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Independence and

Inflation in Latin

America—Through the

Lens of History

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Central Bank Independence and Inflation in Latin America—Through the Lens of History
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ABSTRACT: We study the link between central bank independence and inflation by providing narrative and empirical evidence based on Latin America's experience over the past 100 years. Using a novel dataset of historical index of central bank independence for 17 Latin American countries, this paper recounts the rocky journey traveled by Latin America to achieve central bank independence and price stability. After their creation as independent institutions, central bank independence was eroded in the 1930s at the time of the Great Depression and following the abandonment of the gold exchange standard. Then, by the 1940s, central banks turned into *de facto* development banks under the aegis of governments, sowing the seeds for high inflation. It took the hyperinflation episodes of the 1970s and 1980s, and the ultimate decimation of real income and growing social discontent, to grant central banks political and operational independence to focus on fighting inflation starting in the 1990s. The empirical evidence confirms the strong negative association between central bank independence and inflation and finds that improvements in central bank independence result in a steady decline in inflation. It also shows that high levels of central bank independence are associated with a leftward shift of the right tail of the inflation distribution and with reductions in the likelihood of high inflation episodes, especially when accompanied by reductions in the *de facto* ability of central banks to finance the central government.

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WORKING PAPERS

Central Bank Independence in Latin America—Through the Lens of History

Luis I. Jácome and Samuel Pienknagura¹

¹ We thank Gustavo Adler, Yan Carrière-Swallow, Eduardo Cavallo, Arturo Galindo, Bertrand Gruss, Nicolás Magud, Eric Parrado, Jorge Roldós, Robin Tietz, and participants at the Interamerican Development Bank’s Economist Network Seminar and the IMF Western Hemisphere Department’s Monetary Policy Working Group Seminar for helpful comments. The usual disclaimers apply.

I. Introduction

Most central banks in Latin America are accomplished institutions. In a region battered historically with chronic inflation and even hyperinflation, like no other in the world, most central banks have conquered price stability—for sure with the support of sound fiscal policies. Central banks' institutional strength and the associated credibility of monetary policy have been successfully tested. Based on stronger macroeconomic fundamentals than in the past, on buffer mechanisms put in place over several years, and on the public trust on central bank independence, monetary policy played a key role to weather exogenous shocks in the last 15 years. Amid large reversals of capital inflows, and in a clear break from the past, central banks implemented countercyclical monetary policy to stem the adverse effects of the Great Financial Crisis (GFC) in 2008 and, more recently, to cushion the profound impact on economic activity of the Covid pandemic.²

Despite this success, central bank independence may face challenges in Latin America in the post pandemic years. Countries are confronting rising inflation while economic activity is expected to remain sluggish and many countries face a sub-par medium-term outlook. Against this backdrop, the risk of government influence is likely to reemerge as central banks struggle to strike a delicate balance between tightening monetary policy to restore and preserve price stability and implementing an accommodative policy to support economic activity. The risk of fiscal dominance is even greater because, in several countries, fiscal policy has been mired by political stalemate and has been unable to meet a growing set of social demands, in many cases exacerbated by the effects of the pandemic. Central banks may be called upon to pursue quantitative easing and, by this means, finance government expenditure. But this could erode central bank independence and incite an irreparable damage to monetary policy credibility for years to come.³

This paper sheds light about the perils of undermining central bank independence through the lens of history. It reviews the evolution of monetary policy's institutional foundations in Latin America using a unique dataset of historical measures of legal central bank independence in Latin America spanning close to 100 years. It also performs an empirical investigation to assess the link between central bank independence and inflation performance using over 80 years of data.

² See in Canales et al. (2010) an analysis of the policies deployed by the major Latin American central banks in response to the GFC and in Vegh and Vuletin (2014) a discussion on the countercyclical nature of the monetary policy's response. And in IMF (2020) the monetary policy measures adopted in the region to cope with the pandemic.

³ The risks to central bank independence have been recently stressed. Rogoff (2021) argues that quantitative easing can be considered a form of fiscal policy, which makes it harder to preserve central bank independence, while Ayres and others (2021) alert that central banks in Latin America may confront greater pressure to finance fiscal expenditure. In general, Adrian (2021) underscores that governments in emerging markets and developing economies may grow accustomed to cheap financing from the central bank and pressure them to continue.

Our historical narrative highlights that achieving central bank independence and conquering price stability in Latin America was a rocky journey in which both outcomes seem to be inversely associated. Central banks were created as independent institutions of the government, relying on the restrictions imposed by the endorsement of the gold exchange standard to implement monetary policy. This policy framework helped them to attain low although volatile inflation. However, due to the need of coping with the devastating effects of the Great Depression, and after the gold exchange standard was abandoned in the early-1930s, countries approved legal changes that expanded the financing of government expenditure, which weakened central bank independence. Over these years, Latin America featured low but volatile inflation. Then, in the 1940s, subsequent reforms were approved that expanded central banks' mandate and modified their governance arrangement, turning them into *de facto* development banks under the aegis of governments. In addition, restrictions to the provision of credit to the government were further relaxed, potentially fueling inflation and even hyperinflation in the following decades. It took 50 years of increasing decimation of real income and savings, and growing social discontent, to grant central banks political and operational independence to focus on fighting inflation in the 1990s. This institutional reform of central banks lay the ground for the later adoption of inflation targeting and the final achievement of low and stable inflation.

The historical link between central bank independence and inflation in Latin America is supported by our econometric analysis, which points to a strong negative association between an index of legal central bank independence (CBI) and inflation over the last 80 years. This association is robust to the inclusion of controls commonly used in the literature and appears to be stronger in more recent years. A granular analysis of the different components of our CBI index shows that isolating central banks from political influence and more stringent conditions for central bank lending to the central government, are key to tame inflation. Taken together, it highlights the perils of political influence on central bank's decisions and of fiscal dominance.

In addition, we study the dynamic response of inflation to changes in central bank independence (using the Local Projection Model proposed by Jordà, 2005) and find that a one standard deviation improvement in central bank independence has a cumulative reduction in prices of 10 percentage points over a 5-year horizon. The dynamic impact of central bank independence on inflation is robust to the period of analysis—higher independence leads to a steady decline in inflation both in the pre and post 1970 period (roughly the time when the direct international convertibility of the US dollar for gold was cancelled) and before and after the wave of central bank reforms of the 1990s.

Finally, the results in the paper point to the importance of central bank independence in mitigating the risks of high inflation. To assess the role that central bank independence in reducing the likelihood of high inflation episodes, we pursue a two-pronged strategy. First, we estimate quantile regressions and show that higher levels of the CBI index have a larger impact on higher deciles of the inflation distribution. In addition, we estimate a linear probability model and find that higher levels of the CBI index reduce the likelihood of high inflation episodes.

This paper contributes to a large body of literature studying the link between central bank independence and inflation along two dimensions. First, the historical approach and the regional scope of this paper go beyond previous studies that focus on central bank independence in Latin America, which are either time-specific or country-specific. On the former group of studies, Ortiz (1998) examines central bank independence in the 1930s, whereas Jácome and Vázquez (2008) analyzes the impact on inflation of the 1990s institutional reform of central banks. Other studies have a narrative historical content but are country-specific, like Avella (2014) and Meisel and Baron (2010) on Colombia; Céspedes and Valdés (2006) and De Gregorio (2009) on Chile; Turrent Díaz (2005) on Mexico; Orrego (2007), Tuesta (2007), and Jácome (2022) on Peru. Our paper complements the recent collection of studies by Kehoe and Nicolini (2021), which examines the causes of inflation in eleven countries in Latin America during 1960 to 2017 through the lens of monetary and especially fiscal policy. Second, from an empirical perspective, this paper goes beyond examining the average relationship between *de jure* central bank independence and inflation performance, as is common in the literature (see Masciandaro, Magurno, and Tarsia, 2021 for a comprehensive summary). It quantifies the dynamic impact that changes in central bank independence have on inflation and studies the link between central bank independence and different moments of the inflation distribution. This empirical analysis is conducted using a novel dataset of central bank independence that covers central banks' entire history in 17 countries in Latin America.

The rest of the paper is structured as follows. Section II provides a snapshot of the evolution of central bank independence in Latin America in the last 100 years and highlights the fall and rise of central bank independence, while Section III underscores a simultaneous rise and fall of inflation. Then the paper provides an empirical assessment of the association between central bank independence and inflation performance in Latin America since 1940. Section IV describes the data and the empirical strategy pursued in the econometric analysis. Section V presents the results. Section VI concludes.

II. The Fall and Rise of Central Bank Independence—A Snapshot

The path to central bank independence in Latin America has been an uphill road. The influence of governments—and sometimes the private sector—modeled monetary policy during most of central banks’ lifetime. Fiscal dominance was entrenched by legislation for about six decades, authorizing central banks to provide direct or indirect credit to the government, and even to the rest of the public sector. The use of monetary policy instruments was also often guided by the executive branch. It was only in the 1990s that countries implemented an institutional reform that granted political and operational independence to central banks.

This section highlights key aspects of the evolution of central bank independence in Latin America. The analysis is conducted along three periods as suggested in Jácome (2015): (i) the “early years” that start in the 1920s and go up to the end of WWII; (ii) the “developmental phase,” which covers the Bretton Woods period and the years that follow the demise of this monetary system up to 1990; and (iii) the “golden period,” which spans through the new century, starting with an adjustment phase that took place over most of the 1990s.⁴

The approach to central bank independence used in this historical tour is based on Cukierman (1992). Cukierman’s notion of central bank independence considers four key elements, which laid the foundations for monetary policy formulation and implementation: (i) the legal mandate (policy objective); (ii) its governing structure (central bank governance); (iii) the powers to control monetary policy vis-à-vis the government (policy formulation); and (iv) the conditions for financing government expenditure (central bank lending). A snapshot of the evolution of these institutional features over the three periods identified above is presented in Table 1.

⁴ A thorough narrative of the evolution of central bank independence in Latin America goes beyond the scope of this paper. For a comprehensive historical account of central bank independence in Latin America, see Jácome (forthcoming).

Table 1: Key features of central bank independence over 100 years

	Mandate/Functions	Governing arrangement	Monetary policy autonomy	Credit to the government
Early years	<ul style="list-style-type: none"> - Issue the national currency. - Conduct rediscount and discount operations with banks and the general public. - Provide credit to the public sector on a limited basis. - Work as a depositary and fiscal agent. - Receive deposits from banks, the public sector, and the general public. - Provide clearing for payments. 	<ul style="list-style-type: none"> - Board of Directors comprised of shareholders' appointees (banks), a minority of government representatives, and sometimes from the business associations and the general public. - The President of appointed by the Board of Directors. 	<ul style="list-style-type: none"> - Before the Great Depression, monetary policy restricted by limitations to issue banknotes and, specifically, to provide credit to the government. - In the fallout of the Great Depression, the restrictions to issue currency were increasingly relaxed and the conditions to finance the government expanded. 	<ul style="list-style-type: none"> - Allowed but on limited amounts depending on each country. Central bank loans are capped in a range of 10 to 30 percent of the central bank paid capital and reserves. - These restrictions were eased in the run-up to Great Depression and in the following years. In addition, specific laws were passed to expand central bank credit to the government.
Developmental phase	Conduct monetary, credit, and exchange rate policies with the aim of fostering the appropriate conditions for an orderly and fast development of the economy.	<ul style="list-style-type: none"> - Board of Directors comprised of representatives from banks, the government, and business associations. The majority of members belonged to the executive branch. - The President of the Board is appointed by the President of the Republic. 	<ul style="list-style-type: none"> - Governments gradually gained increasing influence on monetary and exchange rate policy formulation and implementation. - The Minister of Finance had veto power over monetary policy decisions. 	Allowed but on limited amounts. Restrictions varied for each country, up to a proportion of government revenues in a range between 8 and 15 percent in the previous year. Loan maturity and the interest rate charged also varied.
Golden period	<ul style="list-style-type: none"> - Preserve price stability. - Maintain the stability of the banking system. - Promote the normal functioning of the payments system. 	<ul style="list-style-type: none"> - Board of Directors comprised of technocrats nominated by the government and appointed by the Congress for a tenure longer than the presidential term. - Dismissal of Board members must be approved by Congress. 	The Board of Directors enjoyed autonomy to formulate and execute monetary and exchange rate policy, including adjustments to the policy rate.	Restrictions to finance the government are tighter. Loans must be repaid in the same fiscal year and are charged a market rate. In some countries, credit to the government is banned.

Source: Central bank legislation and its reforms and relevant sections of constitutions.

