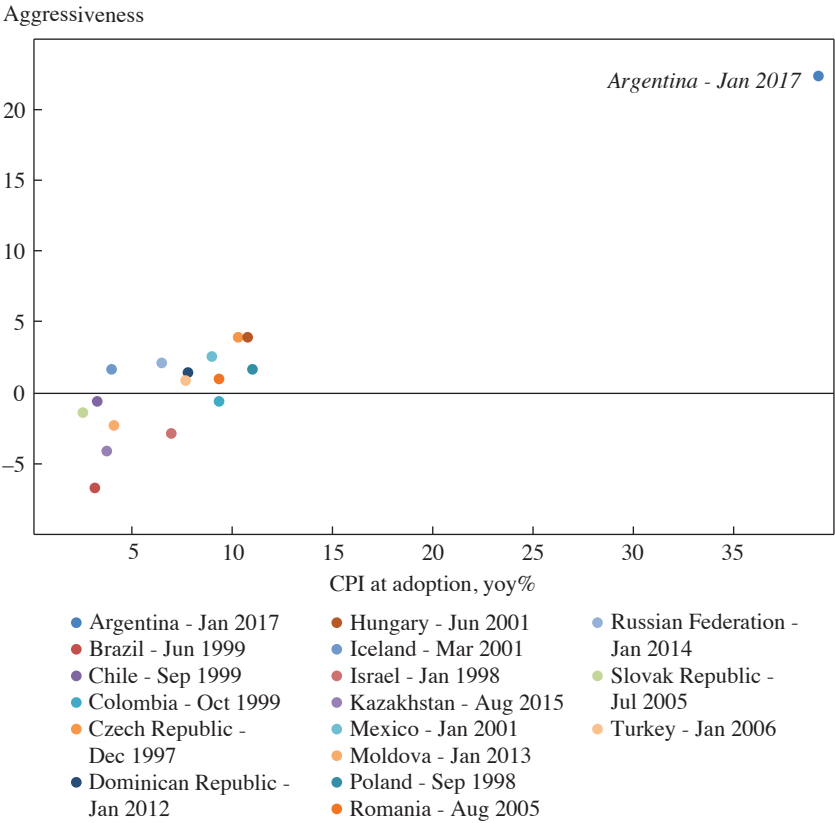
Sources: IMF and national statistical institutes.

Note: The chart plots inflation trajectories for the countries included in figure 3 in the paper from the moment they enter an inflation targeting regime. Sturzenegger has them entering earlier because he considers a pre-IT period.

how aggressive the initial policy stand was by subtracting the target from the initial rate of inflation. This is presented in figure 2. It reveals that Argentina's policy stand was about 3.5 standard deviations more aggressive than the average of the countries considered in Sturzenegger's original sample.¹⁰ Figure 3 repeats these two exercises using an expanded sample

10. This underestimates the initial aggressiveness of Sturzenegger's plan because it uses the 2017 target announced by Alfonso Prat-Gay (and later endorsed by the Central Bank) and the effective annual inflation rate for December 2016. This yields 22.3 percent. If we use the team's anticipations (presented in table 2 in the paper), the projected inflation rate for 2016 is 38.2 percent while that for 2017 is 12.5 percent, for an aggressiveness of 25.7 percent.

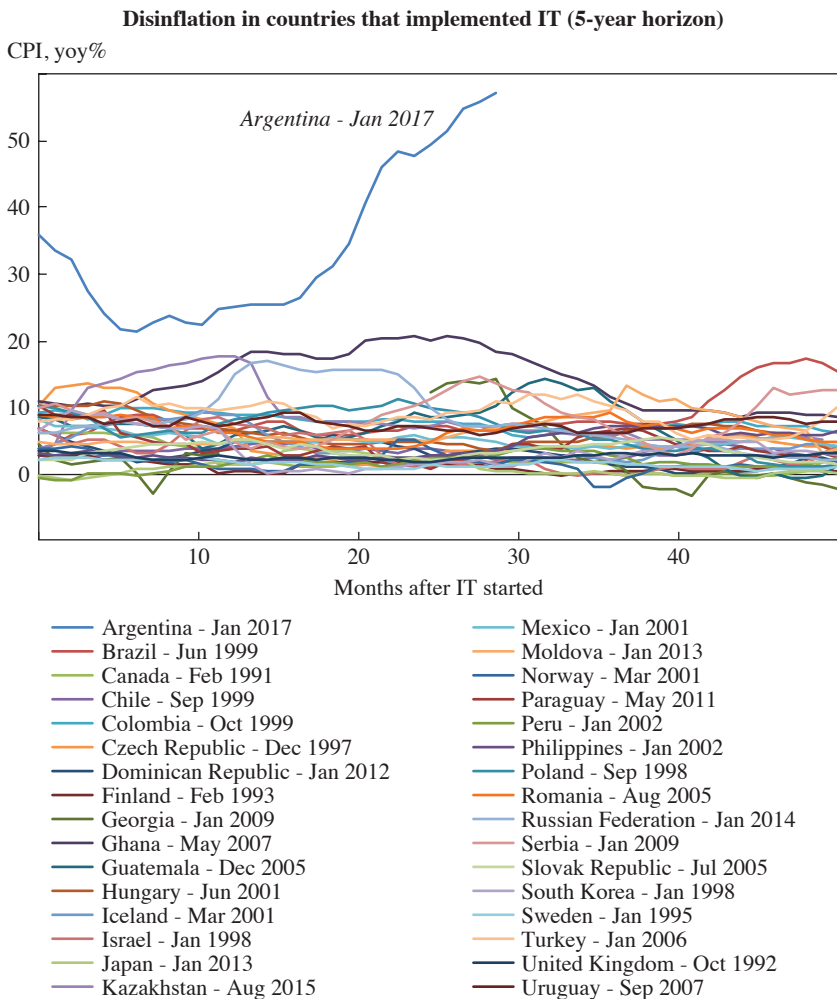
Figure 2. Aggressiveness of Inflation Target at Adoption



