Universidad de San Andrés

Bachelor in Economics´ Thesis

Argentina´s Failed Attempt at an Inflation Targeting Regime: An Analysis of three Emerging Market Economies
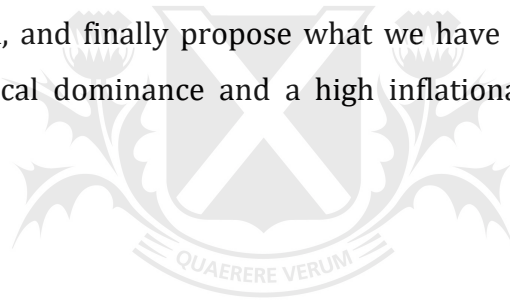
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Abstract

Recent research suggests that fiscal dominance is an important factor when evaluating the success of Inflation Targeting regimes, given that monetary policy is subordinated to fiscal needs. Moreover, emerging markets economies have generally a higher pass-through rate than developed economies, which affects how external markets, and mainly exchange rates, impact on a country's inflation. This Thesis proposes that these are important components when discussing an inflation targeting regime and its recent failure in Argentina. The Thesis also shows that, it is possible to find very different performances across IT regimes around the world. We present a comparative analysis between three Latin American countries (Argentina, Chile, and Peru) to further analyze how particularities within the Emerging Market Economies affect the impact of inflation targets in each situation, and finally propose what we have learned from Argentina´s recent failure where fiscal dominance and a high inflationary basis are part of the economic picture.

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Introduction

The 2008 financial crisis ushered in a new era for central banks around the world. In many advanced economies, legal changes and reforms have been introduced aiming at a more active role for central banks as preservers of financial stability. These institutions also adopted extraordinary and unconventional monetary policies with the initial objective of avoiding the collapse of financial systems and subsequently, to support economic recovery. Simultaneously, new challenges have emerged for central banks in emerging economies. This paradigm shift generated important remnants for the monetary policy of many countries, especially for those that continue to deal with traditional monetary problems, like most Latin-American nations. For Latin American central banks, these challenges can be grouped into two categories according to Carrière-Swallow et al (2016), which will be further discussed below.

On the one hand, there is a small group of countries where inflation remains high and volatile, where central banks seek price stability. In many of these cases it is fiscal policy itself that causes high inflation, along with the fact that monetary policy is not entirely independent. On the other hand, there are countries with credible and well-established inflation targets, where the challenge for central banks is the formulation of economic policies in an environment of uncertainty, in these cases communication plays a fundamental role to anchor inflationary expectations and the importance of the exchange rate. Likewise, central banks face an important challenge related to the influence of world agents. In this sense, many central banks in Latin America are reviewing the role they should play in preserving financial stability and the ways in which monetary and fiscal policies can be coordinated.

The inflation targeting model has become increasingly popular in academia and in policymaking. This Thesis will consider, among others, Chapter 10 of Bernanke et al (1999), which proposes a comparative analysis, considering a large sample of industrialized countries that have adopted IT. Three questions arise from this analysis, which we will try to answer. The first is whether IT makes the disinflation process less costly; the second has to do with whether it reduces inflation expectations. The last, and most relevant, is whether inflation behavior changes under this regime.

The preliminary conclusion could be that the countries that adopted IT saw both inflation and expectations fall. However, there is no empirical evidence that such a regime makes the disinflation process less painful. This might suggest that IT does not necessarily boost credibility or might reflect the fact that monetary policy does not significantly impact the production-inflation transition.

Objective

The purpose of this Thesis is to understand the reasons why Inflation Targeting failed in Argentina. Our approach includes an analysis of inflation targeting regimes for Latin American Emerging Economies, based on a selection of the literature in order to understand the particularities that some of these economies present at the time of the regime´s adoption. Argentina has had inflation of less than 10% in only 17 of the last 75 years[1]. More precisely, there was higher inflation than 20% in 12 of the last 20 years. As has been seen by the experience of neighboring countries that have managed to bring their inflation below 10%, disinflation processes are not linear and have emerged after almost two decades of high inflation. This was the case in Brazil, Uruguay, and Chile.

This literature survey seeks to explore the peculiarities of some Latin American economies and how they affect the application of the model currently used to combat inflation. The Thesis will also try to explain what happens with the IT regime when there is fiscal dominance, as it was the case in Argentina. In a fiscal dominance regime, the fiscal authority tries to fix the future path of the primary balance, sometimes independently of the level of its debt, so its policies are not necessarily oriented to satisfy the solvency condition of public finances. From the point of view of price level determination, under this regime the monetary authority loses the capacity to control inflation.

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[1] According to data from the IPOM of April 2019.

Methodology

Three specific cases will be analyzed: the first two cases are Peru and Chile, where IT has been successful for an extended period of time, and the third one is Argentina, where the scheme was implemented during a tough economic period and failed after less than two years of its implementation[2]. While there are significant regional differences that are important for this paper, some key topics will delineate the analysis and attempt to be answered throughout the paper: the sensitivity of inflation to the interest rate and central bank´s credibility and reputation.

Both issues seem relevant, although one of the previous questions is particularly of great relevance for studying the development of an IT regime, and is part of at discussion that could be crucial when analyzing the failure of a monetary-based scheme: why are central banks so fixed on the evolution of the exchange rate? A preliminary answer could be that this is largely due to the fact that the exchange rate is a central determinant of the nominal anchor in a small, open economy, as are most Latin American countries. This is intrinsically related to the duty of banks, which is to preserve the value of money[3].

Large fluctuations in the exchange rate, as well as depreciations, can destabilize the general level of prices. Monetary stability, generally accompanied by at least moderate exchange rate stability in the medium term, is the cornerstone of orderly economic activity. And for monetary stability to prevail, it is essential to maintain credibility.

The first of the two chapters of this Thesis will strive to expand on inflation targeting schemes as a whole, making a specific emphasis on the prerequisites for it to function and strive as the ruling policy of an economy. For this, it seems important to go deep into the root of monetary policy and, therefore, to mention the Quantity Theory of Money, as well as the Taylor Rule and the Fisher Equation, all of which give insight as to how inflation and monetary policy work. Furthermore, a special part of the Chapter will be dedicated to understanding how exchange rate affects inflation on emerging market economies, to make right by the previous assessment of how this is such an interesting

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[2] From January 2017 to September 2018.
[3] This Thesis seeks to dialogue with the lecture by Agustin Carstens, president of the Bank for International Settlements, at the London School of Economics in May 2019.

and important subject when analyzing the development of IT. Lastly, some examples of success stories of IT schemes will be added to the descriptive part of the Thesis.

The second Chapter will be dedicated to the comparative analysis amongst three different Latin American economies. The first part will be devoted to the case of Peru and its success story regarding the implementation of inflation targets since the year 2002. The second part will dive into Chile´s experience under the monetary regime and the particularities that made it possible for it to be not only successful in the reduction of the inflation rate, but also in maintaining the economy stable and growing.

Finally, after analyzing and evaluating the cases of Peru and Chile separately, we discuss its differences to the implementation of the discussed monetary scheme in Argentina to identify the factors that made it harder for it to prevail in such country. An important component of said discussion has to do with keeping in mind the previously disclosed questions so as to harbor the discourse to the topics relevant to this Thesis.
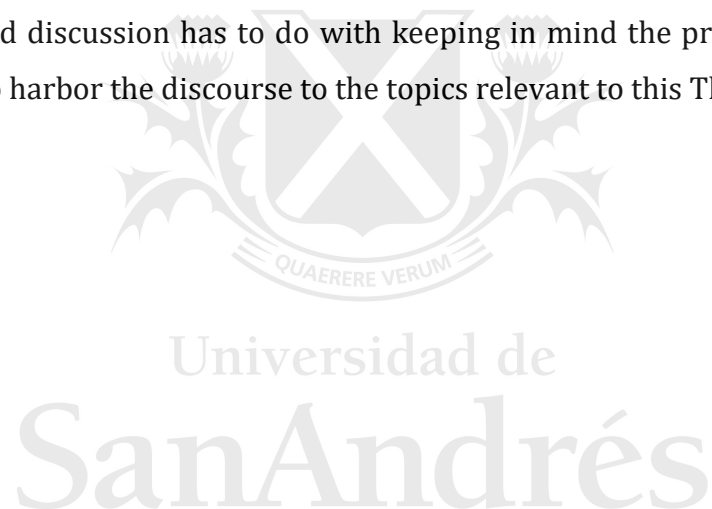
Chapter 1

1.1 Introduction to Inflation Targeting

The sustained rise in prices over time is a problem that has been going on for centuries. The first inflation dating back to the sixteenth century in Spain with the influx of metal coming from America, was believed to be the most disruptive economic event yet to exist. Nowadays, we understand that this is not as catastrophic as it was once believed. In fact, countries even set targets to have a positive rise in prices so as to maintain the economy active and growing. No inflation also means little growth and no job creation. In this regard, having an exceeding rate of price growth is a problem that economists and politicians take a lot of time and effort trying to avoid. One of the methods that has had success in many countries has been inflation targeting (IT).