Based on these four criteria, we construct a CBI index codifying historical central bank legislation covering 17 Latin American countries over a period that spans 100 years. Since the CBI index uses information from central banks' legislation, it is an index of legal central bank independence exclusively. The CBI index is a modified version of the widely known Cukierman, Webb, and Neyapti (CWN) index, the most common metric used in the literature to measure central bank independence.⁵ The CBI index evaluates the same four criteria in the CWN index and is calculated by taking the weighted average of them: the central bank governance (20 percent); the legal mandate (15 percent); policy formulation (15 percent); and central bank lending (50 percent). These four criteria are in turn broken down into 15 sub-criteria, as spelled out in Annex 1.

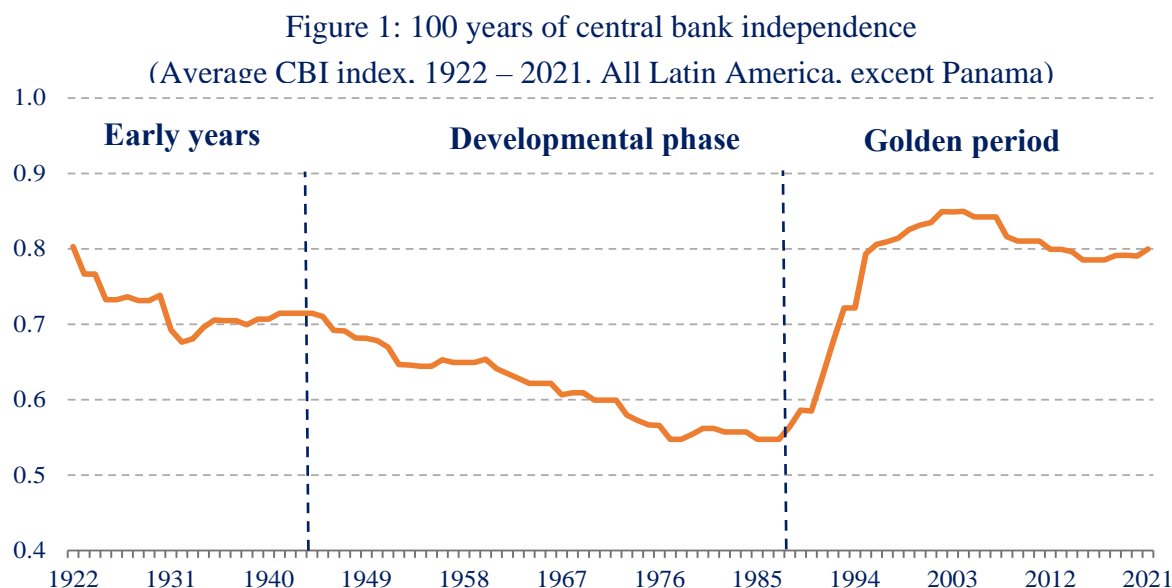
The CBI introduces small modifications to the underlying sub-criteria in the CWN index. Most of the changes are incorporated to the sub-criteria characterizing the governing arrangement of the central bank. The CBI expands the assessment of the rules for the appointment and dismissal to the entire central bank's board of directors, instead of focusing exclusively on the central bank governor, which is relevant because the legal powers of central bank governors generally represent only a minority fraction within the central bank board. Furthermore, the legal provisions for the appointment and term of office for the central bank governor differ from those that apply to the rest of the board members in a number of countries in the region. The criterion to evaluate the term of office of the central bank governor—and other members of the board of directors—is also different, since the CBI index considers not only the absolute length of their appointment, but also their tenure relative to the government. In particular, the CBI index rewards extended or staggered appointments with respect to the government's term, as a way to strengthen CBI from the political cycle. An additional change emphasizes the restrictions on the executive branch to remove members of the board of directors—and not only the central bank governor. The procedures for dismissal of members of the central bank board, including the central bank governor, receive extra weight, since these are even more critical than the appointment of the members of the board. And unlike the CWN, the CBI index penalizes the presence of executive branch representatives at the central board. Given the importance in a historical context of the analysis, the CBI index also assesses the autonomy of exchange rate policy, penalizing the interference of the government as it could likely limit the conduct of monetary policy in small open economies. Lastly, the CBI index adjusts the sub-criteria underlying the conditions for lending to the government to consider the wide array of provisions found in 100 years of central bank legislation in Latin America.

The index varies in a continuous scale from 0 to 1, such that the closer the index is to 1 the higher is the independence of the central bank and vice versa. It assigns higher marks to those institutional

⁵ See Cukierman et al. (1992).

arrangements where the executive branch has no power to exert control over the central bank board. Specifically, central banks are considered to be more independent if the government has limited powers to appoint and dismiss the governor and central bank board members, and when their tenure is longer than that of the executive branch. The intuition behind this assumption is that governments and central banks do not always share common interests in the formulation of monetary policy. Governments are often guided by short-term prospects associated with political cycles, whereas central banks work with long-term horizons in order to achieve policy effectiveness, as monetary policy operates with a lag. On the other hand, having a single or primary objective of price stability is associated with more independence. On the other hand, central banks whose mandate includes development objectives receive a low grade. In addition, central banks must be autonomous to formulate and implement monetary and exchange rate policy in line with their inflation mandate and, therefore, government's interference reduces the CBI index. And, very importantly, restrictions to grant credit to the government—and, more broadly, to the public sector—are rewarded because they help the central bank to maintain control over monetary policy and to keep inflation in check. The CBI index does not include accountability practices, a key dimension of modern central bank independence, given that this feature became an integral component of the institutional design of monetary policy only in the 1990s, when countries introduced checks and balances on central bank independence.

Building on our CBI index, Figure 1 displays the evolution of central bank independence over the course of 100 years. It shows that central bank independence fell shortly after they were created in the early 1920s, in particular, when Latin America was hit by the spillovers of the Great Depression in the U.S. and decided to exit the gold exchange standard, as countries relaxed the existing restrictions to print money and fund the government. The erosion of central bank independence took hold during the developmental phase. During those years, central banks became in practice development banks with an overarching mandate of promoting economic development by financing the government and economic activity in general under rules increasingly set by the government. It is only in the 1990s, that most central banks in the region were granted political independence—the CBI increased markedly—to formulate and execute monetary policy with the objective of achieving and preserving price stability.



A. Central Banks' Early Years

When the Latin American central banks were created in the 1920s (see Box 1), they enjoyed a high degree of legal independence. Most of these central banks were established following the recommendations of US experts led by Edwin Kemmerer.⁶ The fundamental pillar of Kemmerer's vision was that central banks should endorse the gold exchange standard as a means of securing internal and external stability of the currencies and to grant political independence to central banks. He cited the old proverb that says, "we have gold because we cannot trust governments."⁷

Box 1: The Creation of Central Banks in Latin America

Central banks in Latin America are young institutions compared to those in the advanced economies. While most European countries already had a central bank with the monopoly of currency issue by the end of the 19th century and the U.S. Federal Reserve System was created in 1913, the Reserve Bank of Peru, the pioneer central bank in Latin America, was only created in 1922. Then, in accordance with the recommendations of the American commission of experts led by Edwin Kemmerer, other central banks were created; in Colombia in 1923, Chile in 1925, Ecuador in 1927, and Bolivia in 1928. Mexico also established its central bank in 1925 without a Kemmerer-type charter. A Kemmerer mission also helped establishing the Central Reserve Bank of Peru in 1931, a reincarnation of the Reserve Bank of Peru. Before the creation of these central banks, state-owned commercial banks in Brazil and Uruguay—Banco

⁶ Edwin W. Kemmerer was a Princeton University professor, who had previously helped in the creation of the U.S. Federal Reserve System and advised other countries outside the Western Hemisphere. For an extended analysis of Kemmerer's role in the creation of central banks in Latin America, see inter alia Seidel (1972) and Drake (1989).

⁷ See Kemmerer (1944), pp. 181.

do Brasil, founded in 1808, and Banco República Oriental del Uruguay, created in 1894—also had note issue powers and served as the government’s fiscal agent. Central banks were granted a charter for specific periods of time; 50 years in Bolivia, Chile, and Ecuador, 30 years in Mexico and Peru, and 20 years in Colombia. They were created, in most cases, as semi-public institutions with different models of ownership (see Table 1).

By the mid-1930s, new central banks were created in El Salvador and Argentina, and in Venezuela in 1939. Like in the past, foreign advisors played an important role in the creation of these central banks as they provided recommendations that paved the road for enacting the new legislation. Banco Central de la República Argentina benefited from the ideas of Sir Otto Niemeyer from the Bank of England, although it was the Argentine economist, Raúl Prebisch, who ultimately laid out the institutional foundations. Frederick Powell, also from the Bank of England, led a mission that advised in the creation of Central Reserve Bank of El Salvador, whereas Hermann Max from the Central Bank of Chile helped in the creation of the Central Bank of Venezuela. Central banks were established in Cuba, Dominican Republic, and Guatemala in the 1940s, and in Costa Rica, Honduras, and Paraguay in the following decade. In the 1960s, Nicaragua, Brazil and Uruguay finally established stand-alone central banks.

While central banks did not have an explicit mandate, those institutions that followed Kemmerer’s blueprint were assigned instead specific responsibilities, which primarily included issuing as a monopoly the national currency and securing its convertibility into gold, providing credit to commercial banks via rediscount operations, working as fiscal agent, and providing clearing for payments (see Table 1). The control of central banks was vested in a board of directors appointed by their shareholders and the government. Thus, the board was comprised of representatives from the government—although without voting powers in the Kemmerer-type central banks—and private banks, domestic and international, and, in some countries, from business associations, labor organizations, and the private citizens.. This composition of the board of directors aimed not only at giving voice not only to central banks’ shareholders but also to key market participants in the formulation of monetary and credit policies. On the other hand, appointing a diversified membership representing the private sector sought to limit bankers’ influence on policy decisions.

Endorsing the gold exchange standard was the defining policy feature of central banks in the 1920s. Central banks were required to preserve the convertibility of their currencies at a fixed exchange rate while keeping an open capital account to allow capital flows to adjust balance of payment disequilibria. This implied that, in theory, central banks were not in control of monetary policy although not necessarily in practice. For example, adjustments of the rediscount rate by the Central Bank of Chile did not follow adjustments of the New York Federal Reserve’s discount rate, contemporaneously and within a three-month window. Moreover, adjustments of these rates featured a negative correlation (see Jácome, forthcoming).⁸ And while monetary policy implementation was restricted because central banks were allowed to issue banknotes only if they were backed by international reserves, mostly gold, banknotes in circulation were backed with

⁸ This is similar to what happened at the time in several advanced economies. Bordo and MacDonald (2001) performed empirical analysis to test the independence of monetary policy in several advanced economies, when the gold exchange standard was in place, and concluded that short term interest rates could have been used to engage on independent monetary policies.

wide margins, which left central banks with room to expand rediscount operations and provide financial support as lender of last resort as necessary.⁹ Nonetheless, this restriction became increasingly binding in the run-up to the Great Depression as capital outflows soared and, hence, international reserves declined. As a result, banknotes in circulation shrunk and interest rates increased.¹⁰

In addition, central banks' charter crafted the rules for limiting the provision of credit to the government. Central banks could not purchase government securities in excess of a given fraction, which ranged between 10 to 30 percent of their paid up capital and reserves. Imposing such restriction was necessary to leave behind the years when note issue was directed to finance the government, which elicited exchange rate instability and inflation. Putting a cap on financing the government and other public sector institutions was also meant to leave room for financing economic activity given the existing limitations that central banks faced to issue money.