Sources: IMF and national statistical institutes.
Note: “Aggressiveness” is the difference between the yoy% CPI target at the adoption of the inflation targeting regime and yoy% CPI in the month before the adoption took place. If the target was a range, the upper band was taken into account.

and reaches a similar conclusion. In other words, Argentina’s context was nothing like the context of other countries relying exclusively on IT and Sturzenegger’s plan on this dimension was also anything but standard.

Returning to the mismatch between the speed of fiscal adjustment determined by the politicians (gradual) and the speed of adjustment along other margins decided (or tolerated) by Sturzenegger and his team, I note that it is extreme in the case of regulated prices. There was a lot of anticipation about the approach that the monetary authority would take, as some of these prices were obviously lagging, and prior studies had

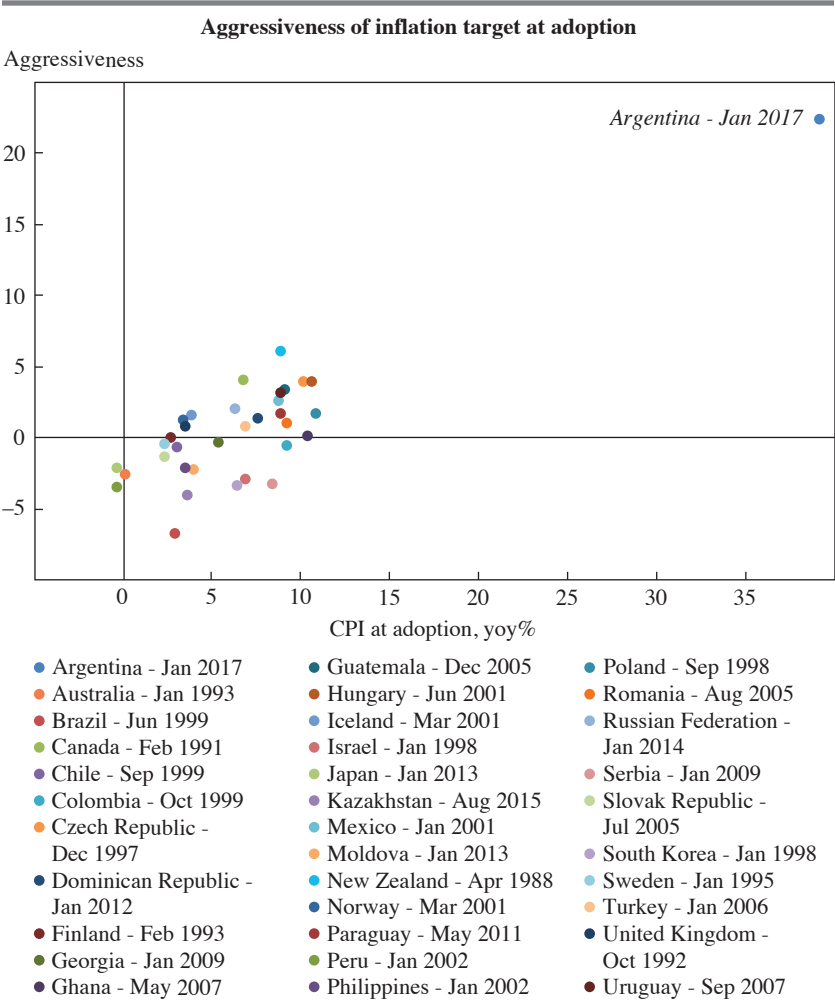
Figure 3. Expanded Sample

Sources: IMF and national statistical institutes.

Notes: These charts repeat the exercises in figures 1 and 2 but include the maximum number of countries with monthly data available.

provided estimates warning of a substantial short-term impact on inflation (Navajas 2015). Sturzenegger lists four of these increases, ranging from 100 percent to 300 percent, in the first months of 2016. Economists had long argued that any direct impact on inflation in the short run could be moderated by the subsequent improvement in the fiscal accounts. But, unfortunately, as it soon became public knowledge, a large fraction of the increase went

Figure 3. Expanded Sample (*Continued*)



Sources: IMF and national statistical institutes.

Notes: These charts repeat the exercises in figures 1 and 2 but include the maximum number of countries with monthly data available.

to recover the profitability of energy sector firms, with a more muted effect on fiscal accounts. As I have alluded above, it is hard to understand what political rationale guided these adjustments: it is far more likely that they would fuel the “stigma of being . . . right-wing” than a simple fiscal adjustment. It is true that the starting point was extremely low and, even after these large increases, may fall short of the level that would help

finance investment. But the impact on inflation—Sturzenegger’s main policy objective—was consistently dismissed as an “adjustment to relative prices” (Sturzenegger 2016, 3, author’s translation).¹¹ While this is certainly a possibility, changes that are so large and that take place in so many products, so close in time, and so clearly as a result of government action might have a different impact on inflation, perhaps because there is a signaling dimension to them (as compared to, say, the change in the price of one type of lightbulb).