IT is a framework for making monetary policy, in which the central bank sets official ranges where prices can fluctuate but cannot surpass[4]. What this does is mainly create realistic expectations within the public, and hold the central bank anchored to certain actions. Monetary policy coherence is important for keeping inflation at a certain target, given that according to Fischer's equation[5], real inflation level depends on public expectations. IT strives to improve communication from the policy makers to the public, as well as increase accountability within the central banks´ actions. It is also important to note that IT does not hold prices to a certain number, but rather to a span of numbers, and therefore leaves room for some discretionary monetary policy to accommodate the inflation level. IT regimes are also accompanied by escape clauses that specifies scenarios that exceed the central bank's control and therefore allows for a suspension or modification of the target imposed[6]. This could be for example in the form of a supply shock that affects the economy.

When setting a specific target, the central bank is looking at a relatively short-term horizon, although long enough to make room for short-run stabilization objectives,

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[4] Bernanke and Mishkin, 2011.
[5] Mankiw, 2016.
[6] Bernanke and Mishkin, 2011.

particularly with respect to output and exchange rates. They usually range from one to four years, considering that, in general, the government has mandates of up to four or six years, so even though the central bank is supposedly a separated and independent entity a decision like the adoption of inflation targets is usually done with the approval of the government and therefore is set to be within its years in office.

While exchange rates and money growth are important tools for making monetary policy, once inflation is set as the goal variable, the other two are set to the side, significantly reducing their role as intermediate targets. Still, some economies have carried out IT combined with exchange rates and short-term interest rates, to have a more rigid framework. This is something that is more necessary in emerging market economies, where central banks are usually not substantially credible[7].

IT ranges propose not only a ceiling, but also a floor. This is done to attenuate the effects of negative, as well as positive, shocks to aggregate demand. What is more, inflation targets are set through price series, which should be accurate, timely and easily understood by the public, to contribute to setting expectations. Lastly, series may also need to allow for individual price shocks or one-time shifts that do not affect trend inflation, which is what monetary policy should influence. It is therefore important to mention that inflation targeting is, as was said before, a framework rather than a rigid rule, and consequently so, allows for some flexibility and accommodations, as well as break out plans when an exogenous or unpredictable shock occurs.

To summarize the prerequisites for setting realistic inflation targets and have a credible monetary framework, Pierre-Richard Agénor and Luiz A. Pereira da Silva (2019) characterized IT regimes by three aspects. First, a public announcement of a target for inflation, in the form of either points or bands, to be reached at a specified date. Second, an explicit policy decision framework to achieve the stated objectives, and a high degree of transparency, including an effective communication strategy, concerning the course of action planned by the central bank. Transparency is an essential component of IT as it helps to anchor expectations and ensure stability.

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[7] Carstens, 2019.

Communication is crucial because even when the inflation target is well communicated, uncertainty about the horizon at which the target is expected to be achieved can destabilize expectations and may translate into higher inflation. Furthermore, an effective communication strategy may ease off the challenges that authorities face, guaranteeing the economic agents understanding of the current policy and how future actions may be determined. Consequently, it helps the central bank maintain inflation expectations focused around the target.

There are a lot of reasons that explain the benefits of adopting an IT regime[8]. One of the main advantages is the anchoring of inflation expectations. This anchoring would ease the disinflation process with lower economic costs. For this reason, it is important for the central bank to have a high level of credibility. This increased transparency makes it easier for the public, especially for the financial sector, to understand and forecast monetary policy. The adoption of a target also puts central bank authorities in the need to offer some explanation when the target is missed.

1. 2 The Taylor Rule and The Fisher Equation

When talking about inflation targets, it is important to understand how inflation behaves under this regime, and what determines its path. The Quantity Theory of Money, originally proposed by David Hume[9], remains the leading explanation for how money affects the economy in the long run. This theory relates the quantity of money in the economy to the number of pesos or dollars exchanged in transactions with the following quantity equation:

$$M * V = P * Q$$

Where P is the price of a typical transaction, M is the quantity of money and V represents the transactions velocity of money, which measures the rate at which money circulates in the economy. Finally, Q is an index of transactions. From this equation we know that P x Q equals the number of pesos exchanged in a year. This equation tells us

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[8] Bernanke et al., 1999; Bernanke & Mishkin, 1997.
[9] Hume's contribution to economics is fragmentary and consists of approximately 100 pages of essays in his Political Discourses, 1752.

that if the quantity of money increases and the velocity of money remains unchanged, then either the price or the number of transactions must rise. Economists usually use a different version of this equation, as the number of transactions is difficult to measure. This one is called income velocity of money, and it replaces T for Y (output):

$$M * V = P * Y$$

Now, the quantity equation can be seen as a theory of what determines nominal GDP. Therefore, a change in the quantity of money (M) must cause a proportionate change in nominal GDP (PY).

From the quantity equation, we consider the determinants of a general rise in prices based on the following train of thought: the factors of production and the production function determine the level of output Y; the money supply M (set by the central bank) determines the nominal value of output PY, because of the assumption that the velocity of money V is fixed; when every other variable is set, the one that has the capacity to fluctuate is P, and is the one that determines the general rise in prices[10].

The productive capability of the economy determines real GDP, the quantity of money determines nominal GDP, and the GDP deflator is the ratio of nominal GDP to real GDP. Therefore, this theory explains what happens when the central bank changes the supply of money. Because the inflation rate is the percentage change in the price level, this theory of the price level is also a theory of the inflation rate. The analysis derived from the quantity theory of money tell us that the growth in the money supply determines the rate of inflation.

Thus, the quantity theory of money states that the central bank, which controls the money supply, has ultimate control over the rate of inflation. If the central bank keeps the money supply stable, the price level will be stable. If the central bank increases the money supply rapidly, the price level will rise rapidly.[11]

The price level is not only influenced by the money supply but can also be manipulated through the interest rate. In fact, the main instrument used by central banks to set the inflation rate is the interest rate. The framework most often used for this purpose is the
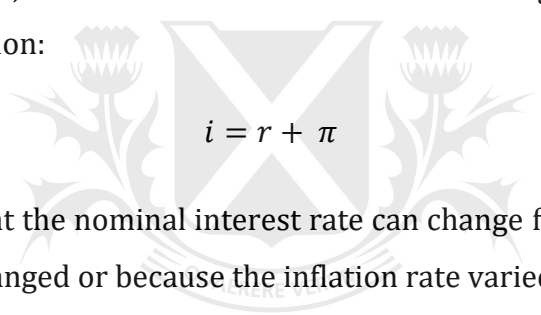
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[10] Mankiw, 2016.
[11] Ibídem.

Taylor Rule, which suggests that the policy rate chosen by the central bank depends on the nominal interest associated with target inflation (Fisher Equation), the difference between the rate of inflation and the target rate of inflation, and the difference between the rate of unemployment versus the natural rate of unemployment.

$$i_t = i^* + \alpha\,(\pi_t - \pi^*) - \beta\,(\mu_t - \mu_n)\ ^{12}$$

Therefore, if there was no difference between the rate of inflation (π) in a given period t and its target, and no difference between the rate of unemployment (μ) in a given period t and its natural rate, then central banks would only have to set the nominal interest rate in order to set the policy rate. Two issues come with this: the first is that there are always differences between the rates mentioned, and the second is that in order to set the nominal interest rate, we also must look at the inflation target. For this, economists look at the Fisher Equation:

$$i = r + \pi$$

This equation shows that the nominal interest rate can change for two reasons: because the real interest rate changed or because the inflation rate varied.

The quantity theory of money shows that the rate of money growth determines the rate of inflation. The Fisher Equation then suggests adding the real interest rate and the inflation rate together to determine the nominal interest rate. These two theories together suggest how money growth affects the nominal interest rate. According to the quantity theory of money, an increase in the rate of money growth of 1 percent causes a 1 percent increase in the rate of inflation. According to the Fisher Equation, a 1 percent increase in the rate of inflation in turn causes a 1 percent increase in the nominal interest rate.

We should keep in mind that the nominal interest rate is the opportunity cost of holding money. Inflation, in turn, affects the nominal interest rate through the Fisher Effect.