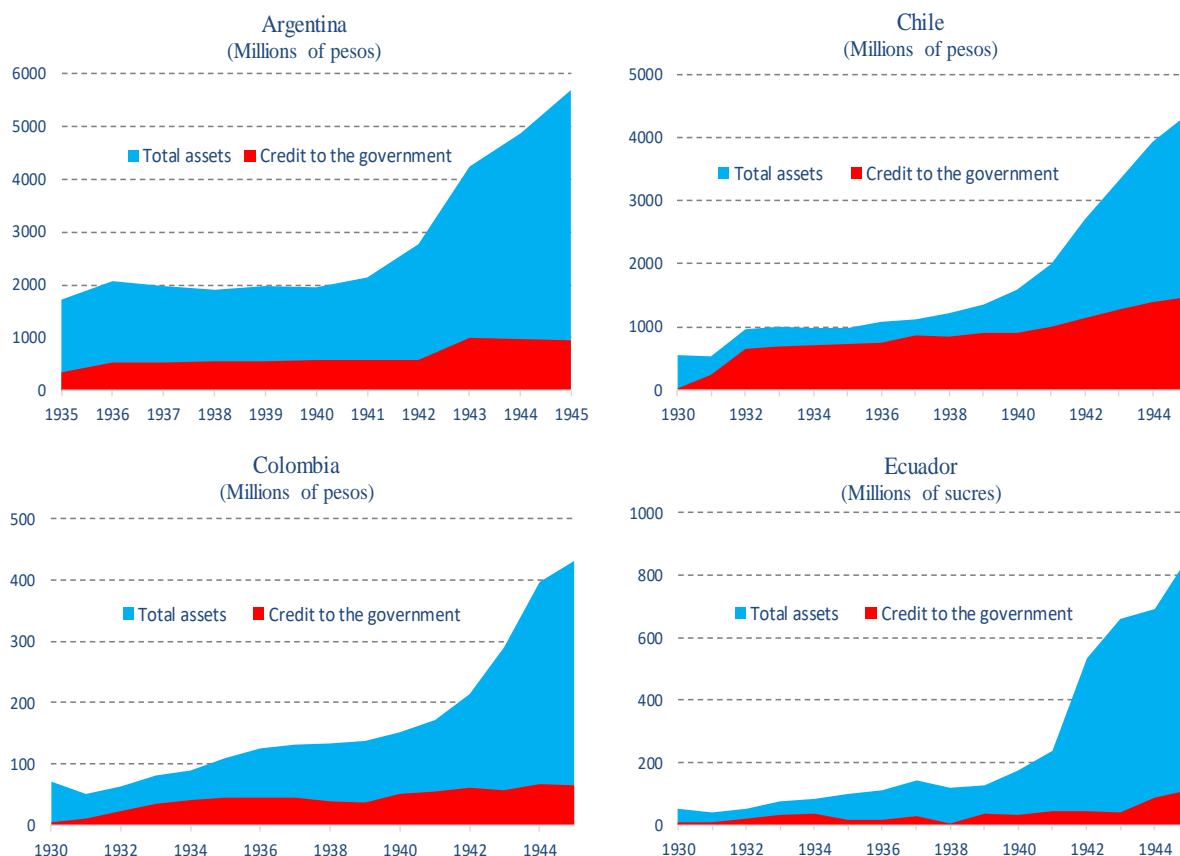
The initial architecture of Latin American central banks, based on the gold exchange standard, was quickly shaken by the advent of the Great Depression. As the world economy and global trade collapsed in the late 1920s, Latin American exports plunged and economic activity slowed down and eventually fell into depression.¹¹ Trade and output decline, in turn, lowered fiscal revenues and, therefore, Latin America defaulted on their foreign debt, which severely constrained government external borrowing. Since adherence to the gold exchange standard imposed insurmountable restrictions that impeded central banks to respond countercyclically to the external shock, and given the dire state of public finances, Latin American central banks abandoned the gold exchange standard and, thus, stopped securing the convertibility of their currencies. Most countries preserved a fixed exchange rate but were free to adjust it as needed, which, together with the introduction of capital controls, gave central banks full monetary policy discretion to pursue expansionary policies aimed at helping economies bounce back.

⁹ Legal provisions required in most countries that 50 percent of the banknotes were backed by specie reserves, which typically included the sum of gold, in vaults and abroad, and U.S. dollars and British pounds, which were convertible into gold. See Jácome (forthcoming).

¹⁰ For an explanation of the workings of monetary policy under the gold exchange standard in the run-up to the Great Depression based on Chile's experience, see Jácome (2015).

¹¹ The value of exports halved from 1929 to 1932 in Colombia and Ecuador, and in Chile they fell by more than 85 percent over the same period (see CEPAL, 1976).

Figure 1: Central Bank Assets and Credit to the Government
(1930 – 1945, except for Argentina)



Source: Argentina: Central Bank of the Republic of Argentina, Annual Reports; Chile: Central Bank of Chile, Annual Reports; Colombia: Revista del Banco de la República 1930 – 1935 and Informe del Gerente a la Junta Directiva del Banco de la República 1936 – 1945; Ecuador: Banco Central del Ecuador (1997).

The policies executed to recover from the Great Depression's economic fallout tested the independence of central banks. Since fiscal policy had run out of steam, central banks were called upon to boost the recovery. In addition to curtailing interest rates, central bank money was required to fund countercyclical fiscal policy amid heightened tensions between the government and monetary policy authorities. And because legal restrictions prevented central banks from providing credit to the government in large scale, central bank laws in several countries were amended, or Congress passed specific legislation circumventing the existing restrictions in the central bank charter. As a result, credit to the government surged and became the largest central bank asset by 1934; reaching 70 percent of assets in Chile, 60 percent in Colombia—including loans to the mortgage bank—, and over 40 percent in Ecuador (see Figure 1). Expanding credit to the government also required relaxing the existing restrictions to issue money that existed under the

gold exchange standard.¹² In contrast, in Argentina, central bank assets were largely driven by the accumulation of international reserves until 1945, although the first signs of fiscal dominance appeared in 1943, when the central bank was required by law to provide credit to the state-owned Banco Nación to finance the purchase of the agriculture harvest of that year.

By the mid-1930s, the worst of the crisis in Latin America was over as economic activity started to pick up. However, central bank independence was a casualty of the recovery. While monetary policy succeeded in pulling Latin American economies from a cliff, this came at the cost of undermining central banks' independence for decades to come. Political pressure on central banks subsided as economies recovered, but the reforms introduced to central bank legislation in the early-1930s remained in place. Governments could thus continue resorting to central bank financing, knowing that they would get funding at subsidized financial conditions without paying the political cost of raising taxes and/or cutting expenditures.

With the return to normalcy, a new modality of monetary policy formulation was set in motion. Central banks switched from the previous rules-based approach to monetary policy discretion to regulate the amount of money and credit. In fact, the central banks created in the 1930s—in El Salvador, Argentina, and Venezuela—received this specific mandate. The central bank in Argentina was also responsible for accumulating sufficient international reserves to lean against the wind and moderate the adverse effects of “export and foreign investment volatility,” and importantly, was in charge of regulating and supervising banks. The latter was in contrast to other countries in the region where such responsibilities rested on a separate entity. This institutional arrangement, where monetary policy and banking supervision is conducted under one roof was replicated later when the central banks in Brazil, Paraguay, and Uruguay were created.¹³

The initial decline of central bank independence in Latin America can be clearly seen when computing the CBI index for 1930 and 1945. Since most of the first central banks in Latin America followed the Kemmerer script, they enjoyed a high level of independence from the government and, prior to the 1930s, the CBI index was not only relatively high but its dispersion across countries was also low (See Annex 2). Nonetheless, the reforms to central bank legislation introduced in the run-up to and during the Great Depression and its aftermath, resulted in a decline

¹² Legal reserves supporting currency issue were lowered to a range between 25 and 40 percent in most countries. In addition, the limits for financing the government—defined in relation to the central bank's capital and reserves—were increased from 30 to 80 percent in Chile, and from 30 to 45 in Colombia, in addition to authorizing the central bank to extend credit to the government up to 30 percent of its assets.

¹³ Because of the geographic pattern, this institutional arrangement have been coined the “Atlantic” model whereas the Kemmerer-type central banks, in charge of monetary policy only, are referred as the “Pacific” model (Jácome et al., 2012).

in central bank independence, such that, by 1945, the median CBI index had dropped from 0.73 to 0.70 (). This decline in central bank independence was not only attributed to the creation of new and more independent central banks in the 1930s, because the median CBI index of the central banks created in the 1920s is even slightly lower than the median corresponding to the full sample of central banks in 1945. There was also greater dispersion of the level of central bank independence across countries given that the group of central banks established in the 1930s were vested with more stringent restrictions than their older peers for funding the government.

The policies implemented in Latin America to cope with the adverse effects of the Great Depression and their aftermath yield important lessons. There is no doubt that, in absence of fiscal space, expanding central banks' balance sheets—mainly via credit to the government—was a necessary step to prevent an output collapse and to bolster economic recovery. However, financing the government saw the seeds of future fiscal dominance because those extraordinary measures were not reversed once the economies bounced back. They remained as part of the monetary policy toolkit and, hence, central bank credit at subsidized rates became a key source of government financing for several decades at the expense of central bank independence.

B. The Developmental Phase

During the developmental phase, any vestige of central bank independence eventually disappeared. In the context of a new international monetary order defined by the Bretton Woods agreement, and the adoption of an inward-oriented development strategy by the largest Latin American countries, a new central banking paradigm emerged by the mid-1940s, one in which monetary policy was subservient of government prescriptions. The new paradigm meant in practice that central banks turned into some form of development banks.

Most countries endorsed the Bretton Woods agreement in the second half of the 1940s, which required them to maintain fixed, although adjustable, exchange rates and to commit to the convertibility of their currencies against the US dollar.¹⁴ Nonetheless, central banks could maintain control of monetary policy because of the enhancements of capital controls introduced in the 1930s. At the same time, several countries, in particular the Southern economies, deepened the policies—introduced in the 1930s—that promoted import substitution industrialization as an

¹⁴ The agreement also called for the convertibility of the US dollar against gold, which made the US currency the new reserve asset. For an extensive review of the Bretton Woods international monetary system from a historical perspective, see Bordo (1993).

alternative development strategy.¹⁵ The Central American countries, though, did not engage on import substitution industrialization and instead continued exporting agriculture commodities.

The new development strategy engulfed monetary policy. Because there was a sense that the existing monetary legislation was obsolete—as it was enacted to secure the convertibility of the currencies into gold—major reforms to the central banks' law were approved.¹⁶ A first critical reform was to expand central banks' mandate to bring on board the objective of fostering economic development. While some of the new laws also made references to inflation, for example, requiring central banks to “prevent inflationary and deflationary trends,” as in Chile and Ecuador, or “preserve the internal value of the currency” as in Peru and Venezuela, promoting economic development became the overriding policy objective of monetary policy.

To enforce the new policy objective and their developmental role, the new laws redefined the central banks' government arrangement. Legal changes included a larger presence of government representatives at the central banks' board of directors than in the past, although the extent of the government's influence in the central bank board varied across countries and over time.¹⁷ As a result, governments enhanced their influence on the formulation of monetary policy and even on its implementation. Moreover, they shaped policy decisions not only as part of the central bank board, but also from outside the central bank—at different periods of time.¹⁸

¹⁵ The rationale for leaving the outward-oriented policies in place until the 1930s, stemmed from concerns that world commodity prices were prone to experiencing large swings, which made countries vulnerable to recurrent external shocks that hurt economic growth and development.

¹⁶ Argentina, Bolivia, Ecuador, Guatemala, and Venezuela changed the central bank legislation in the mid- to late-1940s. Then, Argentina (once again), Chile, and Colombia made reforms in the 1950s, whereas Chile (once again), El Salvador, Peru, and Venezuela (once again) changed the central bank law in the 1960s.

¹⁷ For instance, in Argentina, the Minister of Finance presided the central bank board between 1949 and 1957, like in Colombia, starting in 1963. The Minister of Finance was also a member of the board in several new central banks, such as in Costa Rica, Dominican Republic, Honduras, and Nicaragua, and in other existing central banks like in Ecuador and Guatemala. In Dominican Republic, Ecuador, and Guatemala the central bank board was replaced by a Monetary Board, comprised of government and private sector representatives, which acted as the supreme monetary authority, thus diminishing in practice the central bank status. Colombia in 1963 also established a Monetary Board excluding private sector representatives based on the argument that their presence imposed an inflation bias to central bank decisions (Avella 2014). In the following decade, a Monetary Council was created in Peru in 1970, in Argentina in 1973, and in Chile in 1975, mostly comprised of members of the executive branch, with the responsibility of formulating central bank policies.

¹⁸ In Argentina, the National Economic Council was assigned in 1947 a direct role in formulating credit regulations, such that between 1949 and 1957, the Minister of Finance was directly involved in taking these decisions, even chairing the central bank board. In Colombia, starting in 1951, changes in reserve requirements required the Minister of Finance's approval, which was expanded to other policy instruments when the Monetary Board was created and the Minister of Finance became its president. Similarly, in Chile, starting in 1953, changes in reserve requirements were approved by the Minister of Finance and, in some cases, by the President of the Republic. In Mexico, the Minister of Finance had veto power over decisions adopted by the central bank, whereas in Brazil, when the central bank was created, the National Monetary Council—chaired by the Minister of Finance and comprised of other government officials—was the highest monetary authority.

To implement the new paradigm, central banks adjusted their monetary policy toolkit and deepened financial repression with development purposes. They expanded the use of direct monetary policy instruments, such as the control and the allocation of bank credit, and gradually intensified the use of indirect instruments, like changes in the rate of reserve requirements. While central banks continued executing rediscount operations, they were primarily used as a credit allocation device rather than as a tool to control monetary aggregates and inflation. Yet adjusting the discount rate was rare. Instead, central banks altered the terms and conditions of discount/rediscount operations to encourage credit provision to selected economic sectors in line with the government's economic policy. In addition, they allocated credit quotas on a bank-by-bank basis, according to their level of capital, charging different interest rates across economic activities. In general, central banks expanded credit to banks as means of resource allocation to the economic sectors expected to drive growth and development. The use of open market operations took hold in some countries only in the 1960s, thus providing central banks a more flexible tool to adjust the money supply. Exchange rates were also used as resource allocation tool in most South American economies. Countries implemented multiple currency practices with the aim of discouraging non-essential imports and promoting import substitution industrialization and of propping up specific exports.