One possibility, of course, is that Sturzenegger and his team were concerned about all this but accepted the government’s aversion to having one person centralize power over economic decisions (a so-called superminister). This would then be another political constraint accepted by Sturzenegger that made his job much more difficult than necessary, and it is a pity we do not get his opinions on the trade-offs involved, including whether so much deference to political constraints might, in the end, have undermined the perception of independence of the monetary authority.

Regardless of one’s take on these political constraints, it is still hard to square Sturzenegger’s position on pass-through, which appears to play a key role in his decision to embrace IT, with his early projections. Indeed, the team’s June 2015 projections have inflation for 2016 *increasing* to 38.2 percent (from a 2015 inflation rate of 26 percent under Kirchner). The challenge is figuring out how they arrived to that number without any pass-through. As noted above, the obvious channels involving pass-through from the devaluation and hikes in energy prices are ruled out (Sturzenegger 2016). It is difficult to justify the 38.2 percent through money growth because the plan projected a drastic reduction in monetized deficits (both because the primary deficit was expected to drop and because they were expecting to issue more debt). Perhaps Sturzenegger and his team were making an extreme assumption regarding the change in the Central Bank’s credibility a few months after their arrival (but not immediately after) and, in turn, extreme assumptions regarding the impact of the regime’s credibility on pass-through. Or perhaps the team simply used a model with

11. Sturzenegger (2016) explains how “rigorous reasoning” grounded in “general equilibrium” is enough to dismiss critics of his program who expect an impact of the adjustments in regulated prices (or of the dollar) on inflation. Even if one disagrees with Sturzenegger’s view, one has to accept that it is consistent with some of his other claims (for example, that there was a “successful disinflation” led by expectations anchored by an increasingly credible Central Bank). Surprisingly, on page 31 he contradicts this claim by writing that the increases in the inflation rate during 2017 originate in the increases in regulated prices that took place during that year and that the increase in 2016 was due to the lifting of capital controls (see footnote 31).

standard assumptions regarding pass-through to make the 2016 projections and then they changed it when they had to think about the benefits of IT. If this is the case, and given that they actually hit that projection, one wonders why the economic team did not continue using the standard model.

The second part of the paper refers to the way rivals within the government interfered and convinced the president to change the target on December 28, 2017. These forces followed different logics and went on unappreciated by a political team that Sturzenegger himself describes in favorable terms. Take the conspirators from the Treasury. The idea is that, because pensions were indexed on past inflation, a “different sort of fiscal dominance” led to demands for *slower* disinflation and the changing of the target. This sounds strange, in part because Sturzenegger himself writes that in the second half of 2017 “disinflation stalled” and that inflation expectations for “2018 had increased 2.3 percentage points in the previous 14 months, which, considering that the target for 2017 would be missed, led to continued doubts about the success of the disinflation program.”

There is also a short discussion of how unusual and unhelpful changing the targets might be, independently of how much results differ from the target.¹² The Central Bank’s leitmotiv was “to change a target is to have no target” (BCRA 2017), but, presumably, there is a point beyond which retaining targets that have been repeatedly missed lowers credibility. Unfortunately, the paper doesn’t comment on this possibility. There is also little discussion of the decision to lower nominal rates soon after. Following the change in the targets, survey-based inflation expectations went up substantially, which lowered the real rate, and this was followed by a reduction in the nominal rate that stabilized the market (allowing a large bond issue). This presumably reduced the pressure on the Central Bank, so it is difficult to understand why it was soon followed by a second lowering of the nominal rate, one that triggered the increase in dollar-denominated government bond spreads. Sturzenegger has written before about this and, in the

12. The upper bound for the inflation target for 2016 was announced at 25 percent on January 12, 2016, by Prat-Gay, in charge of the Treasury. He also announced 17 percent for 2017, 12 percent for 2018, and 6.5 percent for 2019. At that time, the statistical office (INDEC) was not yet able to produce CPI data following years of intervention by the Kirchners. So these numbers were likely to be interpreted as tentative. The targets were soon ratified by the Central Bank on April 28, 2016. Argentina’s inflation exceeded the target by 14.3 percentage points in 2016 and by 8.7 in 2017. Sturzenegger calls the first year a “transition” period, and he claims to have tried only to “approximate” the target for 2016 and “did not endorse” it. He laments the coincidence between the targets for 2017–18–19 announced by the Treasury in January and those adopted by the Central Bank in April as it could have suggested more commitment to the 2016 target.

current version, explains that it was the “natural response to a softening of the targets,” without referring to the fact that the real rate had already dropped considerably. Perhaps Sturzenegger did explain this in detail to the political authorities and they were simply insatiable. In that case, we should revise our view of who are the populists in Argentina.