Looking at the previous two equations together, two general guidelines are clear. First, when inflation heats up, the federal funds should rise. An increase in the interest rate

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[12] it is the prescribed value of the policy interest rate in a given period t; i* is the interest rate target; πt is inflation in a given period t; π^* is inflation target; μt is unemployment in a given period t and μn is the natural rate of unemployment. α and β are parameters (positive numbers).

means a smaller money supply and, eventually, lower investment, lower output, higher unemployment, and reduced inflation. Second, when real economic activity slows the federal funds rate should fall. A decrease in the interest rate will mean a larger money supply and, eventually, higher investment, higher output, and lower unemployment (Mankiw, 2016).

Stanford University economist John Taylor has proposed the following rule for the federal funds rate (FFR): According to the Taylor rule, the real federal funds rate –the nominal rate minus inflation– should respond to inflation and the GDP gap (percentage by which real GDP deviates from an estimate of its natural level). For each percentage point that inflation rises above its natural level, the real federal funds rate rises, as he proposes that the Nominal FFR should equal the inflation rate.[13]

1.3 Passthrough and its implications regarding inflation targeting in EMEs14

As we have seen, inflation is a very complex phenomenon, and therefore, when setting inflation targets, it is imperative to consider as many drivers or indices as possible. Exchange pass-through plays a key role in determining the path of inflation.

According to the paper titled "Exchange rate pass-through: What has changed since the crisis?", written by Martina Jašová, Richhild Moessner and Előd Takáts[15], "when inflation is higher, exchange rate changes are passed through more quickly and to a larger extent because firms have to adjust prices frequently anyway". The authors argument that emerging market economies suffer higher pass-through than developed economies and are able to prove through solid empirical evidence a causal link between lower inflation and lower pass-through in emerging market data. They also provide evidence that larger exchange rate movements lead to disproportionately larger price changes. In his paper, it is also discussed that after the 2008 financial crisis, pass-through remained stable in developed economies and decreased in emerging market

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[13] Mankiw, 2016.
[14] Emerging Market Economies.
[15] BIS, 2016.

economies, which suggests that the exchange rate channel of monetary policy might be less effective in affecting inflation than before the financial crisis in these economies. The results are robust to different controls and specifications, and were also control for non-linearities, which is important when exchange rate volatility is changing in the sample period.

With those results in mind, we find it important to address certain features when it comes to the pass-through in emerging market economies, different to how inflation targets should be set in a context of a developed economy.

First, we define pass-through as the effect of exchange rate variations on local inflation. In other words, it is the impact that changes on the exchange rate have on prices.

In open economies, exchange rate fluctuations affect the behavior of inflation. This makes the exchange rate pass-through an important consideration with respect to monetary policy. A first note on this is that it is important to look at the currency that the invoice of goods is set on, given that nowadays, most countries usually set their prices at a third currency, i.e. dollars. When policymakers want to assess the effect of the exchange rate on consumer price inflation, they should consider the currency in which the imported goods are set on, independently of the currency that the country that is involved in the transaction has.

A second note would be to clarify that pass-through can also be partial, which means that, for example, if the local currency appreciates against the invoice currency, exports become more expensive for foreigners and sales are likely to decline. But if the exporter decides to absorb part of that increase in price and sell it at a lower cost, in order to mitigate that effect, then the pass-through is said to be "partial", and not complete. This is when the vendor of a particular exchange good decides to mitigate the effect that inflation has on the final price for demand to not be so affected by the rise in prices.

In particular, the lecture given by Mr. Agustín Carstens in México titled "Exchange Rates and Monetary Policy Frameworks in Emerging Market Economies" (2019), highlights three key points. The first one emphasizes how central banks need to set sufficiently

long horizons and enough flexibility while setting the price stability mandates. In second place, given that fluctuations of the exchange rate cause intertemporal compensation, the central banks should deal with these accordingly. Lastly and most importantly, when striving to find price stability, central banks of emerging market economies need to include in their reaction function multiple instruments that respond to multiple indicators, included the exchange rate. "… the enduring challenge for EMEs central banks is to design their monetary policy frameworks in a way that incorporates in a rigorous way the precise role of the exchange rate for their domestic economic outcomes"[16].

In most emerging markets, economies operate under a regime where the exchange rate is not anchored, while the inflation rate is under constant observation. This could be one of the problems why inflation targeting has not worked in a country like Argentina, where the exchange rate is constantly affecting prices of the economy, since, Carstens argues (2019), this is a core determinant of the nominal anchor in a small open economy. But the solution is not as simple as setting short run exchange rate targets, because foreign exchange interventions and macro-prudential policies are also a key component of pass-through and its implications.

One would think that a local depreciation would increase competitiveness in the foreign market and there would be a rise in exports and foreign investment interventions. However, in emerging market economies this is not always so. Exchange rate can also affect negatively the economic activity, further complicating the Central Bank´s task. This is because strong depreciations of the local currency lower the supply of credit from foreign investors and would therefore lead to a contractionary effect on the domestic economy. In order to calm this negative chain, emerging market economies must be equipped with enough foreign reserves and, eventually, the support of the IMF who would act as the lender of last resort. Another way to assist holders of domestic currency could be to facilitate the duration adjustments of portfolios in times of stress.

Therefore, as it has been mentioned before, inflation targets in emerging market economies have to be much more rigorous in terms of the conditions they set for the

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[16] Carstens, 2019.

economy than in developed economies, where exchange rates and inflation are more stable and pass-through is relatively low.

1. 4 Lessons from successful experiences

As we have seen throughout the chapter, the performance of IT can be affected by the particular characteristics of each country such as government's fiscal position, central bank´s choices about exchange rate´s movements and other variables.

Inflation targeting was adopted in several industrialized countries in the 1990s starting with New Zealand in 1990, with Canada following in February 1991, Israel in December 1991, the United Kingdom in 1992, Sweden and Finland in 1993, Australia in 1994 and Spain in 1994[17].

The experience with IT suggests that although it was successful in controlling inflation in Canada, New Zealand, Sweden, and the United Kingdom, the special conditions in those countries that made it work reasonably well are unlikely to be satisfied everywhere. Inflation targeting therefore is more likely to lead to better economic performance for countries that choose to have an independent monetary policy.

Similarly to how Agustín Carstens (2019) expresses what emerging markets need to do in order to set realistic targets of inflation, Mishkin (2000) draws lessons from the experience with inflation targeting in industrialized countries, and proposes that IT involves five key elements: public announcement of medium-term numerical targets for inflation, an institutional commitment to price stability and to achieve the inflation goal, an information inclusive strategy in which several variables are used in making decisions about monetary policy, increased transparency of the monetary policy strategy, and increased accountability of the central bank for achieving the goal.

The author analyzes if IT has been successful in controlling inflation looking at how well inflation targeting has done along the following dimensions: if IT weakens the effects of inflationary shocks, if it can promote growth and does not lead to increase output

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[17] Mishkin, 2000.

fluctuations. He notices that, contrary to common belief, IT does not necessarily reduce the cost of reducing inflation in every economy where it has been adopted.

Once inflation was reduced to levels consistent with price stability, it has remained low and has not bounced back up during subsequent expansions of the economy. Unfortunately, they only way to achieve disinflation is by inducing short-run losses in output and employment in order to achieve long-run price stability.

Contrary to common belief, IT can promote growth and does not lead to increased output fluctuations. The experience of most industrialized countries where IT has been adopted has shown that once low inflation levels are achieved, output and employment return to levels as high as they were previously. This idea might be biased by the preconception that associates disinflationary phases with low output. A key feature of all IT regimes is that they put enormous stress on transparency and communication with the public. These two elements help promote independence of central banks.

Research suggests that there are four main aspects about an economy that should be taken into special account when implementing and striving for the success of an inflation targeting regime. These are also known as the prerequisites for IT[18], as have been mentioned before:

1. A high degree of central bank independence in choosing and manipulating policy instruments
2. The absence of a de facto targeting of the nominal exchange rate
3. Transparency and accountability
4. A healthy financial system

Since the analysis that will be carried out on the next part of the paper will be focused on assessing the existence or absence of these elements in the targeted economies, we will now proceed to develop each prerequisite further, to have a deeper understanding on how these factors play out at the moment of implementing an Inflation Targeting Regime.

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[18] Agénor and Pereira da Silva, 2019.

Firstly, IT requires that the central bank has a large degree of independence in the conduct of monetary policy. This implies the ability to resist political pressures to stimulate the economy in the short term and the absence of fiscal dominance, that is, a situation in which fiscal policy considerations play a prominent role in monetary policy decisions[19]. These requirements are difficult to satisfy in countries where the inflation tax is a significant source of revenue for the government. In such conditions, fiscally induced inflationary pressures could undermine the effectiveness of monetary policy, for instance by forcing the central bank to maintain low interest rates.