The monetary policy reforms also vested central banks with powers to expand the financing of fiscal expenditure already introduced in the 1930s, thus inflicting a lasting damage to central banks' independence. In an environment of extended financial repression that made unattractive for commercial banks to finance the government, central banks were called upon to fund persistent fiscal deficits that resulted from expanded government expenditure and subsidies. Like in the 1930s, this financing materialized either because new central bank laws were promulgated or the existing ones reformed, or because specific legislation was passed to circumvent the central bank charter.¹⁹ Credit operations were typically provided at preferential interest rates and especially at negative rates, measured in real terms. In addition, ad hoc legislation was frequently passed to restructure governments' debts with the central bank, extending its maturity and reducing the interest rate paid for those obligations. Another form of central bank financing to the government—albeit more difficult to measure—was the provision of credit to state-owned financial institutions, which, in turn, extended credit to the central government, local governments, and other public sector entities. Therefore, fiscal dominance was, to a great extent, a defining feature of monetary policy, which responded to persistent fiscal deficits across the region, as extensively analyzed for eleven Latin American economies starting in 1960 by Kehoe and Nicolini (2022).

¹⁹ This type of central bank credit benefitted the government but sometimes also some public sector institutions, like in Chile, Paraguay, Peru, and Brazil in the 1960s.

In countries where credit to the government and commercial banks reached sizable amounts, central banks could hardly manage their balance sheet. Because there was a chronic systemic liquidity surplus, it was difficult for the central bank to drain enough money from the market of bank reserves to keep monetary aggregates in check. This is what happened in Argentina and especially in Chile, where the central bank balance sheet exploded during 1945 to 1970, while in other countries, like Colombia and Ecuador, the pace of increase was slower (see Table 2). Such asymmetry was reflected on inflation performance as the average annual rate surpassed 30 percent in Chile and was close to 25 percent in Argentina in that period, whereas in Colombia inflation was on average 10 percent and only 5 percent in Ecuador.

Table 2: Central bank balance sheets in Latin America
(Index numbers. Selected countries. 1945 – 1970)

	1945	1950	1955	1960	1965	1970
Argentina	100	677	1,648	3,416	8,323	19,292
Chile	100	314	1,984	13,577	77,316	420,076
Colombia	100	183	190	509	1,519	2,418
Ecuador	100	159	220	330	466	1,396

Sources: For Argentina and Chile: Central banks' annual reports. For Colombia, Revista del Banco de la República, several issues. For Ecuador: Banco Central del Ecuador (1997)

Except in the Southern Cone countries, following the demise of the Bretton Woods arrangement in the early 1970s, monetary policy started to play a secondary role. Latin America, in general, initially benefitted from a commodity boom that released pressure on central bank financing to the government. Immediately after, capital inflows—that surged on the back of the 1972–1974 oil shock—poured into medium-size and large economies, thus boosting major domestic credit expansions and financing growing fiscal and external disequilibrium. Chile and Argentina followed a different path. In Chile during 1970 to 1973 and in Argentina between 1973 and 1976, where left wing political parties rose to power, monetary policy was a critical component of the governments' policy agenda.²⁰ With monetary policy playing a subservient role to the government, the central bank balance sheet surged such that the increase in assets reached close to 40 percent of GDP in Argentina in 1976 and 80 percent in 1973 in Chile, in both cases in response to the increase in credit to the government—and in Argentina because the central bank absorbed credits and deposits from commercial banks. Such an expansionary monetary policy took its toll on inflation as they hit three-digit rates. Nonetheless, "macroeconomic populism," as characterized by Dornbusch and Edwards (1991), did not last much. A political coup took place in both countries

²⁰ In Argentina a new central bank law was passed to give the government more control over monetary policy.

bringing to power governments from the opposite political spectrum, which shifted the emphasis of economic policies to stabilizing the economy and restoring market conditions to guide price formation. And while governments continued defining the direction of monetary policy, pressures to provide loans to the government receded.²¹ Anti-inflation efforts relied on a forward-looking exchange rate anchor, known as “tablita,” to drive inflation expectations. In other countries, like in Colombia and Ecuador, the amount of credit to the government was negligible and, thus, monetary policy was much less expansionary.

The persistent increase in aggregate demand financed with capital inflows proved to be unsustainable. In the early 1980s, a triple crisis (debt, banking, and currency) was triggered by the drastic increase in interest rates in the US and the UK. Monetary policy then became accommodative to prevent the meltdown of financial systems and support quasi-fiscal responsibilities.²² Thus, in the rest of the decade, most central banks were subject to a combination of fiscal and financial dominance that led to an explosive growth of their assets (see Figure 3), sometimes also associated with increasing operational losses, which became another source of monetization that hampered central banks’ capacity to handle monetary policy. Operational losses were mostly a legacy of the monetization of the banking crises and, in some cases, of distortive interest rate and exchange rate policies.²³

Because the government influence on monetary policy took hold throughout the developmental phase, the median CBI index declined to 0.66 and 0.54 in 1960 and 1990, respectively (see Annex 2), while the standard deviation kept growing. And because the median CBI in 1990, when excluding the new central banks created after 1960, is 0.55—similar to the median for the full sample of countries—, we conclude that low central bank independence was a general trend across Latin America. Thus, by 1990, the level of central bank independence in most countries had reached record lows, with the exception of Chile that in 1989 passed a new law of the central bank that granted independence to monetary policy.

²¹ In Chile, a new central bank law was approved in 1975. It created a Monetary Council, mostly comprised of members of the executive branch, with the responsibility of formulating central bank policies with aim of reducing the historically high inflation. El Salvador and Peru also established at the time a similar governing arrangement (see Jácome, forthcoming).

²² Central banks focused on three broad areas that varied across countries: assisting ailing banks; restructuring the financial system; and supporting bank borrowers. See, for example, the extensive analysis of the crises in Argentina, Chile and Uruguay by Baliño (1991), Velasco (1991), and Pérez-Campanero and Leone (1991), respectively.

²³ For instance, in the second half of the 1980s, the central bank in Peru implemented multiple currency practices that led to recurrent losses, as average buying rates were greater than average selling rates (see Jácome, 2022).

C. The Golden Period

The 1990s marked a turning point for central bank independence in Latin America. Because macroeconomic instability and stagnation in the previous decade had taken a high toll on living conditions and was a major source of social discontent, governments decided to undertake a major structural reform that conferred political independence to central banks. Thus, the vast majority of countries in Latin America approved new central bank legislation or passed major reforms to the central bank charter.²⁴ The key tenet of central banks' institutional reform was to prevent politically motivated short-sighted influences on monetary policy from happening and allow central banks to focus on defeating inflation.²⁵ Independence was enshrined in the central bank charter and, in some countries—like in Chile, Colombia, and Mexico—, in the constitution, with the view of making it difficult to reverse this reform. Countries also stopped issuing parallel laws to circumvent central bank independence. In exchange for granting independence, in most cases, legislation held central banks accountable.

The reform endowed most central banks with an unequivocal mandate of pursuing price stability. Thus, promoting and financing economic development became history. Most Latin American central banks also became independent from governments. This implied that monetary policy was isolated from self-interested political influences that could otherwise undermine its credibility and generate an inflation bias. Central banks' boards of directors, including the governor, became appointed for a tenure that exceeded—or overlapped—with the country's presidential constitutional term, with the view of preventing the subordination of monetary policy to the countries' political cycle.²⁶ The law also required in many countries that the Congress confirm board members following executive branch nominations. In addition, unlike in the past, the central bank board rarely included private sector representatives. A key feature of political independence was to remove members of the government from the board of directors, although, in some

²⁴ El Salvador (1991), Argentina (1992), Colombia (1992), Nicaragua (1992 and 1999), Venezuela (1992). Ecuador (1992 and 1998), Peru (1993), Mexico (1993), Bolivia (1995), Costa Rica (1995), Uruguay (1995), Paraguay (1995), and Honduras (1996) followed suit. A few years later, Guatemala and Dominican Republic in 2002, followed the same path. Brazil was the only country in the region that at that time did not pass legislation granting independence to the central bank. This only happened in 2021. Over time, the institutional reform of monetary policy gained political traction and, thus, it was preserved and respected in practice, except in a few countries, where central bank independence was hindered, most notably Argentina and Venezuela.

²⁵ Granting independence to central banks was well rooted in economic theory. The early time-inconsistency models of Kydland and Prescott (1977), Calvo (1978), and Barro and Gordon (1981) showed that governments facing a trade-off between inflation and unemployment are tempted to choose higher-than-optimal inflation rates due to self-interested political intervention, thus generating an inflation bias. These models favored a conduct of monetary policy based on rules rather than discretion, as Milton Friedman had suggested long before. However, the benefits of avoiding an inflation bias was later weighed against the costs of maintaining a rule that over time was no longer appropriate. Later work by Rogoff (1985) proved that the inflation bias could be reduced by delegating monetary policy to an independent and “conservative” central banker—a person that is more averse to inflation than the government and the society. Later work, by Persson and Tabellini (1993) and Walsh (1995) provided the basis for establishing a system of check and balances and, therefore, for holding central banks accountable. They used a principal-agent approach to demonstrate that the central bank (the agent) acts in the principal's interest (the society, represented by the government) under a contract with a well-defined goal, namely low inflation.

²⁶ Over time, the benefit of this institutional attribute was weakened in countries where legal changes introduced the possibility of an immediate reelection of the president of the republic.

countries, the Minister of Finance continued being a member, often without voting powers. An exceptional case is Colombia, where the Minister of Finance was empowered to preside the board of directors of the Bank of the Republic. And to strengthen political independence, in many countries the new legislation specified strict legal grounds for removing members of the central bank board of directors and put the final decision in the hands of the legislative or the judicial branch, following a well-established due diligence process.

The new governing arrangement empowered central banks to formulate and execute monetary policy without government interference. Starting in the 1990s, most of central banks enjoyed not only *instrument independence*, but also *goal independence*.²⁷ Central banks had the authority to set alone their policy goal, typically the target for inflation, except in few countries like Brazil and Colombia, where the Minister of Finance presides the National Monetary Council and the Monetary Board, respectively—these central banks have instrument independence. Enjoying goal and instrument independence was considered necessary in Latin America to restrict the governments' interference in policy formulation and execution, given the region's history of high inflation. Yet in some countries the central bank was not vested with the authority to manage autonomously exchange rate policy. In Mexico and Venezuela, the government retained the power to co-participate in the formulation of exchange rate policy, which had the potential for interfering on the central banks' operational independence. However, the relevance of this restriction diminishes when countries introduce exchange rate flexibility, like in Mexico.

Chief among the monetary policy reforms was to prevent fiscal dominance.²⁸ In some countries, the new legislation banned direct or indirect central bank financing to the government. In others, the central bank was authorized to provide advances to help the government cope with seasonal liquidity shortfalls. However, this financing was conceded in limited amounts and the government had to pay it back within the same fiscal year. Banning the provision of credit to the government was elevated in some countries to a constitutional level—like in Chile, Guatemala, and Peru—to make its reversion harder. Banning or restricting fiscal deficit financing reflected the consensus that central bank funding to the government has historically been the main cause of the chronic inflation that afflicted the region (Kehoe and Nicolini, 2022).

Holding central banks accountable was a novelty. Until the 1990s, central banks in Latin America simply published an annual report describing the country's overall economic performance, the policies they adopted in the given year, and their financial statements. However, this publication

²⁷ This distinction was originally proposed by DeBelle and Fischer (1994), with the view of characterizing how independent central banks are.

²⁸ The spirit of this restriction has been violated based on alternative legal grounds. In Venezuela, the law required the central bank to transfer to the government unrealized profits associated to the revaluation of international reserves.

served essentially as a historical record. Since the reforms of the 1990s accountability became a check and balances institutional routine, given that independence involved delegating important state powers to an institution governed by unelected officials. With the turn of the century, accountability was complemented with enhanced transparency, in particular in countries that adopted inflation targeting. In these countries, central banks not only disclosed their policy objective, but also began to explain how they formulate monetary policy, the content of policy decisions, and the outlook for inflation and output to guide economic agents' decisions and their inflation expectations. The enhanced transparency associated with the adoption of inflation targeting resulted in a better anchoring of inflation expectations.²⁹ Accountability and transparency also made central banks less likely to behave in a dynamic inconsistent fashion.