At one level, this is an easy paper on which to comment: it explains that it is standard to use IT for disinflation purposes and I see this as anything but standard. Sturzenegger also explains that he and his team were aware of the fact that absence of fiscal dominance is a precondition for effective IT but that they insisted on relying on IT, even in early 2017 when it was clear that the fiscal position had worsened. While the paper makes many valuable points, it doesn’t explain whether Sturzenegger was concerned over this, and if he was, why he failed to transmit this constraint to the political authorities or why he insisted on applying such a pure version of IT, with a floating exchange rate and unchanging targets. The relationship between politicians and economists in government is always complicated. Most of the time, politicians explain the constraints within which economists must design their policies. But occasionally, economists are able to convince politicians of the benefits of avoiding certain paths. What is striking in this paper, if one accepts its basic premise of an exogenously mandated gradual fiscal adjustment, is how little Sturzenegger was able to shape the environment in which he and his team had to work, and how optimistic he remained as he interpreted the rest of the constraints he faced.

Sturzenegger ends his paper with some lessons. They differ from my own, which are relatively straightforward.

1. The use of inflation targeting with a floating exchange rate to stabilize the economy is nonstandard. The usual approach is to use IT as a way of cementing in the fall in inflation achieved through other means. While this certainly doesn’t mean it couldn’t work as a matter of principle, it does suggest that the paper’s portrayal of the use of IT as mainstream is incorrect.

2. A credible fiscal path can help anchor expectations during a stabilization program. It is likely a precondition, particularly in countries with a history of fiscal indiscipline as most participants monitor the fiscal accounts. Under a “pure” version of IT with a floating exchange rate, it is particularly important because the relatively easy and immediate substitution of local price expectations by the (exogenous) process determining foreign price expectations that is offered by a traditional peg has been forgone.

3. Income policies and exchange rate interventions are reasonable instruments, at least in principle, so one should not accept political or ideological constraints on their use.

4. It seems that it wasn't easy for Sturzenegger to derive credibility from appearing tough or overambitious. I wonder if one can derive credibility from appearing to be reasonable. For example, after missing the target, I wonder about the effects of recognizing it publicly in an effort to rally support for the new targets. In that sense, changing targets that one has missed might be more credible than appearing stubborn.

5. It can be useful to calibrate each of the assumptions of a program on an optimism scale. If most or all of them are on the optimistic side, relative to other assumptions that can be made, then one should wonder about its robustness and probably rethink it. At a minimum, if one cannot convince the members of one's own government of the virtues of the program, the margin for error is small, so a case can be made for leaning toward policies that are seen as reasonable by most, rather than as the best by a few.

6. While some key elements of the economic program put together by Sturzenegger and his team depart from those observed in prior successful stabilization attempts, my main criticism is that the political authorities do not seem to have been aware of the nonstandard nature of the plan and the uncertainties involved. We do not have many experiments in macroeconomics so most of our knowledge comes from historical narratives and simplified models. Thus, it is good to let the clients (politicians and voters) know the large margins of error within which macro policymakers work. Pretense of knowledge is unlikely to help build credibility and may even fuel resistance to experts, even amongst no-populist voters in Argentina.

REFERENCES FOR THE DI TELLA COMMENT

- Banco Central de la República Argentina (BCRA). 2017. *Monetary Policy Report*, April. http://www.bcra.gov.ar/Pdfs/PoliticaMonetaria/IPOM_Abril_2017_i.pdf.
- Cavallo, Alberto, Brent Neiman, and Roberto Rigobon. 2019. "Real Exchange Rate Behavior: New Evidence from Matched Retail Goods." Working Paper 20-040. Cambridge, Mass.: Harvard Business School. https://www.hbs.edu/faculty/Publication%20Files/20-040_237cc084-3e63-4376-bb58-50043cd281fb.PDF.
- De Gregorio, Jose. 2019. "Inflation Targets in Latin America." Working Paper 19-19. Washington: Peterson Institute for International Economics. <https://www.piie.com/sites/default/files/documents/wp19-19.pdf>.
- Dervis, Kemal, and Süreyya Serdengeçti. 2001. Letter to Horst Kohler, Managing Director of the IMF. <https://www.imf.org/external/np/loi/2001/tur/03/index.htm>.
- Dornbusch, Rudiger, and Mario Henrique Simonsen. 1987. "Inflation Stabilization with Incomes Policy Support: A Review of the Experience of Argentina, Brazil

- and Israel.” Working Paper 2153. Cambridge, Mass.: National Bureau of Economic Research. <https://www.nber.org/papers/w2153>.
- Iglesias Illa, Hernán. 2016. *Cambiamos: Mauricio Macri Presidente* [We Changed: Mauricio Macri President]. Buenos Aires: Sudamericana.
- Navajas, Fernando. 2015. “Subsidios a la energía, devaluación y precios” [Energy subsidies, devaluation and prices]. Working Paper 122. Buenos Aires: Fundación de Investigaciones Económicas Latinoamericanas. http://www.fiel.org/publicaciones/Documentos/DOC_TRAB_1431636145020.pdf.
- Pill, Huw. 2019. “Monetary Policy: ‘Whatever It Takes within Our (New?) Mandate.’” In *Renewing Our Monetary Vows: Open Letters to the New Governor of the Bank of England*, edited by Richard Barwell and Jagjit S. Chadha. London: National Institute for Economic and Social Research.
- Ramos-Francia, Manuel, and Alberto Torres García. 2005. “Reducing Inflation through Inflation Targeting: The Mexican Experience.” Working Paper 2005-01. Banco de México. <https://www.banxico.org.mx/publicaciones-and-press/banco-de-mexico-working-papers/%7B7F3073DE-937B-4393-1C77-6C77A661A348%7D.pdf>.
- Sargent, Thomas J. 1981. “Stopping Moderate Inflation: The Methods of Poincaré and Thatcher.” Working Paper. Federal Reserve Bank of Minneapolis. <https://www.minneapolisfed.org/research/working-papers/stopping-moderate-inflation-the-methods-of-poincare-and-thatcher>.
- Sturzenegger, Federico. 2016. “El uso del concepto de equilibrio general en su aplicación a la política monetaria.” Speech given at the Academia Nacional de Ciencias Económicas, March 16. http://www.bcra.gob.ar/Pdfs/Prensa_comunicacion/Distertaci%C3%B3n_Sturzenegger_Academia_NCE.pdf.