In second place, adopting a low, stable inflation rate as the main objective of monetary policy requires the absence of any commitment to a value of the exchange rate, as is the case under a freely floating exchange rate regime. However, in practice, in many countries that have opted for a de jure[20], flexible exchange rate, monetary authorities have continued to pay considerable attention to the value of the domestic currency – often adopting a de facto target. There are various reasons for the central bank to be concerned with nominal exchange rate movements. The exchange rate has a direct impact on inflation and plays a key role in transmitting monetary policy shocks to prices. If the pass-through effect is high, the central bank may be tempted to intervene on the foreign exchange market to limit currency fluctuations.

A high degree of nominal exchange rate instability may also be of concern to policymakers to the extent that it translates into a high degree of variability in the real exchange rate and distorted relative price signals to domestic producers, which in turn may lead to a misallocation of resources between tradable and non-tradable[21]. Furthermore, in partially dollarized economies such as Peru or Argentina, large fluctuations in exchange rates can lead to banking and financial instability by inducing large portfolio shifts between domestic and foreign currency-denominated assets. Finally, in countries where the corporate and banking sectors hold large foreign currency liabilities, exchange rate depreciations can have significant adverse effects on their balance sheets. This has prompted policymakers to assess vulnerabilities and to

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[19] Ibídem.
[20] Meaning a state of affairs that is in accordance with law (i.e. that is officially sanctioned), opposite to de facto.
[21] Agénor and Pereira da Silva, 2019.

intervene in foreign exchange markets, in case of abrupt movements of the exchange rate, to preserve domestic financial stability.

In third place, openness and transparency in the conduct of monetary policy are important ways to improve credibility in an IT regime. Making the central bank publicly accountable for its decisions raises the incentive to achieve the inflation target and, therefore, enhances the public's confidence in the ability of the monetary authorities to do so. The fact, for instance, that monetary authorities must announce policy changes and explain the reason for these changes to the public may help to stabilize inflation expectations and increase the effectiveness of monetary policy under IT.

Lastly, in countries with a weak financial system, the central bank may be forced to inject large amounts of liquidity to support banks and, consequently, the ability to conduct an independent monetary policy is restricted. These weaknesses may also constrain the monetary authority's ability to manipulate interest rates. Indeed, a rise in these rates can lead to higher default levels among banks' borrowers[22]. Furthermore, in countries where the corporate and banking sectors hold large foreign currency liabilities, exchange rate depreciations can have significant adverse effects on their balance sheets. This may induce the central bank to be concerned with nominal exchange rate movements and adopt an implicit exchange rate target.

However, a weak financial system is not an argument for rejecting IT as a policy regime, rather, it calls for financial sector restructuring and a strengthening of bank regulation and supervision prior to, or at the same time as, adopting or implementing IT. More generally, there has been a debate as to whether the prerequisites highlighted in the early literature are sine qua non conditions for adopting an IT regime (Mishkin, 2011). In fact, in many cases, at least some of the initial conditions identified earlier were not fulfilled at the time IT was adopted. This is the case for central bank independence, or the absence of fiscal dominance, which are issues that Brazil, for example, was confronted with in 1999. In addition, one condition considered later also as a prerequisite was moderately low inflation; as illustrated in the following figure, this was clearly not present in several countries at the time of IT adoption.

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[22] Agénor and Pereira da Silva, 2019.

Inflation rate at time of policy adoption
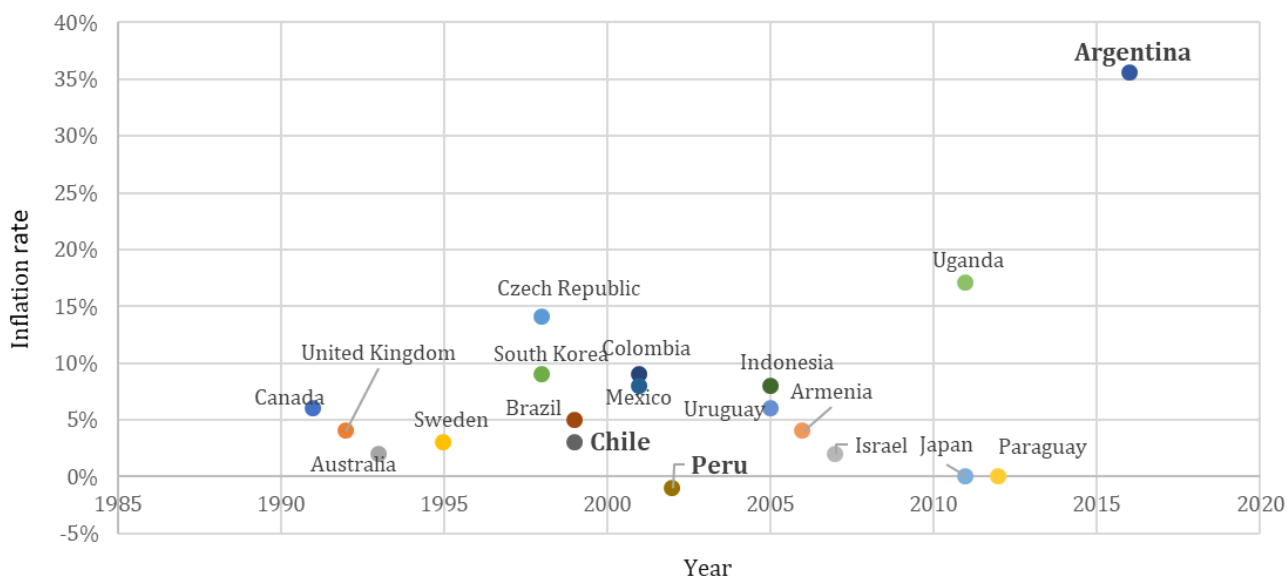
Source: Central Bank data

For instance, Argentina formally announced a switch to IT in 2016 at a time when annual inflation was running at about 35.5% – the highest among any country at the time of IT adoption. However, in October 2018, it indicated its intention to switch temporarily (until June 2019) to a money growth target, with the objective of better anchoring inflation expectations[23].

Some scholars have criticized IT because they believe that it imposes a rigid rule on monetary policymakers, and it does not allow them to act in a discretionary manner under unforeseen circumstances. This aspect might be considered part of the endless debate about rule vs. discretion about monetary policy.

Inflation Targeting is far from a rigid rule in the sense that IT leaves room to a substantial degree of policy discretion. Inflation targets need to be modified depending on economic circumstances. Besides, central banks under IT regimes have left themselves considerable scope to respond to output growth and fluctuations through several devices[24]. The choice of inflation targets above zero is explained by the fact that too low inflation can have substantial negative effects on real economic activity. Mishkin

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[23] Agénor and Pereira da Silva, 2019.
[24] Mishkin, 2000.

(2000) argues that a "healthy" target would be between 0 and 3% as it appears to be no loss of credibility for the central bank and IT regimes.

Emerging market countries have a big concern about exchange rate movements. Changes in the exchange rate can have a major impact on inflation, particularly in small open economies, like most Latin Americans´. This can be seen with the following example: depreciations lead to a rise in inflation as a result of the pass through from higher import prices and bigger demand for exports. Additionally, the public puts pressure on the central bank to alter monetary policy. An appreciation of the domestic currency can make domestic businesses uncompetitive, whereas a depreciation might be seen as a failure of the central bank. Depreciations in emerging economies are really dangerous because they can contribute to a financial crisis as suggested in Mishkin (1999).

Chapter 2

The aim of this chapter is to assess and analyze the differences in the implementation of an inflation targeting regime in three different Latin American economies, as are Peru, Chile and Argentina. As it has been previously anticipated, the first two cases have been successful ones, while the third one has not. Although Peru and Chile have had satisfactory experiences with the monetary scheme, their involvement and background have not been the same. Part of the following pages are going to be dedicated to delineating these differences, in order to see that the regime can be adapted to different economies, when the prerequisites for IT are met. After drawing out the specifics of each case, identifying the similarities and judging their differences, this will all be incorporated in the appraisal of Argentina´s failure with IT.

2.1 Peru

After the hyperinflationary episode of the 1980s and early 1990s, the BCRP[25] applied an explicit inflation targeting scheme at the beginning of 2002, which consisted on announcing an inflation goal that the BCRP was committed to reach. Initially, the goal was between 1.5% and 3.5% annually. The 2002 Monetary Program set a 2.5% inflation target, together with a tolerance band of plus or minus 1%. In January 2007 the target was lowered to 2%, where it has been since (Céspedes, Chang and Velasco, 2012). With this shift to a lower target, the Central Reserve Bank of Peru has been trying to move closer to the concept of optimal inflation associated with price stability and reinforcing the process of financial and real de-dollarization of the economy.