Table 3: Average of the CBI index subcomponents for pre-reform and post-reform legislation

	Pre-reform	Post-reform
CBI index (average by group)	0.576	0.812
Central Bank Board	0.391	0.709
Term of office of governor	0.312	0.548
Who appoints the governor	0.314	0.549
Term of office of the rest of the Board	0.194	0.667
Who appoints the rest of the Board	0.275	0.686
Government representation at the Board	0.706	0.918
Dismissal of Board members	0.529	0.883
Central Bank Objective	0.292	0.785
Policy Formulation	0.712	0.850
Central Bank Lending to the Government	0.695	0.850
Advances	0.691	0.868
Securitized credit	0.750	0.956
Beneficiaries of central bank lending	0.609	0.746
Interest rate charged	0.618	0.882
Maturity of loans	0.706	0.794
In the primary market	0.824	0.882

Sources: Central bank legislation that granted independence to central banks and years of approval in parenthesis: Argentina (2012), Bolivia (2009), Chile (2020), Colombia (1992), Costa Rica (2019), Dominican Republic (2002), Ecuador (2021), El Salvador (2012), Guatemala (2002), Honduras (2004), Mexico (1993), Nicaragua (1999), Paraguay (1995), Peru (1993), Uruguay (2008), and Venezuela (2015). For the pre-reform period, central bank legislation in effect in the 1980s—except Chile that passed a major reform in 1989.

Note: The computations correspond to the criteria and sub-criteria behind the central bank independence index used in this paper, which are found in Annex 1.

²⁹ See, for example, Brito et al., (2018).

Building on the political and operational independence granted to central banks, and with an unequivocal mandate of defeating inflation, monetary policy delivered the expected results in most countries. To achieve this outcome, the support from other structural reforms implemented during the second half of the 1980s and the early 1990s was critical.³⁰ Importantly, the effectiveness of monetary policy would have not been possible without having in place sounder fiscal policies than in the past. By the late 1990s, an increasing number of central banks started to modernize their monetary policy framework by introducing inflation targeting, which helped to attain low and more stable inflation in the last 20 years (see Carrière-Swallow et al., 2016).³¹ The importance of central bank independence for inflation targeting has been widely recognized in the literature as an institutional mechanism to infuse credibility on inflation targeting and price stability and to eliminate the time inconsistency problem.³²

The CBI index clearly illustrates the significant improvement of central bank independence that followed the wave of reforms implemented in the first half of the 1990s. The median CBI index rose from 0.54 to close to 0.82 from 1990 to 2020, despite the fall in the autonomy of monetary policy introduced in a handful of countries, especially in Argentina and Venezuela during the 2010s. Going granular into the criteria that accounts for the different aspects of the CBI index, suggests that the latest central bank reforms introduced improvements in all areas considered in the index. However, on average, major improvements came from (i) refocusing the mandate of central banks on fighting inflation as the primary policy objective, and (ii) instituting a governing arrangement dissociated from the executive branch and, hence, with autonomy to formulate monetary policy without paying attention to political cycle considerations (see Table 3).

III. The Rise and Fall of Inflation

Against this backdrop of fall and rise of central bank independence, inflation rose and fell during most of the last 100 years. In a nutshell, inflation featured three different trends throughout this period (see Figure 5). It was initially low and volatile during the early years of central banks in Latin America, surged in the next five decades and even spiraled out of control in some countries, where inflation reached four-digit rates, and became low and stable in the new century (apart from

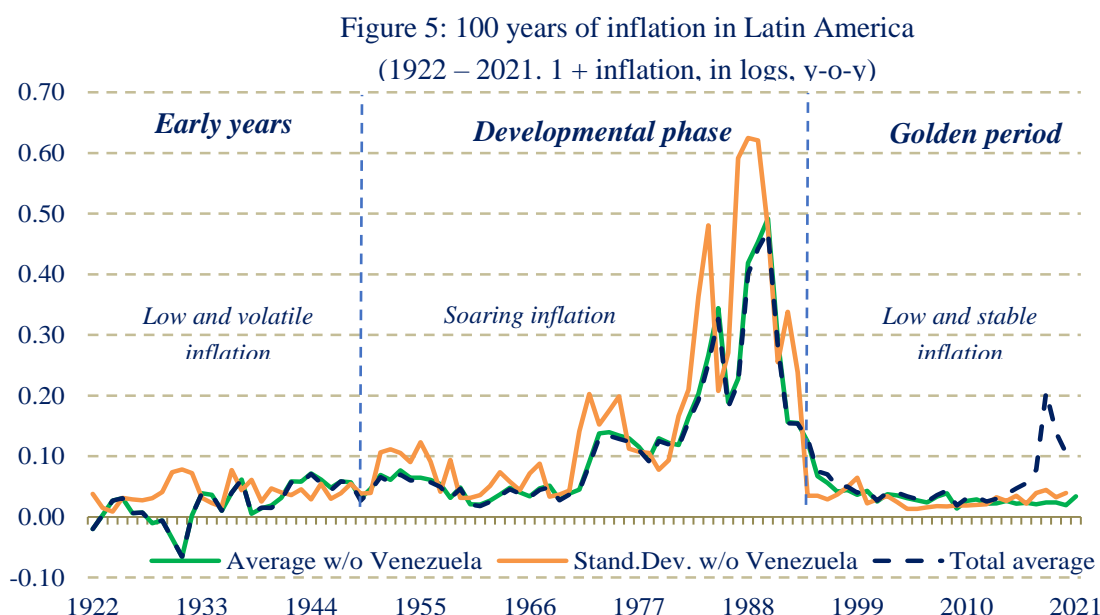
³⁰ These structural reforms were labeled as the Washington Consensus (see Williamson, 1990). One notable exception among these reforms that momentarily reversed some of the improvements in inflation trends was financial liberalization given that it was not accompanied by stronger prudential regulation and supervision. As a result, banks did not internalize appropriately the financial risks associated with deregulation, which led to a series of crises in the late 1990s and early 2000s and a temporary reversal of the declining path of inflation. For a detailed analysis of the 1990s and early 2000s financial crises in Latin America, see Jácome (2008).

³¹ In general, inflation targeting is nowadays the most popular monetary policy regime. It has spread across regions and spanned different levels of development (see Jácome forthcoming).

³² See, for example, Chari and Kehoe (2006).

bouts of inflation associated with the impact of external shocks), except in Argentina and especially Venezuela.

During the 1920s, when central bank policies endorsed the gold exchange standard, inflation was low but volatile—with prices even dropping significantly. Due to the restrictions to issue banknotes imposed by central bank legislation to preserve the convertibility of the currencies at a fixed exchange rate, inflation remained low. It even fell to negative territory because Latin America was a region of commodity exporters and, therefore, vulnerable to adverse terms of trade shocks, which often produced a drop in the level of prices induced from the adverse impact on output. Negative inflation rates also happened in the early 1930s, at the time of the Great Depression. However, once countries abandoned the gold exchange standard and relaxed the restrictions to limiting currency issue, central banks expanded the injection of money, mainly through the provision of credit to the public sector, with the view of moderating the economic collapse induced by the ripple effects of the Great Depression. Inflation then picked back to positive territory, above the rates recorded in the 1920s.



Sources: Argentina: Ferreres (2010) and Banco Central de la República Argentina; Chile: Diaz and others (2010) and Central Bank of Chile; Brazil: starts in 1964, Central Bank of Brazil; Colombia: GRECO (2001) and Bank of the Republic of Colombia; Ecuador: Morillo (1996) and IMF's International Financial Statistics; Mexico: 1922 to 1940, Índice General de Precios al Mayor de la Ciudad de México, Bach y Reyna (1943) and from 1940 onward, National Institute of Statistics and Geography (INEGI); Peru: Reserve Central Bank of Peru. For other countries, IMF's International Financial Statistics, starting in 1938.

As credit to the government gained traction in the second half of the 1940s and the 1950s, and central banks began to provide credit to commercial banks, monetary policy expanded steadily. Credit was conceded at preferential interest rates including to the private sector in order to allocate

resources to selected economic activities. As a result, inflation started to accelerate in some countries in the 1950s. This was remarkable in Argentina and Chile, where inflation hit three-digit rates in 1959 in the former country and more than 80 percent in 1955 in the latter. Inflation kept rising in the 1960s. For instance, inflation surged in Brazil to more than 90 percent in 1964 and topped 120 percent in Uruguay in 1967.³³ Exchange rate devaluations were in these and other countries a reinforcing driver of the money-inflation link, as they proved to be deeply intertwined.³⁴ While countries were in principle committed to maintain an exchange rate parity with respect to the US dollar under the Bretton Woods' rules—a par value—, monetary and fiscal expansion led to a persistent external disequilibrium, which made it difficult to maintain the par value and, hence, major currency devaluations were inevitable, fueling further inflation and the need of adjusting again the exchange rate—a vicious cycle that tended to perpetuate inflation.³⁵ Inflation was also volatile because countries started to implement stabilization policies, which rendered only short-run success.

In the 1970s, inflation started to accelerate across Latin America and, in Argentina and Chile, it hit record highs as populist macroeconomic policies were at play, bringing annual inflation to more than 400 percent in Argentina in 1976 and about 600 percent in Chile in 1974. Because central bank financing to the government became entrenched in an environment of expansionary fiscal policy, and due to the impact of the simultaneous currency, sovereign debt, and banking crises in the early 1980s, inflation spiraled out of control in several countries. With central banks subject to fiscal and financial dominance, inflation reached more than 3,000 percent in 1989 in Argentina, exceeded 7,500 percent in Peru in 1990, and hit close to 2,500 percent in Brazil in 1993. On average, inflation surpassed 500 percent in Latin America by 1990.

Then with the new central bank mandate focused on price stability and the severe restrictions to finance the government alluded in the previous section, inflation started to decline in most countries in the 1990s, with the support of sound fiscal policies and the implementation of an array of structural reforms. Yet, many countries still experienced moderate inflation for several years, one in which the negotiation of wages and other contracts featured inertia, as they were set in a backward-looking fashion—a legacy from decades of high inflation.³⁶ Central banks believed at that time that stabilization efforts based on targeting monetary aggregates would not be effective to address inflation inertia, that it would take longer to bear fruits, and that would inevitably inflict

³³ See IMF's International Financial Statistics.

³⁴ See Jácome (2015).

³⁵ Devaluations were often the result of adjustments in a complex exchange rate system, both in terms of its structure—by reclassifying commodities across categories with different exchange rates—and of the value of different exchange rates. This happened mostly in countries where governments used the exchange rate as a developmental tool, guided by government directions (see Jácome forthcoming).

³⁶ Moderate inflation refers, in general, to a persistent annual increase in prices in the range of 15 to 40 percent—although this range varies in view of different scholars.

a high toll on employment and economic activity, thereby challenging the sustainability of the stabilization strategy. Therefore, vested with powers to formulate and execute an independent monetary policy, central banks implemented initially exchange rate-based stabilization programs. The rationale for this policy strategy was that managing the exchange rate path, together with credible fiscal discipline would help to break inflation inertia and guide inflation expectations to decreasing targets.³⁷

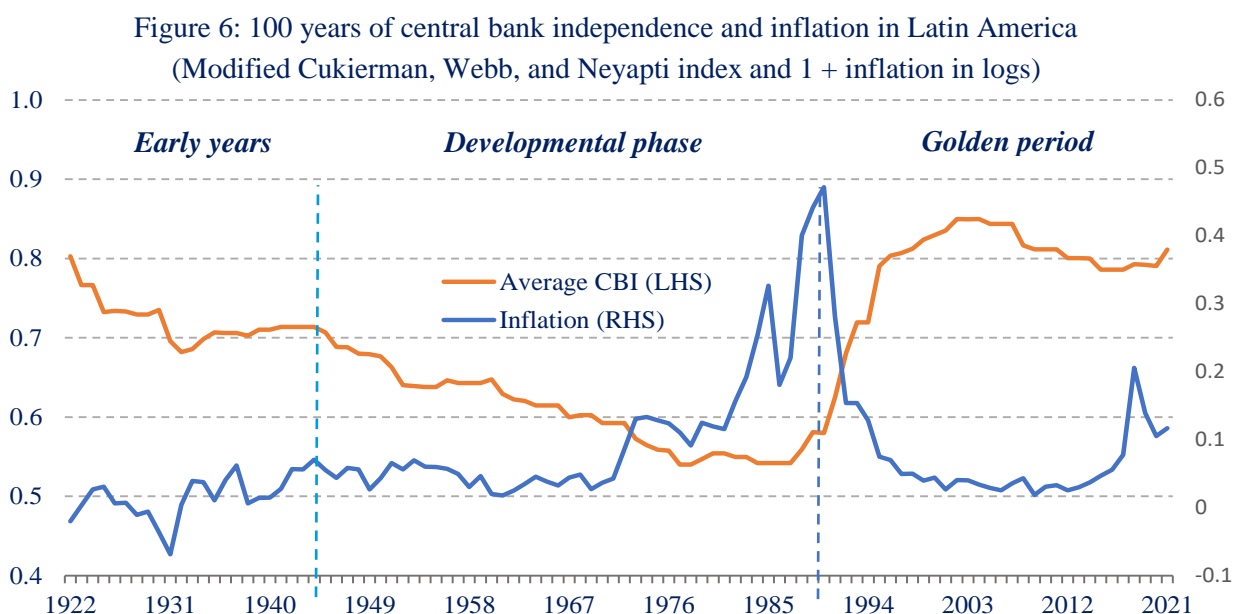
By 2000, annual inflation in Latin America had plummeted to below 10 percent. With central bank independence becoming widely accepted by politicians and the public at large, an increasing number of central banks revamped their monetary policy framework and introduced inflation targeting to better anchor inflation expectations, as noted in section II. As a result, most countries reached low inflation over the last 20 years. It was a major achievement in a region with a history of endemic macroeconomic instability. The exceptions are Argentina that keeps struggling with an inertial inflation of more than 50 percent and Venezuela that featured levels of hyperinflation not seen before in the region.