COMMENT BY

ANDRÉS VELASCO I learned a great deal from reading this paper. One finds novel or illuminating observations at almost every turn. But it is not an easy paper to discuss. Sturzenegger is the author of the paper and also one of the authors of the 2016 Argentine stabilization plan the paper analyzes. My task is therefore twofold: to discuss the plan itself and at the same time to discuss the paper’s interpretation of the plan and what went wrong.

Let me say first of all that all postmortems are painful, but this is a particularly painful one. It is by now a cliché of international economics that Argentina is the impossible-to-explain outlier, the country that was about as rich as Canada and Australia around a century ago yet has stagnated ever since. Mauricio Macri, coming to power after a particularly inept and corrupt administration and enjoying good will at home and (initially at least) propitious economic conditions abroad, had a unique

opportunity to make Argentina a normal country again. Today, that aspiration lies in tatters as the economy contracts and careens toward yet another debt default, while the polity appears bitterly divided into irreconcilable camps.

FISCAL POLICY Macri's "gradual adjustment" approach to fiscal policy was based on two arguments: one economic and one political. The economic argument was that the fiscal situation allowed for gradual consolidation because initial debt levels were low (that is one advantage of a default). The political argument was that all previous experiences with fiscal shock treatments had failed in Argentina, often for political reasons. I will discuss the economic argument first and save the politics for the closing portion of my comment.

A useful contribution of the paper is to show that, once all necessary adjustments to the data are performed, the initial debt burden was 40 percent of GDP, not 23 percent. To that one should add the Central Bank's gaping equity hole, amounting to some \$93 billion. So the initial position of the consolidated public sector, including the BCRA, was much worse than headlines suggested.

Moreover, the gradual fiscal adjustment went off course for three reasons: tax cuts were large, equal to 2.2 percent of GDP; economic growth, and therefore revenue, was smaller than initially planned; and adverse political shocks materialized, among them a Supreme Court decision that raised the federal deficit by 1 percent of GDP. There was a fourth reason the paper does not emphasize: the removal of energy subsidies did happen, but more slowly than government projections initially envisioned.

So rather than going down, however gradually, the fiscal deficit actually *increased*. Not counting the temporary revenue produced by a tax amnesty, the primary deficit rose from 3.8 percent of GDP in 2015 to 5.4 percent in 2016. Fiscal adjustment was limited until early in 2019. By then, it was too late.

This all prompts an inevitable question: Why did the authorities, when confronted with this reality, not implement an early course correction? Why did the Macri team not do what it had to do, say, in late 2016? One possible answer is that it was not politically feasible to adjust more. Another is that the base case scenario for fiscal policy was worse than expected but sustainable and therefore no major adjustment was required. What happened instead, the paper suggests, is that the shocks kept coming, and they eventually caused the fiscal program to go off course.

This argument, again, is not fully convincing because it raises issues about the reasonable degree of risk aversion. Engineers do not build bridges

to withstand all kinds of earthquakes, but they do build bridges that will remain upright, say, 99 percent of the time. The more seismic is the country in question, the stronger the bridges will have to be to meet this standard. Argentina is a financially seismic country. Shocks have occurred in the past and will recur in the future. Given all of this, shouldn't the fiscal bridge have been stronger?

One last point on fiscal policy. The paper makes a great deal of the impact of changes in inflation on the real value of expenditures and revenues, and therefore on the fiscal deficit. In particular, it argues that because pensions were indexed backward, a sharp disinflation would have actually worsened fiscal accounts. This, the paper argues, caused the fiscal authority to exert pressure on the BCRA to slow down the disinflation process.

Surely unexpected inflation shocks can have real and unwanted effects. If the expenditure side of the budget was built with the expectation of 20 percent inflation, and then inflation surprisingly reached only 15 percent, then the real value of expenditure will be too large and so will the deficit. But in this case, inflation often surprised on the upside, not on the downside. Moreover, the effects of backward indexation were perfectly predictable. Why did the authorities not take this into account when designing the initial fiscal and monetary strategy? Or why did they not spend more political capital early to obtain the congressional support needed to tweak the indexation formula? Perhaps the answer is that they tried but it was not politically possible. If so, then something else (perhaps taxes) had to give.

MONETARY POLICY As for price stability, Argentina followed conventional wisdom and quickly adopted an inflation targeting (IT) regime. The paper stresses that core inflation fell throughout Sturzenegger's tenure as governor. But headline inflation was volatile, reflecting utility price increases and a very erratic exchange rate. Pass-through from the exchange rate to prices fell but remained high (Cavallo, Neiman, and Rigobon 2019), and every time headline inflation targets were missed (which happened often), credibility took a hit.