The inflation target of the Central Reserve Bank of Peru is one of the lowest among developing economies, this is explained by the objective of providing a credible long-term anchor and the need to gradually de-dollarize the economy. These purposes might explain the choice of such a low target, which is close to the idea of optimal inflation, developed in the theory called "optimal monetary policy".

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[25] Banco Central de Reserva del Perú or Peru's Central Bank.

It is shown that the Central Bank's low target has not diminished economic growth since its implementation. On the contrary, if one evaluates the combination of low inflation and high economic growth, the Peruvian scheme has been one of the most successful in the world. If we compare credible nominal anchors to reduce inflation, the scheme has been able to better coordinate the fixing of prices of economic agents and, consequently, induced less volatility of inflation, compared to developed countries.

Unlike all the cases of adoption of an IT scheme, in Peru this regime was adopted to fix a positive inflation anchor, based on a deflationary situation caused by the recession at the beginning of the decade.

It should be remarked that yearly inflation in Peru as of December 2001, before the adoption of the scheme, was below 1%. Therefore, the Peruvian inflation target is particularly conditioned to the historical context of high dollarization and recession from which the inflation target starts. No other country that followed this scheme started it with high dollarization and no other country did it to raise its inflation, which suggests that Peru and its conditions at the time of the adoption of the regime represent an interesting case to analyze.

In the case of Peru, besides the usual reasons that are used to fix a positive inflation goal, it should be considered that the inflation goal regime began in a context of high financial and real dollarization, which was produced by the high inflation of the decade of 1980. To induce a gradual de-dollarization of the economy, according to the literature on monetary substitution, it was important to achieve that the domestic and foreign inflation were equal in the long run, so that the Peruvian Sol[26] had not lost its real value against the dollar. This was obtained when resembling the domestic inflation target with the international one.

The inflation target is a long-term nominal anchor. That is to say, the average inflation and the long-term inflation expectations are determined in relationship with it, regardless of the level of real growth in the economy. In other words, the inflation target can be relatively high or low regardless of the economic growth that can be achieved.

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[26] Peruvian local currency.

The goodness of a credible nominal anchor is that it not only stabilizes inflation around the anchor but also reduces its uncertainty or volatility because it helps forming future price expectations and promotes better coordination among economic agents in setting their own prices.

When studying inflation in Peru, it might be relevant to compare its performance with officially dollarized countries like Panama, Ecuador or El Salvador. Official dollarization is a very powerful nominal anchor for reducing inflation and competes with the inflation targeting scheme. In the case of the IT, its advantage is that it provides the agents with an explicit numerical anchor that helps with the price coordination of the economic agents and reduces the inflationary uncertainty. That is why the standard deviation of inflation is less in Peru than in the officially dollarized Latin American countries. In Peru, the standard deviation of inflation is also less than the standard deviation of exchange rate fluctuations (which reaches a value close to 5). This result is even consistent with the Minimum-variance Portfolio Theory (Ize and Levy-Yeyati, 2004), which suggests that if the volatility of inflation is lower than that of exchange rate fluctuations, the economy tends to de-dollarize.

To conclude, the Peruvian Central Bank took two major decisions in the early 2000s: implementing an inflation target regime and accumulating sufficient foreign-exchange reserves. These two decisions have allowed the central bank to preserve macroeconomic stability in both favorable and unfavorable international environments. The main monetary policy instruments used over the period 2002–2013 were the short-term interest rate set by the central bank, the reserves requirement ratio in local and foreign currencies, and, finally, the sterilized intervention in the foreign exchange market, altogether with the process of bank credit (de)dollarization (Dancourt, 2015). One could think that the combination of these monetary instruments was a key part for the success of this program in Peru.

2.2 Chile

Inflation Targeting in Chile, a small and open economy, has been successful for over a decade. The macroeconomic horizon before the implementation of targets and specific actions regarding fiscal and monetary policy were one of deeply irresponsible and expansive fiscal approach, frequently operating under an unbalanced budget[27]. High volatility and inflation were obvious responses to this approach regarding the economic system. An overview of the specific situation leading to the time IT was implemented seems important to understand its reasons for success.

Tough policies were not adopted until hyperinflation threatened the economy around the seventies, which is when reforms were made with regards to firmer monetary and fiscal strategies. This approach proved to be insufficient, so a fixed exchange rate was introduced in order to further calm the economic turmoil and with the particular purpose of achieving the theoretical convergence of domestic to external inflation. Although this seemed to be a positive approach, the resulting real appreciation was combined with a weak and poorly regulated financial sector and a severe negative external shock, culminating in a sharp devaluation, a deep recession from around 1982 to 1983, and the abandonment of the fixed parity after three years of its establishment[28].

The policies carried out during the years after were again concentrated on stabilization and inflation control, but in 1989 when the Central Bank had acquired autonomy, price volatility remained an issue of concern. In the context of a healthy financial system and robust external accounts, the Central Bank was able to focus on reducing inflation, for which it implemented a monetary regime whose characteristics resembled what would later become known as the inflation targeting scheme.

There is no specific date to when inflation targets *per se* were formally implemented in Chile given that it was still not something known as it is today[29], but explicit monetary

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[27] Morandé Lavín, 2001.
[28] Ibídem.
[29] Inflation Targeting was first introduced as a formal scheme in New Zealand, March 1990, although it had been present as an informal regime since April 1988.

policy adjacent to specific targets for inflation was carried out around the time when the Central Bank became independent.

Around 1999, prices rose at an average rate of 3.4%, which is not only within the ranges specified by the Central Bank[30], but also comparable to developed economies. Consistent with what has been previously discussed about how, for IT to work, monetary policy must be subordinated to that objective only, the authorities eliminated the low exchange rate band active since 1985, to avoid inconsistencies amongst the two parallel policies. Therefore, the monetary scheme that has been active and thriving in Chile has been maintaining inflation targets combined with a flexible exchange rate.

When it comes to the specific implementation of what we now know as IT, Chile's Central Bank had a "2 stages approach"[31], the first one going from about 1990 to 1999, and the second one from 1999 onwards. This was not something premeditated, but rather something that was reasonable given the context that the regime was immersed in, at the time of its implementation. When talking about inflation targets, as it has been mentioned in the first chapter of this paper, credibility is crucial for the scheme to work, and therefore construction of reputation is key. The downside to emphasizing compromise is the trade-off between rigidity to build that relationship with the public to keep their expectations synchronized with the Central Bank´s propositions, and the flexibility that the economy needs in order to accommodate after real shocks that can push inflation upwards.

The first stage of the Chilean experience with IT was more dedicated to building that trust to align the expectations of the people, and therefore, rigidity was prioritized over flexibility. After inflation had sufficiently lowered[32], the Central Bank had acquired the trust it needed, and when several shocks hit the economy in the beginning of 1999[33], the involvement of flexibility within the targets marked the start of what is considered as the second stage.

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[30] The Central Bank imposed a range for inflation between 2% to 4%.

[31] Morandé Lavín, 2001.

[32] The long-term target had been achieved ahead of schedule; Inflation was below 3% for most of 1999, possibly one year before it was estimated around 1997-1998.

[33] The Asian crisis, the Russian moratorium and the devaluation of the Brazilian Real.

The successful reduction of inflation in Chile can be attributed to three specific routes: a change in the process of formation of expectations regarding future inflation; a real appreciation as a result of fiscal and monetary policies; and, because of previous structural reforms that increased the average productivity of labor, a deceleration in the growth rate of the unit cost of labor. Evidence and research[34] suggest that the main instrument that contributed to the success of the regime is the result of expectations being driven to believe the imposed inflation targets. Therefore, it is clear that prioritizing rigidity and compromise during the first stage of IT implementation was the main factor for Chile's Inflation Targeting Regime´s success.

To conclude with the economic overview of the case of Chile, there are four aspects that have made it unique and are therefore important to keep in mind to better understand why it has been a successful experience. The first one has to do with the fact that the long inflationary tradition has led the Chilean economy to be one of the most indexed in the world. The second one is the gradual approach that has dictated the first nine years of the IT scheme. As described by Felipe Morandé L. (2001): "Inflation has declined step by step - almost monotonically - from around 25% in 1990 to the current level slightly above 3% in its underlying measure. From 1990 to 1999, every September the inflation target for the following year was set at a lower level than the previous year (sometimes as low as 30% and other times only 10%), so in a sense the decrease in the inflation rate (and target) was a goal in itself".

The third aspect that makes Chile´s experience with IT a distinctive one is that IT was set *de facto* by the Central Bank. Thus, the monetary authority is independent of both instruments and objectives, which is an important factor given that no escape clauses were drawn out. Lastly, inflation had not been the only variable for which a goal was established. In fact, and particularly until 1998, the Central Bank also focused year after year on achieving a sustainable current account deficit, although less explicit and more flexible[35].