While most countries in Latin America exhibited similar trends, there were noticeable differences in terms of levels. Countries like Argentina, Brazil, Chile, and Peru featured long spells of high inflation and even hyperinflation (Annex 3), as did Bolivia, Nicaragua, and lately Venezuela. Most other countries—for example Costa Rica, Dominican Republic, Ecuador, and even Mexico—managed to prevent long periods of runaway inflation by restricting credit to the government and, until the 1980s, keeping a fixed exchange rate most of the time (Annex 3). Among the emerging markets, Colombia has been an exception by Latin American standards, as inflation barely exceeded 30 percent y-o-y at a specific point in time over the central bank's life span.

A noteworthy fact is that the historical trajectory of inflation in Latin America seems to have evolved in the opposite direction of central bank independence, as displayed in Figure 6 for the period 1922 to 2021. Plotting the simple average of the CBI index for each year across 17 the countries in the region—including Venezuela—shows the long decline of central bank independence and its sharp recovery, following the wave of reforms that strengthened the institutional foundations of monetary policy in the 1990s. The chart also points to a reversal in the trajectory of central bank independence in the last 15 years, approximately, which is explained by the subsequent reforms to central bank legislation introduced in Argentina, Bolivia, Ecuador and, especially Venezuela, whereas the uptick of the CBI index in 2021 captures the

³⁷ See Vegh (1991), for a thorough comparison of the macroeconomic dynamics in exchange rate-based vs. money-based inflation stabilization.

increase in central bank independence in Brazil—where a comprehensive reform of the 1964 law was approved—and also in Ecuador.



Source: Central bank legislation (central bank laws, reforms to the laws and relevant constitutional provisions). Inflation: IMF's International Financial Statistics and World Economic Outlook, end of year data.

Note: The CBI index is codified based on the criteria and sub-criteria laid out in Annex 1. Inflation corresponds to the simple average in all countries each year.

If we break down the sample of countries into those with high and moderate inflation, we find that the inverse relationship between central bank independence and inflation performance seems to be mostly driven by the group of countries that have endured high levels of inflation and hyperinflation—Annex 4, Figure 4A1. In the rest of the countries, the average central bank independence features a similar trend, but inflation performance was lower, especially during the developmental phase (Figure 4A.2). In the golden period, Argentina and, especially Venezuela, in the high inflation group of countries, explain most of the difference between the two groups of countries.

IV. Central Bank Independence and Inflation: An Empirical Assessment Through the Lens of History

Motivated by the historical narrative presented in the two previous sections, the goal of this section is to systematically study the static and dynamic impact of central bank independence on inflation

and to assess the role of central bank independence in preventing episodes of high inflation. To that end, this section describes (a) the data and (b) the empirical approach used to estimate the link between central bank independence and inflation.

Data

The econometric analysis relies on country-level yearly data for a sample of 17 Latin American countries for the period 1940-2019, conditional on availability. We build on the long time series of central bank independence, codifying central bank legislation according to the criteria as described in Annex 1. Data on real GDP comes from the Maddison Project (see Bolt and Luiten van Zanden, 2020). Data on inflation and Central Bank Claims on the Central Government come from IFS. For the early part of the sample, data were obtained from scanned records of original IFS hard copies. These sources are complemented with data on exchange rate regimes from Ilzetzki, Reinhart, and Rogoff (2019), data on crises from Laeven and Valencia (2020), and the IMF structural reform database.

Following the literature, our data excludes outliers on both ends of the inflation distribution. In particular, we winsorized values at the 3 percent level (1.5 in each tail of the distribution). Our final dataset contains between 1200 and 1100 observations depending on our econometric specification.

A. Econometric Approach

We study the historical link between central bank independence in Latin America through several empirical approaches. First, we estimate panel regressions in the spirit of Jácome and Vázquez (2008), Acemoglu and others (2008), and Garriga and Rodriguez (2020). The baseline specification takes the following form:

$$\pi_{i,t} = \alpha_c + \beta CBI_{i,t} + \delta X_{i,t-1} + \varepsilon_{f,i,t} \quad (1)$$

where $\pi_{i,t}$ is the inflation rate³⁸ in country i at time t , α_c is a country fixed-effect, $CBI_{i,t}$ is the index of central bank independence, and $X_{i,t-1}$ captures lagged country-specific variables typically associated with inflation, including the output gap, lagged inflation, the exchange rate regime³⁹,

³⁸ As in Jácome and Vazquez (2008) and Acemoglu and others (2008), we use the following transformation of inflation, $\pi_{i,t} = (\text{inflation}_{i,t} / (1 + \text{inflation}_{i,t}))$, which helps deal with outliers.

³⁹ In particular, we use the Ilzetzki, Reinhart and Rogoff (2019) classification to create three dummy variables: fixed exchange rate (categories 1-4 in their fine classification), semi-flexible exchange rate (categories 5-8), and flexible exchange rate (categories 9-13). The excluded category in the analysis are countries with free falling exchange rates and dual/multiple exchange rates.

and net claims of the central bank on the central government normalized by the money base.⁴⁰ The latter variable captures de facto links between the central government and the central bank. This panel approach is aimed at estimating the “average” response of inflation to differences in central bank independence. In addition to the baseline variables, the specification in (1) is expanded by including additional controls, such as global inflation, proxied by U.S. inflation, a banking crisis dummy,⁴¹ the country’s exchange rate regime, and, for a shorter time span, the state of structural reforms in the country.

Our second approach focuses on estimating the dynamic cumulative impact of changes in central bank independence on inflation. To do so, we follow the local projection method proposed by Jordà (2005). The method has the advantage that it does not constrain the shape of the impulse response functions and is therefore less sensitive to misspecification than estimates of VAR models (Jordà and Taylor, 2016). The approach is similar to that followed by Carrière-Swallow and others (2021) when studying exchange rate pass-through. The benchmark specification is as follows:

$$p_{i,t+h} - p_{i,t-1} = \alpha_c^h + \beta^h CBI_{i,t} + \vartheta^h CBI_{i,t-1} + \sum_{j=1}^2 \delta_j^h X_{i,t-j} + \varepsilon_{f,i,t+h} \quad (2)$$

where for each horizon $h = \{0, 1, 2, 3, 4, 5\}$ we estimate equation (2). Our coefficient of interest will be β^h , which captures the cumulative dynamic impact of differences in the CBI on cumulative changes in the price level associated with the transformed inflation measure. Notice that, in addition to the controls included in (1) and lags of these variables, we also control for past values of the CBI and inflation. The inclusion of these additional controls aims at taking into account past dynamics of our variables of interest, which may be important determinants of current values.

One additional attractive feature of the local projection method is that it allows to study state contingencies in the response of the dependent variable to shocks in a parsimonious and flexible way. Making use of this feature, in some of the exercises below we study whether the impact of changes in central bank independence on inflation varies with country-level state variables, such as the initial inflation level, and the state of other structural reform areas. When focusing on these exercises, we estimate the following state-dependent local projection:

$$p_{i,t+h} - p_{i,t-1} = \alpha_c^h + S_{i,t} * \beta^{h,H} CBI_{i,t} + (1 - S_{i,t}) * \beta^{h,L} CBI_{i,t} + \vartheta^h CBI_{i,t-1} + \sum_{j=1}^2 \delta_j^h X_{i,t-j} + \varepsilon_{f,i,t+h} \quad (3)$$

⁴⁰ The output gap is constructed using annual data and applying the Hodrick-Prescott filter.

⁴¹ We use data from Valencia and Laeven (2020) for the period after 1970, and code the banking crisis dummy as zero for the 1940-1970 period, since Latin American countries did not experience such crises in that period.

in which $S_{i,t}$ stands for a dummy variable that takes value 1 if a specific country characteristic is satisfied in $t - 1$ (as described above) and zero otherwise. As in the baseline local projections, we cap our horizon at 5 years.

In addition to studying average effects and dynamic results, the paper assesses the role that CBI has in preventing tail events. In particular, we study the extent to which higher levels of central bank independence are successful in reducing the right tail of the inflation distribution and in preventing episodes of high inflation. The first objective is tackled by estimating a panel quantile regression model as in Gelos and others (2022). The quantile regression framework quantifies the impact that CBI has on different quantiles of the inflation distribution. To study the role of central bank independence in reducing the likelihood of high inflation episodes, we estimate a fixed-effects linear probability model, which follows a similar specification as (1), but where the left hand side variable is a dummy variable taking value 1 if inflation crosses a given threshold. For robustness we estimate such model for several thresholds.

V. Results

This section presents the results of the estimated impact of central bank independence on inflation. As described earlier, the discussion will cover the average and the dynamic response of inflation to CBI, as well as studying the impact of CBI on tail values of inflation.

A. Evidence from Panel Regressions

Using our historical coverage of 17 Latin American countries, we start by revisiting the panel regression evidence of the link between inflation and CBI (Table 4). Our results show that inflation is negatively associated with higher levels of central bank independence, and positively associated with above-potential output levels and with increases in net central bank claims on the central government, which highlights the importance of fiscal dominance in Latin America (Column 1).

The estimated coefficient for the CBI index is both statistically significant and economically meaningful. The coefficient implies that an increase in the CBI index of 30 points, equivalent to moving from the 25th to the 75th percentile of the historical distribution of the CBI, would result in inflation declining from its historical median value to the 25th percentile of the historical distribution. For context, a 30-point change in the CBI index is similar in magnitude to what was observed in LAC countries when they introduced legislation in the late 1980s/early 1990s to strengthen central bank independence.

The link between CBI and inflation is robust to the inclusion of additional controls. In particular, we find that the magnitude and statistical significance of the CBI coefficient remains virtually

unchanged when we sequentially control for international inflation (proxied by the US inflation, Column 2), for the country's exchange rate regime (Column 3), for a dummy of banking and sovereign crises (Column 4), and for time fixed effects (Column 5), although the latter specification results in a slightly lower and less statistically significant point estimate.

Table 4. Central Bank Independence and Inflation

Dependent variable: inflation	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Central Bank Independence (CBI) index	-0.147*** (0.0337)	-0.139*** (0.0336)	-0.121*** (0.0306)	-0.121*** (0.0302)	-0.108** (0.0495)			-0.188*** (0.0457)	-0.0996* (0.0484)	-0.108*** (0.0202)
Inflation (t-1)	0.716*** (0.0356)	0.711*** (0.0362)	0.553*** (0.0465)	0.552*** (0.0460)	0.565*** (0.0506)	0.551*** (0.0478)	0.535*** (0.0455)	0.501*** (0.0650)	0.439*** (0.0440)	0.628*** (0.0308)
Net Central Bank Claims on Central Government (% of Base Money, t-1)	0.0162*** (0.00411)	0.0162*** (0.00405)	0.0246*** (0.00428)	0.0245*** (0.00459)	0.0328*** (0.00672)	0.0245*** (0.00470)	0.0269*** (0.00464)	0.0314*** (0.00671)	0.0362*** (0.00490)	-0.0229 (0.0171)
Output gap (t-1)	0.598*** (0.161)	0.578*** (0.166)	0.610*** (0.160)	0.611*** (0.163)	0.700*** (0.164)	0.611*** (0.163)	0.598*** (0.160)	0.300 (0.211)	0.246 (0.197)	0.559*** (0.0930)
Fixed Exchange Rate Dummy (t-1)			-12.10*** (1.770)	-12.10*** (1.772)	-10.65*** (1.664)	-12.09*** (1.746)	-11.52*** (1.847)	-13.82*** (3.317)	-12.47*** (2.362)	-11.39*** (1.015)
Semi Flexible Exchange Rate Dummy (t-1)			-10.42*** (1.831)	-10.42*** (1.823)	-9.148*** (1.742)	-10.45*** (1.895)	-10.54*** (1.806)	-10.39*** (2.427)	-7.751*** (1.573)	-9.247*** (1.024)
Flexible Exchange Rate Dummy (t-1)			-9.466*** (1.773)	-9.469*** (1.774)	-8.929*** (1.632)	-9.479*** (1.793)	-9.482*** (1.768)	-11.67*** (2.253)	-9.530*** (1.812)	-8.790*** (0.985)
Banking Crisis Dummy (t-1)				0.153 (1.492)	-1.015 (1.613)	0.147 (1.496)	-0.167 (1.529)	-2.228 (2.099)	-1.946 (1.862)	1.318 (0.980)
US Inflation (t-1)		0.130 (0.0988)	0.252** (0.0899)	0.252** (0.0898)		0.253** (0.0905)	0.181 (0.106)	0.0431 (0.185)	-0.369** (0.142)	0.119 (0.0837)
CBI*year>=1990						-0.123*** (0.0385)				
CBI*year<1990						-0.125** (0.0484)				
CBI*year>=1970							-0.146*** (0.0383)			
CBI*year<1970							-0.177*** (0.0470)			
Structural Reform Index (t-1)									-9.513*** (2.790)	
Inflation (t-2)										-0.0380 (0.0261)
Constant	13.74*** (2.516)	12.78*** (2.520)	22.37*** (3.185)	22.40*** (3.135)	19.95*** (5.463)	22.60*** (4.076)	25.17*** (3.689)	30.46*** (5.420)	19.10*** (6.000)	20.70*** (1.778)
Country Fixed Effects	1,170	1,170	1,133	1,133	1,133	1,133	1,133	505	504	1,111
Year Fixed Effects	0.675	0.675	0.711	0.711	0.751	0.711	0.715	0.784	0.804	
Observations	1,170	1,170	1,133	1,133	1,133	1,133	1,133	505	504	1,111
R-squared	0.675	0.675	0.680	0.680	0.727	0.680	0.683	0.754	0.784	
Number of id	17	17	17	17	17	17	17	16	16	17