IT has worked well in countries where inflation was already low. But to get there, countries that were successful at inflation targeting like Chile, Israel, and Poland initially employed some combination of currency pegs, dual exchange rates, income policies, or all of the above. The Argentine authorities, by contrast, ruled out a currency peg because of the traumatic experience with the one-to-one dollar peg two decades ago. And income

policies would have required negotiating prices and wages with union bosses regarded as political adversaries.

The question is whether all the bells and whistles of IT, including a floating exchange rate, should have waited until inflation was lower (say, 20 percent). Sturzenegger takes a firm stance on this, arguing that this is mostly a labeling issue, in the sense that successful countries began doing IT *de facto* long before they officially called it that. I am not sure I agree with that characterization. One reason many countries did not adopt the label (Chile is an example) is precisely because they were using crawling pegs or exchange rate bands to aid the initial disinflation.

Yes, there is a handful of countries—the experiences of Indonesia and the Dominican Republic are stressed in the text—where disinflation starting at high levels of inflation occurred under a float. But neither of these was a country with chronic inflation (and therefore widespread indexation) like Argentina. And, as the paper shows, they both underwent sharp nominal and real appreciations that would have been hard to sustain in the Argentina of 2016, where export growth was a priority.

Under standard inflation targeting the central bank, having decided to control the interest rate, is supposed to let the exchange rate float. But, in fact, the BCRA often intervened in foreign exchange (FX) markets, buying dollars in order to have more international reserves ready for a rainy day. Sturzenegger is quite enthusiastic—and persuasive—in arguing that the reserve buildup was necessary. Of course, after the fateful Southern Hemisphere summer of 2017, the BCRA also attempted to use intervention and the resulting exchange rate appreciation as a source of anti-inflation credibility.

So if FX intervention was both necessary and desirable, does this not raise the question of whether IT with a “cleanly” floating exchange rate was the right policy for Argentina? Or was perhaps some kind of modified or flexible IT, one that allowed for reserve accumulation and decumulation at some predefined junctures, preferable? These are general issues that go far beyond the implementation of IT in the particular case of Argentina, but they take on especial importance there given the attention that is always lavished to Central Bank purchases or sales of foreign exchange.

There is a case to be made for occasional sterilized intervention, even in the context of the IT framework; the Bank for International Settlements, led by Agustín Carstens and drawing on important work by Hyun Song Shin, has been making that case recently (Carstens and Shin 2019). But

if a central bank is willing to buy reserves in an orderly manner, it should also be prepared to sell them in an orderly manner when the need arises. In Argentina there was no such rule, and when the crunch came Central Bank decisions—whether to sell dollars or to stop selling them—were not understood by the market and tended to be more destabilizing than stabilizing. Sturzenegger is candid about this failure: “after two years of almost free floating, the interventions only added to the confusion about the monetary regime.”

Last but not least, successful inflation targeting assumes prudent fiscal policy and central bank autonomy. As Sturzenegger makes clear in the paper, Argentina met neither prerequisite. In December 2017, the president’s political enforcers pressured the Central Bank to raise its inflation target and, a few weeks later, to cut interest rates twice, by a cumulative 150 basis points.

It was the beginning of the end. While other inflation targeting countries have relaxed targets without dire consequences, they did not suffer from Argentina’s combination of weak underlying conditions and limited government credibility. Investors headed for the exits, the peso depreciated, and country risk spreads soared. Because debt was dollar-denominated, as the exchange rate weakened from 20 to 40 pesos to the dollar, the debt-to-GDP ratio doubled almost overnight. Soon enough, Argentina was asking the International Monetary Fund for a bailout.

Late 2017 was a strange time for President Macri to lose his cool. He and his coalition, called *Cambiamos*, had triumphed over the Peronist Justicialist Party in that October’s legislative and gubernatorial elections, even in the Peronists’ traditional stronghold of Buenos Aires Province. If ever there was a time to put Argentina’s fiscal house in order and pursue disinflation, this was it. Instead, for reasons that remain unknown, Macri browbeat the Central Bank into a mistimed monetary loosening.

STERILIZATION, SHORT-TERM BONDS, AND MULTIPLE EQUILIBRIA I found the discussion of this issue one of the most interesting portions of the whole paper. It is fascinating, beyond the features of the Argentine experience, because it points to a fundamental tension. While sterilized intervention can be effective, its quasi fiscal costs are often sizeable, and the presence of a large stock of short-term domestic liabilities, whether issued by the Central Bank or by the Treasury, opens the door to rollover risks and self-fulfilling crises.

The probability of a self-fulfilling attack depends on two factors the paper discusses in some detail (the size of the debt and its average maturity) and one that the paper only touches in passing: the degree to

which amortizations are bunched. Having allowed maturities to shorten was only one of the sins committed in Argentina in late 2017 and early 2018; the other was to have permitted a huge bunching of amortizations in 2018:Q2.

The story unfolded as in the textbook account. At first, longer maturity issues by the Central Bank were avoided so as to make room for the Treasury in that segment of the yield curve. But this shift set in motion a series of perverse changes in expectations: “while this [the decision to shorten maturities] had been a policy decision, market participants believed it could only be the response to difficulties in rollover, which worsened market sentiment.” Soon enough, in late April, there was a massive run-out of short-term BCRA paper, which also became a run on the peso.