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[34] Morandé Lavín, 2001.
[35] Whenever there was an evident conflict between reaching the inflation target and the CDD target, reflected, for example, in pressures for an appreciation of the peso beyond the limits of the exchange band, the Central Bank opted to maintain the inflation target and proceeded to modify some of the parameters of the band.

The inclusion of making the deficit an objective when considering Chile's monetary policy is crucial to this analysis, given that the final objective is to understand why IT has not worked out in Argentina, and this is one of the aspects that has had an impact in its failure. Foreign investors tend to highlight this indicator to assess the soundness of emerging economies. This assessment influences the availability and cost of foreign savings and, in more extreme cases, the likelihood of a financial crisis. Therefore, maintaining the solvency of the external payment system is important to prevent the current account deficit from going beyond a threshold considered compatible with a notion of a balanced real exchange rate.

With regards to the last years under the IT scheme[36], the election of Donald Trump as president of the United States was something that had an impact in the world markets and also in Chile. The 2016 IPOM[37] mentions this as an important factor given that it would be traduced as a change in the expected fiscal and monetary impulse mix in the US, leading to a change in market perceptions of future inflation and monetary policy developments in that country. Since the evolution of the exchange rate was, is and will continue to be a determining factor in the behavior of inflation, its development is subject to high degrees of uncertainty. As mentioned in the 2016 IPOM: "For example, scenarios of sudden movements in global financial markets could forcefully depreciate the peso and generate short-term risks to inflation. In any case, it is possible that the spaces for adjusting prices upwards will be much smaller and this will lead to lower inflation". Overall, inflation in 2016 went downwards, even faster than was expected, which surprised internal and market projections. Authorities expected inflation rate to continue to fall and end 2017 at a rate of around 3%[38].

The 2017 Monetary Policy Report conveyed that the 2016 projections (as mentioned) where, in fact, somewhat over the factual results: "In the last few months, annual inflation continued to be slightly below 2%, lower than expected at the September

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[36] 2016, 2017 & 2018.

[37] Chile's Monetary Policy Report.

[38] This considered that during the next following months (beginning of 2017) the annual inflation of the IPCSAE would have a significant fall, reaching values even below 2%, being compensated, in part, by the rise of the more volatile elements.

IPOM. On the other hand, the IPCSAE[39] behaved as projected and maintained annual variations close to the floor of the tolerance range, very influenced by the evolution of the peso/dollar parity and the dynamics of the activity gap". The projections for 2018 expected annual inflation to remain at levels similar to the present ones at the time, and to start converging towards 3% from mid-2018 and reach the target during the first half of 2019. Plans for the future dictate that the normalization process would have to continue and be implemented gradually and cautiously, in a context where the uncertainty derived from the external scenario is still high, in order to fulfill the inflation targeting regime´s objective for Chile.

2.3 Argentina

In September of 2016, the Argentina's Central Bank (BCRA) announced the formal launch of the IT regime for January of 2017, when the transition to a formal IT regime was made[40]. The targets were set to be 12% to 17% by 2017, 8% to 12% by 2018 and 5% from 2019 on. This regime implied that the Central Bank was going to use all monetary policy instruments at its disposal to achieve its inflation objectives[41]. The policy instrument would stop being the 35-day LEBACs (Central Bank Paper) and would become the center point of the 7-day repo rate[42]. The BCRA´s primary aim was to ensure that the official adoption of this scheme allowed the alignment of the agents´ expectations with the announced targets for the next years.

A short-term interest rate was the tool that the monetary authorities chose (instead of a monetary aggregate). Hence, money supply became endogenous and inflation expectations became the monetary anchor, and with the lack of strong policy reaction, the inflation process remains unanchored. This represented a weakness in the case of Argentina: while expectations declined almost constantly during the length of the regime and signaled disinflation going forward, they also remained above the targets, undermining credibility (Sturzenegger, 2019).

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[39] CPI SAE: Consumer Price Index minus Food and Energy. It has 236 products and corresponds to 72.29 % of the weighting of the CPI basket.
[40] Sturzenegger, 2019.
[41] IPOM October 2016.
[42] Ibídem

The advantage of using this transmission mechanism is that changes in money supply are better matched to changes in money demand. Whereas, the downside is that the Central Bank has less control on monetary aggregates, and therefore in reducing inflation because of how shocks can affect the economy. Sturzenegger (2019) explains this by saying that "inflation targeting delivers a more stable inflation, obviously, but output volatility depends on the relative strength of supply shocks (which an inflation targeting regime amplifies) and demand and money demand shocks (which an inflation targeting regime smooths over)." (p. 12)

On the other hand, the benefit from using a monetary aggregate is that the Central Bank would have had more control on the evolution of money supply, and therefore better management of the inflation´s path. Nevertheless, the disadvantage would have been a potential mismatch between money demand and supply.

Using the interest rate to anchor inflation in small open economy is a dangerous policy (Caballero and Krishnamurthy, 2003), as there is a high risk that a short-term reduction in inflation comes with the cost of a spike in inflation rates or a currency crisis in the future. While the benefits of smoothing over monetary shocks is clear, a drawback of a such a 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[43].

Most of the countries that have adopted an IT regime, did so either when the inflation rate was already in a clear descending path or when it was already at low levels (Bernanke et al., 1999). That is to say that these countries used IT to lock-in a low inflation level rather than to trigger a disinflation process. In the case of Argentina, the Central Bank might have implemented IT too early and with the intention to reduce the inflation rate rather than keeping it low.

A key date for understanding the failure of the regime in Argentina was December 28th, 2017. In a press conference, the President of the Central Bank, Federico Sturzenegger, together with the Chief of Staff, Marcos Peña, the Treasury Minister, Nicolás Dujovne, and the Minister of Finance, Luis Caputo, announced higher inflation targets. Annual

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[43] Sturzenegger (2019), "Macri´s Macro: The meandering road to stability and growth," Working Papers 135, Universidad de San Andrés, Departamento de Economia, revised Oct 2019.

inflation rate by December 2017 was 24.8%, above the target for that year (14.5% ± 2.5%)[44].

Given the deviation from the inflation targets observed during 2017, a deferral of 5% from the initial inflation targets was announced, defining a new path of 15% for 2018, 10% for 2019 and 5% from 2020 on. This announcement was widely perceived as an interference from the President's office into the autonomy of the Central Bank and was translated into a negative credibility shock. At this point, it was clear that the Central Bank was unable to meet the inflation target. Nevertheless, it seemed seriously committed to maintain the regime as the primary method to reduce inflation.

This date represents a breaking point because inflation targets were not credible anymore. The negative credibility shock was not generated by the revision of the targets, it was due to how the announcement was done and the image that it gave of the authorities to the public and the political interpretation that it generated. The way in which authorities made the announcement suggested that the Central Bank was not independent anymore, fiscal dominance was taking place and the public understood that inflation was not a priority anymore, which had a negative impact on expectations.

It is relevant to mention that the Central Bank's policy included the removal of excess liquidity through the issue of debt securities. With the issuance of these debt, which was exclusively subscribed by banks, the Central Bank withdraws pesos that, if left in circulation, could put upward pressure on inflation. In exchange, the issued debt pays interest rates, and this drove the array of rates for the entire banking system.

Since 2016, the Central Bank had acquired foreign currency in order to reach a level of international reserves similar to other countries in the region that operate under a scheme of inflation targeting and floating exchange rate. The Central Bank had accompanied the purchase of external assets with the mentioned sterilization operations, so as not to generate an excess supply of money and place the interest rate outside the established level to reach the inflation target. These sterilization operations consisted on the sale of LEBACs by the Central Bank as well as the making of passive passes with the financial entities, both policies tending to absorb the monetary base

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[44] IPOM January 2018.

deemed to be excessive. As a result, external assets have been increasing along with the central bank's non-monetary liabilities (LEBACs and net passes).

The ratio of LEBACs plus net passes to international reserves had remained virtually stable since late 2015, while it had increased significantly between 2011 and 2015 as a result of the fall in reserves. The stability since 2015 was explained by a significant fall in LEBACs plus net passes compared to external assets.

Additionally, to LEBACs, in early 2018, the Central Bank implemented the Liquidity Letters (LELIQs). These bills are instruments denominated in Argentine pesos with a seven-day maturity. The monetary authority offered LELIQs on a daily basis only to financial institutions for their own portfolios[45]. Likewise, they may be traded in the secondary market only between financial entities and may also be used as collateral in pass transactions. The objective of these new instruments of monetary regulation was to improve the implementation of monetary policy through an upgrade of the passes market. Banks were given an instrument that could be traded in the secondary market, which would give greater liquidity to the inter-bank market of funds[46].