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Our results also suggest that the link between CBI and inflation is not affected by the period of analysis. To test the stability of the link between inflation and the central bank independence, we interact the CBI index with two dummies, marking a pre and post period. In column 6 we compare the pre-1990 and post-1990 period, a useful split of the sample as 1990 roughly coincides with the wave of central bank reforms seen in Latin America. In column 7 we split the sample between the

pre- and post-1970 period, which boils down to studying the period before and after the US dollar convertibility for gold was cancelled. In both cases we find that the CBI coefficient is statistically significant for both the pre and post period and of similar magnitude.

Next, we study the robustness of our results to the inclusion of a structural reforms index and to alternative estimation methods that tackle certain endogeneity problems. As highlighted by Jácome and Vázquez (2008), structural reforms and central bank independence go hand-in-hand, and our baseline results may be capturing the effects of pro-competition reforms that lower prices and, as a result, inflation. To study the importance of the omission of structural reforms in our baseline regressions, we use the IMF Structural Reform Database, which covers reforms implemented over the period 1973-2014 in four broad areas: i) domestic finance ii) trade iii) product market, and iv) labor market (see IMF (2019)). Given that the country coverage and time frame changes when we include the structural reform index, we begin by showing that the estimated coefficient for CBI remains negative and significant (column 8). Next, we estimate our baseline equation adding the structural reform index as a control (column (9)). While the point estimate of CBI declines (and the statistical significance falls), we still find a negative association between the CBI index and inflation. Finally, column (10) shows results of the estimation of our baseline model using the Arellano-Bond estimator, which deals with endogeneity issues arising in dynamic panel settings. Results show that the estimated coefficient for CBI remains statistically significant, albeit the magnitude of the coefficient is lower than in column (4).

Table 5 studies the relative importance of different CBI components in explaining inflation. In particular, it shows results of an exercise where we estimate two variations of equation (1): one where we control for each subcomponent of the CBI index, and one where we control for each subcomponent and an aggregate index of other subcomponents.^{42 43} Column 1 shows that a higher value for the central bank governance component, which can be interpreted as central banks being less exposed to political influence, is associated with lower inflation. This result holds even when we control for the index of all other subcomponents (column 2). Higher values of the policy objective and policy formulation components are also associated with lower levels of inflation (columns 3 and 5, respectively), but their statistical significance vanishes when we control for the aggregate index for other subcomponents (columns 4 and 6). The subcomponent capturing the extent to which central banks can lend to the central government appears as an important

⁴² For each subcomponent, we construct an aggregate index of all other subcomponents by reweighting them. For example, when constructing the aggregate index of subcomponents excluding central bank governance, we reweight each subcomponent other than central bank governance by dividing the original weight in the aggregate CBI index by the weight that central bank governance has in the index. That way, the subcomponent we focus on, and the aggregate index of all other subcomponents are measured in the same units and their coefficients are comparable.

⁴³ Garriga and Rodríguez (2020) conduct a similar analysis. However, their estimation only control for each subcomponent individually and does not control for the level of other subcomponents.

determinant of inflation. Column 7 shows that higher values of the index (that is, more limits to central bank lending) are associated with lower inflation, and the point estimate is substantially larger than for other subcomponents. The coefficient for central bank lending remains statistically significant when we include the index for other subcomponents (column 8), and, as expected, its magnitude increases when we omit our measure of de facto lending (column 9).

Table 5. Central Bank Independence and Inflation: by Subcomponent

Dependent variable: inflation	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Central Bank Governance (CBG)	-0.0460*** (0.0110)	-0.0297** (0.0113)							
CBI except CGB		-0.0897*** (0.0222)							
Central Bank Policy Objective (CBPO)			-0.0402*** (0.00942)	-0.00493 (0.0163)					
CBI except CBPO				-0.129** (0.0531)					
Central Bank Policy Formulation (CBPF)					-0.0510** (0.0207)	-0.0259 (0.0208)			
CBI except CBPF						-0.0918*** (0.0223)			
Central Bank Lending (CBL)							-0.0933*** (0.0245)	-0.0550** (0.0244)	-0.0624*** (0.0188)
CBI except CBL								-0.0615** (0.0220)	-0.0581** (0.0209)
Inflation (t-1)	0.569*** (0.0467)	0.552*** (0.0464)	0.563*** (0.0461)	0.553*** (0.0469)	0.566*** (0.0481)	0.552*** (0.0467)	0.570*** (0.0475)	0.552*** (0.0468)	0.569*** (0.0484)
Change in Central Bank Claims to Central Govt. (% of Base Money, t-1)	0.0214*** (0.00459)	0.0238*** (0.00460)	0.0198*** (0.00443)	0.0248*** (0.00499)	0.0199*** (0.00451)	0.0235*** (0.00454)	0.0239*** (0.00489)	0.0236*** (0.00458)	
Output gap (t-1)	0.598*** (0.163)	0.611*** (0.163)	0.602*** (0.164)	0.615*** (0.163)	0.598*** (0.164)	0.611*** (0.163)	0.620*** (0.163)	0.611*** (0.162)	0.568*** (0.154)
Fixed exchange rate dummy (t-1)	-12.24*** (1.799)	-11.98*** (1.761)	-12.48*** (1.839)	-11.86*** (1.805)	-12.16*** (1.820)	-11.97*** (1.755)	-12.14*** (1.875)	-12.00*** (1.771)	-11.94*** (1.801)
Semi flexible exchange rate dummy (t-1)	-10.97*** (1.775)	-10.39*** (1.813)	-10.70*** (1.768)	-10.40*** (1.844)	-10.97*** (1.839)	-10.41*** (1.833)	-10.69*** (1.894)	-10.40*** (1.819)	-10.35*** (1.837)
Flexible exchange rate dummy (t-1)	-9.926*** (1.798)	-9.430*** (1.773)	-9.814*** (1.790)	-9.361*** (1.782)	-9.725*** (1.749)	-9.411*** (1.775)	-9.595*** (1.753)	-9.432*** (1.777)	-9.395*** (1.788)
Banking crisis dummy (t-1)	-0.668 (1.616)	0.0808 (1.516)	-0.256 (1.640)	0.168 (1.455)	-0.351 (1.562)	0.113 (1.501)	0.152 (1.393)	0.0989 (1.482)	0.0280 (1.388)
US inflation (t-1)	0.334*** (0.0958)	0.241** (0.0906)	0.296*** (0.0899)	0.244** (0.0906)	0.349*** (0.0841)	0.247** (0.0881)	0.298*** (0.0897)	0.243** (0.0906)	0.201** (0.0907)
Constant	16.52*** (1.968)	22.19*** (3.019)	16.25*** (2.130)	23.47*** (3.801)	17.92*** (2.819)	22.24*** (3.128)	20.83*** (2.876)	22.03*** (2.977)	22.39*** (2.762)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,161
R-squared	0.704	0.711	0.706	0.711	0.705	0.711	0.707	0.711	0.714
Number of id	17	17	17	17	17	17	17	17	17

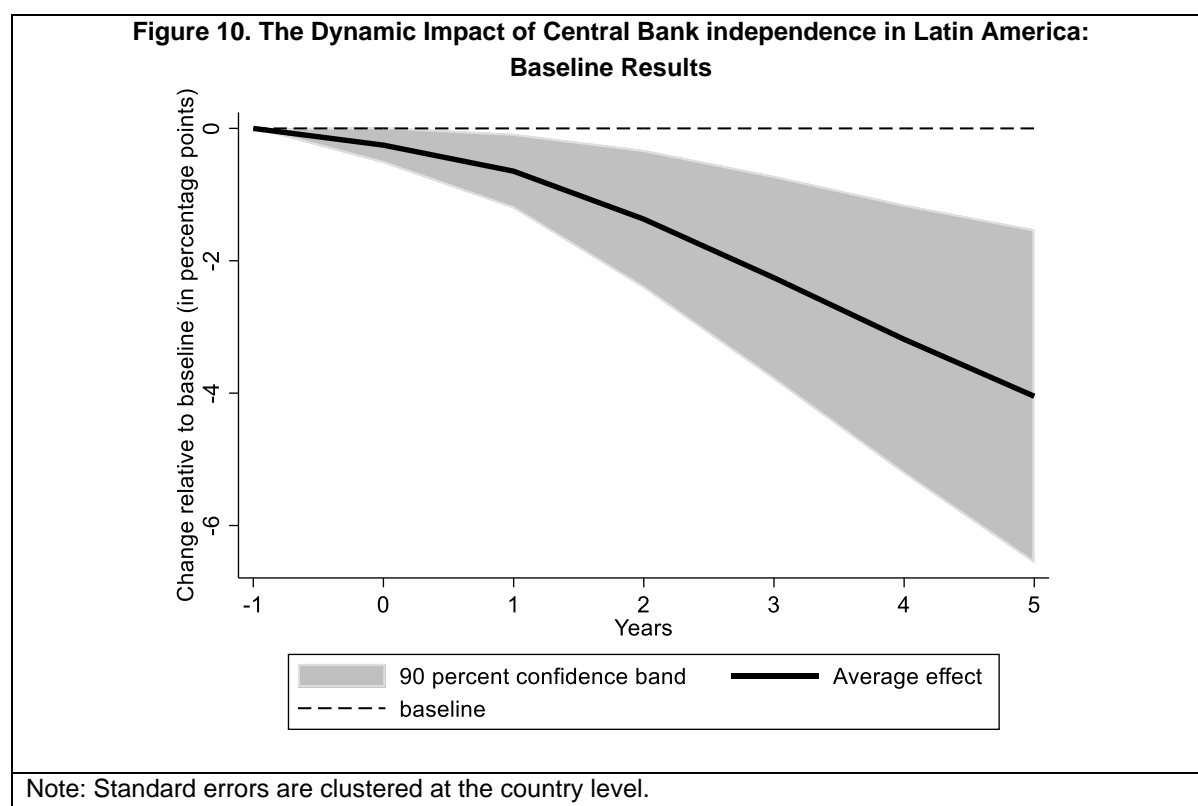
Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

B. Evidence from Local Projections

Thus far we have presented evidence of the average relationship between the CBI index and inflation. However, inflation can be persistent and institutional changes can take time to materialize, which means that the benefits of a more independent central bank in terms of reducing inflation can take time to materialize.

Figure 10 shows the dynamic impact of improvements in central bank independence on inflation in Latin America. The estimated local projections suggest that a one standard deviation increase in the CBI index is associated with a reduction in inflation of approximately 1 percentage point and yields an accumulated reduction in prices of roughly 5 percentage points after 5 years.



The dynamic response of prices to changes in the CBI index does not appear to have been affected by the sweeping reforms of the 1990s. Figure 11, panel A, shows that the estimated dynamic impact of the CBI index is roughly the same in pre- and post-1990 period. Figure 11, panel B, does point to slightly higher responsiveness in the pre-1970s period, but differences between the two subperiods do not appear to be statistically significant.

The initial response of inflation to changes in the CBI appears to be stronger when other areas of reform are less advanced, but differences disappear after a few years. As shown in Figure 12,

inflation declines gradually when CBI is improved in countries where the structural reforms index takes low values, with a cumulative reduction in prices of close to 5 percent after 5 years. In countries with high levels of the structural reforms index, prices remain flat initially, but eventually decline to levels comparable to those observed in countries with low levels of the structural reform index.