POLITICAL ECONOMY Sturzenegger argues that Macri spent fiscal and credibility capital in order to build up another kind of asset: political capital. By choosing not to begin its administration with a shock treatment, the argument goes, the Macri administration showed it was not like all the other center-right (or, in most cases, extreme right) administrations in recent Argentine history.

I have some sympathy for this argument. Showing that Macri had little to do with Carlos Menem, and even less to do with the likes of Generals Videla and Galtieri, who led Argentina’s military dictatorships in the 1970s and 1980s, was important. But the point should not be exaggerated.

While Macri was right to steer away from shock treatment, he likely had more political capital than he thought: voters backed his coalition in October 2017 even though utility prices had gone through the roof, inflation remained high, and slow growth persisted. In the two years since, Macri has presided over a balance of payments crisis, repeated devaluation episodes, an inflation spike, a deep recession, two IMF bailouts, and a deep (though late) fiscal adjustment. And nonetheless, contravening many forecasts of impending electoral collapse, he received over 40 percent of the vote in the October 2019 presidential election.

Perhaps Mauricio Macri could have spent more of that political capital on a gradual—but substantial—fiscal adjustment, cut taxes by a smaller amount, dismantled capital controls more slowly, used a wider set of tools to fight inflation, and pushed sooner for pension reform. On the political front, to avoid the stigma of being called right-wing he could have tacked left on issues like human rights and abortion, where, as an avowed liberal, he should have been less timid.

But he did not. It may be a long time until Argentina gets another chance to be a normal country.

REFERENCES FOR THE VELASCO COMMENT

- Carstens, Agustín, and Hyun Song Shin. 2019. "Emerging Markets Aren't Out of the Woods Yet." *Foreign Affairs*, March 15. <https://www.foreignaffairs.com/articles/2019-03-15/emerging-markets-arent-out-woods-yet>.
- Cavallo, Alberto, Brent Neiman, and Roberto Rigobon. 2019. "Real Exchange Rate Behavior: New Evidence from Matched Retail Goods." Working Paper 20-040. Cambridge, Mass.: Harvard Business School. https://www.hbs.edu/faculty/Publication%20Files/20-040_237cc084-3e63-4376-bb58-50043cd281fb.PDF.

GENERAL DISCUSSION Eswar Prasad began by comparing the session to a postmortem of a corpse that is not yet cold. In his view, Sturzenegger's analysis was sobering and persuasive. However, he pointed out that Sturzenegger's conclusion that the exchange rate regime worked better than anticipated seemed to be based solely on an analysis of the inflation outcomes. However, the literature on exchange rate regimes, balance sheet effects, or the dominant currency shows that other measures matter as well. Therefore, he wondered whether this result still held in the context of the regime's ability to absorb shocks in the context of broader macroeconomic outcomes.

Echoing comments made by both discussants, Frederic Mishkin turned the focus toward the risks of pursuing pure inflation targeting in the context of high initial inflation. He drew two key lessons from this analysis: One was that in the context of fiscal dominance, it is crucial to discuss commitments at the very beginning so that monetary and fiscal policy can work consistently to bring down inflation. Second, in the context of high initial inflation, a central bank needs to make use of other tools such as exchange rate stabilization policies, which he believed would have been the most sensible approach for Argentina. Of course, this approach also poses its own risks when central banks do not have a clear exit strategy at the outset. He noted that Argentina's convertibility law is a classic example of this.

Even with an exit strategy, however, Mishkin remarked that outlining an exit strategy is not foolproof. For example, he observed that despite intending to pursue inflation targeting with an exit strategy, Chile's economy went into crisis following the Russian 1998 crisis, and it made a mistake by focusing too much on the exchange rate. Still, having an exit strategy was useful as it helped Chile eventually get rid of the peg and transition toward a pure inflation targeting regime.

Mishkin concluded by restating his belief that exchange-based stabilization was the right way to go but emphasized the importance of having

a clear exit strategy. Otherwise, he argued, stabilization might appear to be successful at first but lead to a disaster later on, as happened during the 1998–2002 Argentine great depression.

Olivier Blanchard found the paper and discussion both fascinating. In terms of the consistency of the initial monetary policy framework, he recalled that Sturzenegger had said that the Central Bank had to give some of the seigniorage to the central government such that the money supply would grow enough to cover it. In principle, he remarked, this can conflict with using an interest rate instrument, which Sturzenegger had also said he used when he was president of the Central Bank. Therefore, Blanchard wondered how he had approached this potential contradiction.

Peter Henry discussed the gradualist approach through the lens of the literature on reductions of moderate inflation in emerging markets. In 2002, he published a paper which showed that there is no evidence that rapid disinflation can be done without cost from moderate levels.¹ Therefore, he noted that even moderate disinflations pursued gradually could have some upward costs.

Moreover, Henry added that fiscal adjustment is still necessary for disinflation to succeed. Although the discussants mentioned the case of Venezuela, he pointed out that another disinflation program in the Caribbean basin received much less attention. In his view, Jamaica is probably the most surprising macro story of the last three or four decades. Its debt-to-GDP ratio, over 120 percent less than four years ago, is forecasted to decline to roughly 90 percent in the fiscal year 2019–20, and its inflation rate has fallen to less than 5 percent under two different governments that were consistent in their fiscal adjustment. Henry optimistically asserted that if it can be done in Jamaica, it can be done elsewhere, albeit with some leadership sacrifice.