Argentina made a first agreement with the IMF in June 2018 in order to calm the consequences of the significant fiscal deficit and the capital flight. It consisted in three-year USD 50 billion Stand-By Arrangement. The authorities of the mentioned institution believed that the sudden stop in the country's economy was due to the slow fiscal consolidation and therefore, they set a specific course of action regarding the fiscal policy in order to lower this effect. This prompted a complete stop on the transfers from the BCRA to the Treasury, an avoidance of the interference from the bank altogether, a new bill reinforcing the independence of the institution and, most importantly, an adjustment in fiscal deficit numbers[47]. What is more, they set the inflation target for 2019 to be 17% instead of the original 5% and asked for minimal intervention in the exchange rate market, although a few transparent auctions were permitted when necessary. This led to the elimination of the cap on the exchange rate at 25 pesos per dollar, which inevitably led to a significant jump on this convertibility ratio and ushered the replacement of the Governor.

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[45] IPOM January 2018.
[46] IPOM January 2018.
[47] 2.7% of GDP in 2018 and 1.3% in 2019 were allowed, so as to reach equilibrium in 2020.

Inflation accelerated sharply in the third quarter of 2018, reaching a monthly average of 4.5% and a record 6.5% in September. This increase was associated with the depreciation of the peso, which began in April but returned to a high level at the end of August. This second episode of exchange-rate instability in August deepened uncertainty, led to a further correction in prices and posed the risk of a slippage in inflationary expectations. Analysts' 12-month inflation expectations went from 24.1% at the end of July to 33.4% at the end of August 2018[48].

The second program with the IMF was agreed in September of the same year due to the failure of the previous set conditions, it involved USD 7.1 billion additional. In this new pact, funds would be outlaid in a faster fashion, but with the condition of agreeing tighter monetary and fiscal policy, which meant, amongst other things, the fixation of monetary aggregates. This implied dealing with volatility in money demand, which could potentially tamper with the inflation objectives. As a result, the program was an initial success given that inflation dropped, even if the economy persisted in its deep recession, but it also meant the end of the inflation targets, and a new Central Bank President, Guido Sandleris.

With the aim of recovering the anchor on expectations and resume the path of disinflation, the Central Bank modified at the end of September 2018 its monetary policy, leaving aside the inflation-targeting regime. Only 21 months after its implementation[49], the inflation-targeting regime had failed. It had consistently overshot its target and then revised its target upward before it ultimately abandoned inflation targeting altogether[50].

From both programs, it is possible to conclude that the desynchronization between the deflationary process and the fiscal balance was a main cause for the regime to destabilize because of the revision of targets which attempted against the credibility of the Central Bank, and also the large depreciation that came after.

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[48] Data from Relevamiento de Expectativas de Mercado.

[49] From January 2017 until September 2018.

[50] Cachanosky (2019). *Inflation Targeting in Argentina: What Went Wrong?* American Institute for Economic Research.

One lesson to learn is that the failure of this regime in Argentina was mainly due to two reasons: a negative credibility shock and a design and execution that did not consider certain conditions for its implementation. Even though the Central Bank lacked liquid assets to conduct open market operations, it decided to issue its own bonds to sterilize increases in the money supply. What it did not consider was that issuing its own bonds meant a promise to expand the money supply in the future. And, as we know, it is hard to keep inflation expectations low if today's sterilization requires tomorrow's expansion. This action pushed inflation expectations up. The monetary authority lost credibility among the public, resulting in even higher inflation expectations. In the end, the sizable carry-trade operations that resulted from the issuance of high-rate Central Bank bonds were liquidated, triggering a currency crisis in May 2018. And the central bank responded to the crisis by abandoning the regime[51].

We have analyzed how powerful an IT regime could be, if the preconditions required for its sound implementation are observed. However, in Argentina, its design and development was hampered by the economy´s conditions presented at the beginning of its implementation: high and persistent inflation, pending adjustment of relative prices (exchange rate and public service tariffs) and a high deficit of public accounts financed in part by transfers from the Central Bank. This was compounded by the demanding process of disinflation that started in the end of 2015.

This said, it is also important for it to have attained the preconditions mentioned in Chapter 1, to have better chances at achieving the inflation targets. This has not been easy in Argentina because of different reasons affecting its overall economic history and its relationship with politics, as well as the fact that it is a small open and emerging market economy which, as it has also been shown, presents its own challenges.

As expressed, the first ingredient towards a healthy and sustainable inflation targeting regime is the independence of the central bank. This implies that the authorities must be able to autonomously decide how and which tools to use in order to conduct monetary policy. It is typical in emerging market economies where there is not much economic history and crisis resolutions to look back and reflect on, elements such as political discrepancies, alliances with different social sectors and corrupt personalities

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[51] Ibídem.

inside organizations that tend to deviate the objectives and interfere with the autonomy of the institution. Grosembacher (2016) has studied Argentina's Central Bank independence since its creation up to 2015 and analyzed its correlation to the problem of inflation. This was done by establishing the level of independence with respect to other countries, evaluating different aspects such as the designation of its president, the length of his or her mandate and the amount and level of negotiation the Central Bank had with the government. In this study, the author takes into deep consideration the Central Bank's charter[52], that during its years has suffered modifications that could explain a part of the reason why inflation has been stable and growing for the past decades.

The numerous changes in the charter are not minor to this analysis, given that they have, over time, diminished the banks overall state of independence. One of the most important changes has been an increase in the ability to direct funds to the Treasury, as well as the amount of reserves used to repay the debt. What is more, price stability was abandoned as the first and only objective, and goals such as financial stability, job creation, and economic development with social stability were added. After a deep understanding of the bank´s movements, operations and authorities, Grosembacher is able to identify its independence as low and constant.

The verdict given by the author is also due to the high rotation of presidents or directors, which in a way contribute to the lack of persistence and continuity with a specific course of action. Economies need large periods of time in order to be able to adjust and tend to a certain goal, so it is not convenient to change the head of the organization so often. It is safe to say that the independence requisite was not achieved when the IT regime was put into action, and even though its influence on the following failure of the scheme is not clear or measurable, it is reasonable to argue that it has not contributed to keeping the economy smooth and steady to be able to accomplish such a scheme. Apart from this, the President has enough power to remove the Central Bank's governor at his will, making the institution´s independence even more questionable. The low autonomy of instruments within the Central Bank´s reach could be part of the

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[52] In Spanish, "La Carta Orgánica del Banco Central", which is what governs the Central Bank and delimits its objectives and course of action.

reason why Argentina has had a rough history with inflation not just over the last few years, but for the last decades.

The second ingredient needed, when applying an IT regime to be successful, is the supremacy of monetary stability as the sole objective. This means that, when having to decide on whether to pursue a different goal or keep inflation at ease, during the scheme the obvious choice should always be the second one. Particularly in Argentina, the exchange rate has played a key role in the course and history of the economy and is the variable that could be said has interfered with the IT scheme because of different reasons.

In this sense, there is literature to support that a fixed exchange rate is not compatible with autonomous monetary policy when there is no capital control[53]. Consequently so, there should be a flexible exchange rate so that the monetary policy can be dedicated to fulfilling the inflation goals. What is more, Carvalho Filho (2010) establishes that there is a strong correlation between a floating exchange rate and inflation targets. However, some people differ and say that there are times when a flexible exchange rate can amplify the shocks and thus take away the fulfillment of the goal. On the other hand, it can also allow for a faster adjustment of the real exchange rate in the face of negative shocks, since the depreciation of the currency allows for a reduction in the negative effects of the adverse shock, and in the same way it adjusts with appreciation in the face of positive shocks. Opposed to this, a fixed exchange rate could be considered desirable since there are cases where it can reduce transaction costs between different currencies, but it cannot absorb external shocks, and is therefore not ideal for an inflation targeting regime, where external shocks can push the target away and destabilize the scheme as a whole. In short, if the exchange rate were to be a variable regulated by the Central Bank during an IT regime, although not ideal because of the prerequisite mentioned, it should be more advantageous to maintain a flexible but delimited exchange rate.

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[53] The impossible trinity (also known as the trilemma) is a concept that sustains it is impossible to have a fixed foreign exchange rate, free capital movement (absence of capital controls), and an independent monetary policy.

After the year 2005[54], average inflation in Argentina began to become much higher, relative to the average of the other Latin American countries´ inflation. Following the convertibility crisis, the focus was mainly on the real exchange rate, to keep it stable enough in order for it to become the engine of the country's growth. For this purpose, the CB intervened in the exchange market to avoid appreciations. The exchange rate is an important factor in any economy, but even more so in an emerging market economy, in part because of the impact on pass-through, as it has been explained in Chapter 1.

Emerging economies have higher pass-through rates because they tend to consume more tradable goods than service goods, and the phenomenon mentioned has a bigger impact on the first group[55]. Furthermore, with respect to the external sector, it should be borne in mind that capital and investment inflows depend on whether or not the local economy maintains a competitive exchange rate. This also influences the financial sector, since it affects capital inflows and outflows. It is therefore a crucial matter to decide whether to include the exchange rate in the BCRA´s reaction function during an IT regime, in addition to being a function that takes into account the country's economic history, inflationary culture and how the different variables behave in the face of different external shocks.

In Argentina, there is a strong negative correlation between the real exchange rate and real wages, which implies that, when the exchange rate falls, wages increase to compensate for the fall of the local currency against the world's currency. In other words, when the dollar gets more expensive, there is going to be a salary increase in pesos to compensate for the drop in its value. It is still under discussion whether or not to add the exchange rate to the CB´s reaction function when carrying out an IT scheme, and it will ultimately depend on each country's situation and history. Countries that chose to add the exchange rate tool onto the CB´s reaction function had lower inflation rates than Argentina, and a slower stabilization that countries that had not added it, which is very likely to had been due to the adjustment between the exchange rate and

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[54] Post-convertibility crisis.
[55] Pagnotta, 2002.

the disinflation process. On the other hand, countries that let the exchange rate float had higher initial inflation rates[56].

Considering Argentina is an emerging market economy, it seems prudent to have the exchange rate as one of the central bank's objectives or targets to look after. Its volatility impacts directly on different areas of the national economy and is therefore convenient to regulate it. As it has been said before, this could contrast with having price stability as the only objective, so one way that this could be solved is following Chile´s example, where exchange rate was a part of the first stage of the IT regime, but whenever a situation that required the CB to choose between both objectives emerged, they prioritized the one that would ensure the continuation of the regime. During the inflation targeting regime in Argentina, the authorities argued it would be best to let the exchange rate float to avoid a late and slow stabilization, even if they had to resign the use of the extra anchoring as a shock absorber. Therefore, we could say this precondition was met.

Thirdly, for an IT regime to work, transparency and accountability are key. For a long period during the Kirchner mandate[57], this was set to the side. Especially when it came to inflation numbers, data was not reliable. When Mauricio Macri came to power in December of 2015 this slowly began to change, since one of the biggest focus of the new government was to uphold credibility.

Credibility was very well attained by different measures that the Central Bank´s authorities took in order to strengthen its credibility and relationship with the public: the directory of the central bank would reunite every week to establish the monetary policy rate for the following period and the decision would be published every Tuesday. Also, a quarterly report (IPOM according to its acronym in Spanish) would be published for anyone to read, where there would be information on the evolution on the utilized financial and monetary instruments for the implementation of monetary policy and,

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[56] Sturzenegger, 2019.
[57] From 2003 to 2015.

most importantly, would show the progress of the inflation indicators. Furthermore, a report on the expectations of the market[58] would also be available to the public.

Lastly, the prerequisites ask for a healthy financial system. This is particularly hard for a country like the one in discussion because of its emerging market character. Having an underdeveloped financial system not only makes financial intermediation difficult and hinders development, but also affects monetary policy, since it is not so easy for domestic debt markets to absorb the government's debt intake and therefore it is up to the CB to ensure that it does not default, which generates additional inflationary pressures[59]. As said by Sturzenegger, (2019): "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 and a currency mismatch in case of a real exchange rate depreciation". Apart from that, what has also attempted against the success of the regime was the extension of the maturities on the Central Bank debt, which contributed to the idea that the financial structure was too volatile to support the "smooth sailing" of the IT regime.

All in all, the main problems with the preconditions could be attributed to the failure of the Central Bank to be independent and credible, as well as the fluctuating and inconsistent financial sector.

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[58] REM according to its Spanish acronym - considering the CPI from GBA, the nucleus CPI and a national index.
[59] Eichengreen et al., 1999.

Conclusions

An area where economic discipline seems to have reached a broad consensus is on the positive impact that low inflation has on long-term economic growth. The discussion is based on an intense theoretical discussion, regarding the long-term real effects of the monetary policy over the inflation rate, which was created towards the end of the 1960s from the works written by James Tobin (1965) and Michael Sidrauski (1967)[60].

With regards to the previous analysis, a few matters have yet to be answered, as mentioned in the Introduction of the present Thesis. Apart from the main objective which has to do with understanding the reasons behind the failure of the discussed monetary scheme in Argentina, there are interesting topics that can be answered with what has been presented up to now, regarding whether IT makes the disinflation process less costly, whether it reduces inflation expectations, and whether inflation behavior changes under IT.

As seen in the previous sections, an IT regime requires the authorities to keep targets as the main and only objective in order to boost credibility and reach the target. In a way, this is a good system in order to keep hitting the targets, but it is not possible to affirm that it does make the disinflation process less costly because this was not true for Argentina, given that the scheme suffered many fluctuations that ended up being very damaging to the economy as a whole.

When it comes to Argentina´s experience, one should also keep in mind that the economy was in a long recession, which the regime did not help with. In this respect, Peru and Chile are interesting cases because of how different the economic scenario was in each country at the time of policy adoption. There was almost no inflation in Peru when they decided to switch to an IT regime, and in Chile, it is difficult to determine if, thanks to the implementation of IT, the negative effects of the disinflation process were softened because of the two-stages approach that the country followed.

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[60] IPOM October 2016.

We have yet to answer if inflations expectations are reduced under an IT regime and if it changes inflation behavior. In this respect, what we have learned is that Chile and Peru represent successful experiences under IT, where both inflation and its expectations were lowered following the path that each Central Bank needed for its monetary program. Whereas, the experience of Argentina taught us that neither inflation nor expectations diminish under IT. In this country, on the hand, the opposite happened.

This had to do not only with temporary issues such as the lack of credibility of the Central Bank and the fact that the preconditions for its implementation were not met, but also with the fact that the regime studied does not ensure an improvement in terms of expectations or a reduction in inflation, when numerous variables that may affect its performance are not taken into account.

Regarding the preconditions for IT, it is clear that most prerequisites were not met by the time the IT regime was implemented in Argentina, in January of 2017, but neither were in Chile, as analyzed before, but the outcome of the implementation was a success. Clearly, not "playing by the rules" was a part of what probably went wrong with the scheme, but that is not the unique reason for its failure. There are other matters that could have also played its part in the failure, such as the country's history with inflation and the public distrust in institutions. There is a certain social tolerance towards inflation that is not seen in other countries such as, for example, Germany, Netherlands, or even Peru. Whenever there has been a contradicting objective to price stability, there has usually been a tendency to fight first towards the other goal rather than focus on inflation, as seen, for example, after the convertibility crisis, where there was a clear preference for favoring the exchange rate rather than keeping inflation stable.

The considerable fiscal deficit is also an important issue when explaining why the country has been experiencing high levels of prices for the last decades and the failure of the monetary program discussed in this Thesis. Even if the government should have implemented a gradual deficit reduction, the deficit initially increased during the Macri administration. The sustained weakness in fiscal policy was ultimately responsible for the change in inflation targets and the loss of credibility of the whole program[61].

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[61] Sturzenegger, 2019.

One would think that if the government authorities freely decide the budget they want to execute, monetary policy will be limited by the amount of debt the government decides to take on because if the debt cannot be financed with surpluses or new debt, the Central Bank will have to issue money and thus lose control of inflation. If this is to be improved in order to reach a certain goal towards keeping inflation low or stable, a ceiling should also be established on transfers from the Central Bank to the Treasury. And this is how fiscal policy is limited by having to regulate the amount of debt it can take on and resign itself to the debt that the private sector decides to take on. Along with inflation targets, this was done to pressure the government to finance itself in another way during the regime but was re-evaluated and re-defined, so it was not particularly clear if there was fiscal dominance or not.

We could blame inflation targeting´s unsuccessful experience in Argentina on the following reasons: naive expectations altogether with non-compliance of the prerequisites, Central Bank´s lack of credibility and weak policy design. Another of the reasons that may explain why IT has not worked in Argentina may be external financial instability, which is reflected in the current account deficit.

As we have learned, a successful IT regime not only presupposes, but requires, an independent Central Bank and a lack of fiscal dominance. What the case of Argentina revealed is that these two are necessary and essential requirements in order to achieve what is expected from a disinflation process under IT. Therefore, we conclude that the program was too ambitious, but neither the fiscal nor the institutional preconditions were present at the time of the regime´s adoption.

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