Henry concluded by asking about the decision-making process around monetary adjustment. One alternative, he noted, would have been to tighten monetary policy and force a recession to do the adjustment on the monetary side instead of the fiscal side. Therefore, he asked Sturzenegger to comment on his decision-making process and other alternatives that he considered.

Kristin Forbes flipped Velasco's question on whether Sturzenegger had changed the inflation target without lowering interest rates and asked what would have happened if he had refused to change the inflation target but

1. Peter Blair Henry, "Is Disinflation Good for the Stock Market?," *Journal of Finance* 57, no. 4 (2002): 1617–48.

lowered interest rates. Brazil took this approach around this time, and in general, it seemed to have stabilized inflation without running into the problems Sturzenegger encountered in Argentina.

Lastly, she said she would like to hear more about the decisions Sturzenegger made on financing the debt. She wondered whether these debt-financing decisions had more of an impact on Argentina's economic problems than the mistakes emphasized in the paper. In particular, she noted, given that Argentina's debt financing is mainly in dollars, then whenever there is any shock to confidence, its currency depreciates and its debt skyrockets to quickly become unsustainable, which is what has happened now. Forbes wondered whether Sturzenegger could have financed more of the debt in local currency or with growth-indexed debt—which investors have made money in—when it was relatively cheap to finance debt. She asked if this approach would have cost much more at the time in terms of making the fiscal numbers look worse but may have been worth it in the current situation by preventing the debt from rapidly increasing due to exchange rate movements.

Jeromin Zettelmeyer wondered whether Sturzenegger or the discussants could say something about the last 18 months, which were not the main focus of the presentation. Sturzenegger's explanation, he observed, contained a puzzle: on one hand, the initial success of the disinflation program was surprising given that the monetary strategy was relatively risky, and the fiscal policy was not collaborating. In other words, inflation unraveled despite a lack of fiscal support. However, in the last 18 months, Argentina has pursued a drastic fiscal adjustment by about 3 points of GDP, but inflation has stayed high. With this said, he asked whether this puzzle was an unavoidable consequence of the waning credibility of the program, which unfolded by early 2018 or if it had something to do with the execution of monetary policy. Furthermore, he wondered what lessons we should draw for future monetary policy in Argentina.

John Lipsky followed up on Zettelmeyer's point by adding that Argentina has been the beneficiary of the most extensive IMF stabilization program ever. The IMF's loan, he pointed out, ballooned from \$50 billion originally to around \$57 billion, and currently about \$50 billion has been disbursed. Therefore, he questioned whether the program was flawed at the outset on technical grounds and asked Sturzenegger if he could comment on why it has failed so catastrophically despite unprecedented actual disbursement of funds.

Sturzenegger started by responding to Prasad's and Mishkin's question on the role of inflation targeting without exchange rate support. He admitted

that perhaps he failed to mention an important constraint at the beginning of his term, that the Central Bank's net reserves were around minus \$5 billion. Therefore, he noted, targeting the exchange rate could have been done in theory, but in practice it was off the table.

On the point made by Di Tella that Argentina's fiscal reforms were only selectively gradualist given harsh increases in utility prices, he claimed that the public understood an adjustment had to be done there. He stated that he believed that the population knew very well that although prices had increased ten times over the previous ten years, utility prices had not moved. Therefore, some dimensions of fiscal adjustments were feasible while maintaining the perception of following a gradualist path.

With regards to the questions on monetary policy he argued that Di Tella's belief that the program was too harsh can be put to rest by just checking that during 2016 and 2017 inflation fell and output grew. All these gains were swept aside once the executive decided to change the targets, weakening the commitment of the government to disinflation.

Specifically, he noted that the de-anchoring of inflation expectations unraveled once the market understood this following the second interest rate reduction in January. For this reason, he said he believed that the big lesson to draw from this experience is that the institutional framework is very relevant because if the Central Bank had been independent, this event would not have happened. While he acknowledged that because Argentina has changed course many times, Central Bank independence may be less effective as investors would fear that this might change in the future, he posited that the story still would have been different in his view, particularly because the program had worked until that change.

On Forbes's question about Argentina's external financing and its effects on the exchange rate, Sturzenegger said that they had discussed the benefits to moving to domestic-denominated debt or even to domestic inflation-denominated debt, but that it was difficult to understand how serious this was—especially since the economy grew around 4 percent in 2017. Hence, he said that it was not evident at the time that real exchange appreciation was a real problem. In retrospect, he argued, one reason this may not have been so clear was that despite how lax fiscal policy was, the market gave them a surprising amount of credit during the first two years. However, he noted that eventually, governments must deliver concrete results, and fiscal policy should have been less lax. In fact, the tax reform of late 2017 went in the opposite direction, relaxing fiscal policy even further. He concluded that the form of external financing exacted a significant toll once the time came, and the government failed to deliver because then

the short-term dollar-denominated debt led to a currency and maturity mismatch.

On Zettelmeyer's and Lipsky's puzzle, it all points to the institutional story again. With little help from fiscal policy, inflation came down because there was credibility. Once the credibility was undermined by the government itself, even a fiscal contraction or tighter money conditions were not enough to compensate and inflation increased.