Next, we study the extent to which results are driven by the initial level of inflation. This may be an important consideration if changes to central bank laws are introduced in response to inflationary episodes.

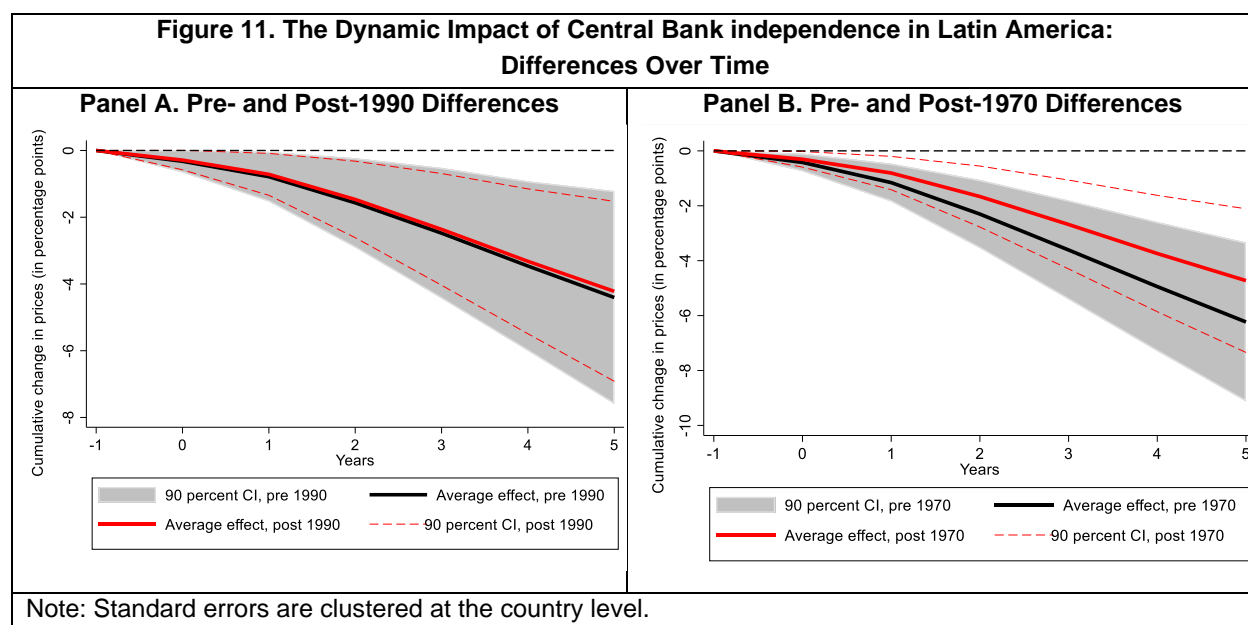
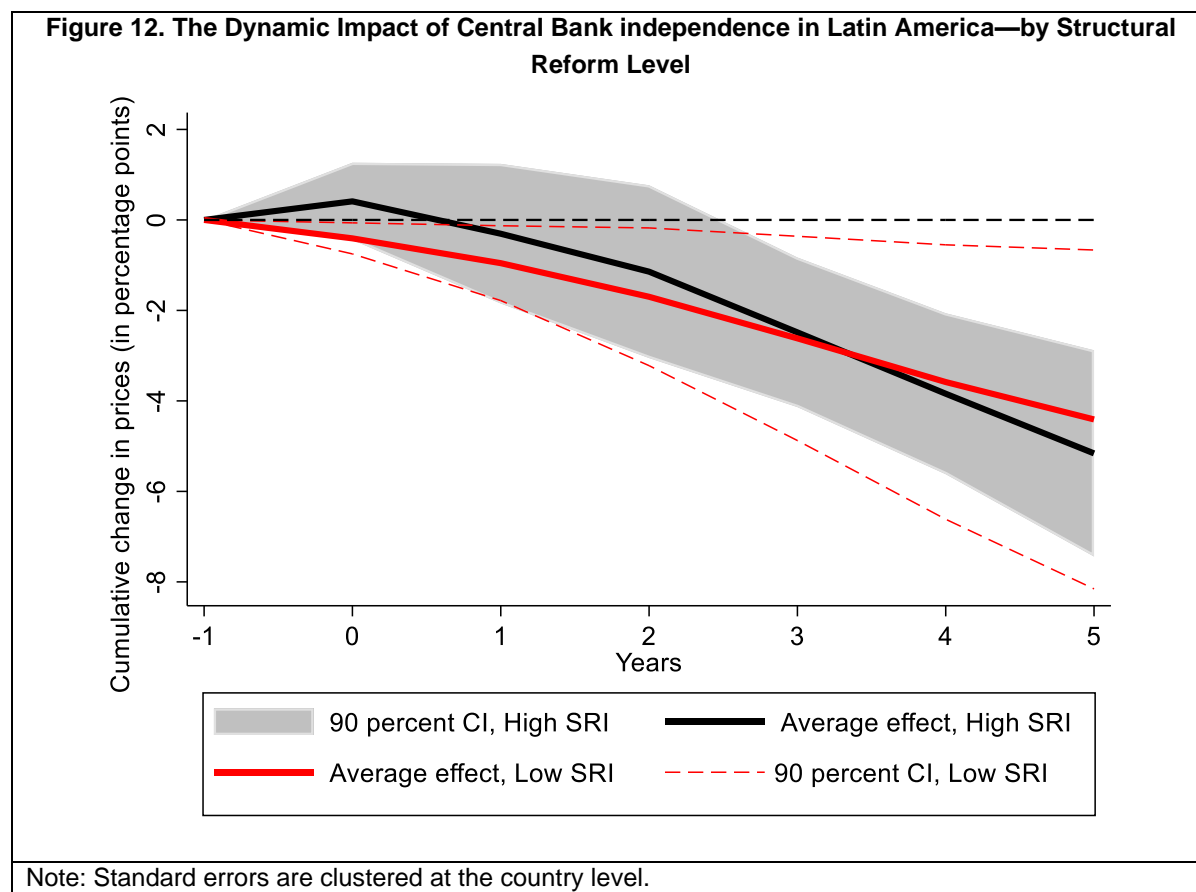
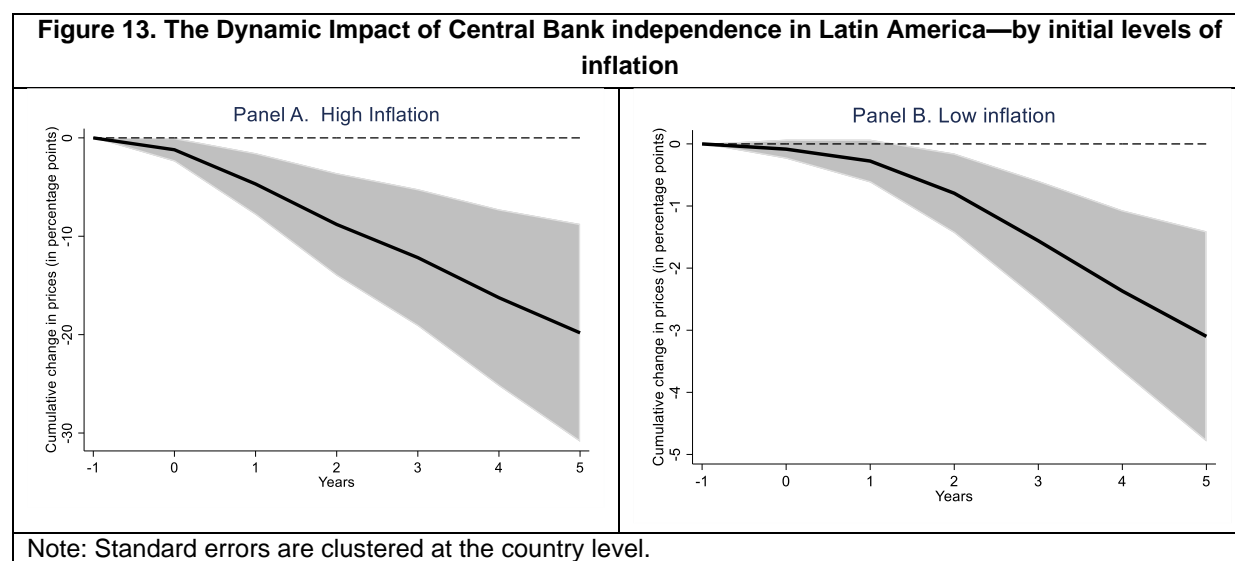


Figure 13 shows that, while inflation responds strongly to improvements in CBI when inflation takes above average levels, CBI yields cumulative declines in prices even in low-inflation environments. The estimated coefficients suggest a 20 percentage point cumulative decline in prices after 5 years following a one standard deviation improvement in the CBI when inflation is initially high (Panel A). When inflation is low, the decline is more modest, but it is statistically significant (Panel B). The fact that prices respond strongly when inflation is high is not surprising—after all, these are typically situations where inflation inertia is high, and changes in CBI work as shock therapy to break the pattern. What is perhaps more surprising is the fact that CBI's bite is also present in low inflation settings when arguably expectations are better anchored.



Taken together, our results point to a strong dynamic link between central bank independence and prices in Latin America. The estimated impacts suggest that CBI remains an important policy lever to achieve price stability, regardless of the state of the economy or the advancement of other policy reform areas. They also highlight the potential adverse effects of an erosion of independence in terms of inflation. Importantly, Latin America's history suggests that a deterioration of central bank independence can result not only in a gradual rise in inflation but could increase the likelihood of inflation becoming unanchored and of a high inflation episode materializing, a concern that we tackle empirically next.



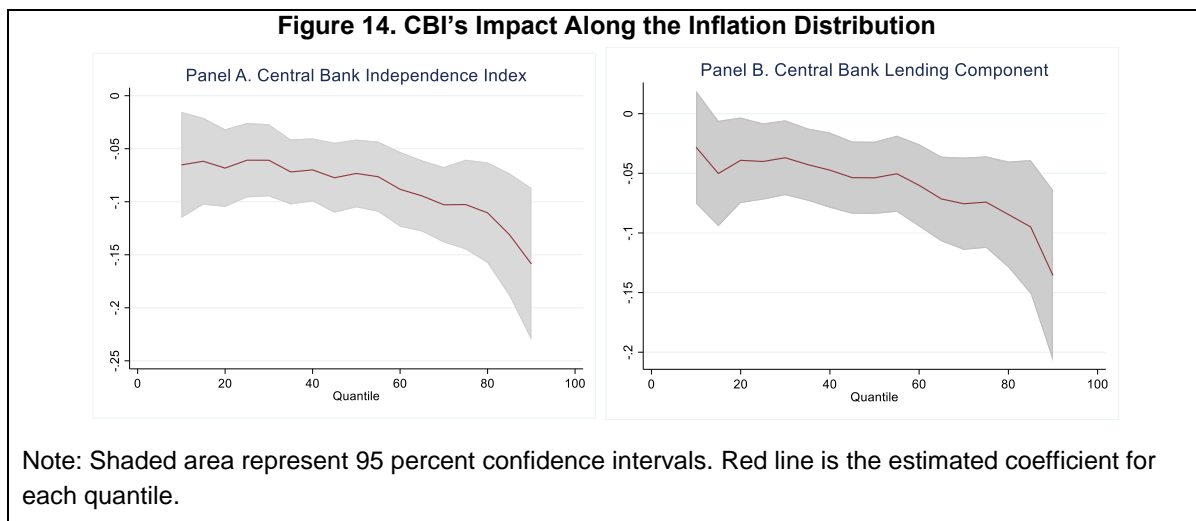
C. CBI and inflation tail risks

The results from the standard panel regressions and from local projections assess the link between CBI levels and average inflation. However, one potential benefit of an independent central bank focused on combating inflation is that it can prevent extreme episodes of inflation. The individual experience of Latin American countries showcased in previous sections provides suggestive evidence to this potential benefit of central bank independence, as arguably the loosening of CBI was a harbinger of future episodes on high inflation.

To study whether this narrative evidence is systematically supported in the data, we pursue two separate empirical exercises. The first exercise estimates quantile regressions akin to those in equation (1). This approach aims at estimating the impact of CBI not only on average inflation but on different moments of the inflation distribution. If the narrative evidence presented earlier is robustly seen in the data, one would expect that CBI has a larger coefficient at the right tail of the inflation distribution.

Figure 14, Panel A provides some support to the role of CBI in reducing inflationary tail risks. Indeed, our quantile regressions (estimated at each decile of the inflation distribution) points to a relative stable and modest, albeit statically significant, link between CBI and inflation up to the 5th decile of the inflation distribution in the sense that the coefficient is relatively small. By contrast, coefficients for deciles above the median are noticeably larger in absolute value for larger deciles, with the CBI coefficient for the 90th percentile being almost 2 times as large as that for the median.

The results for the overall index resemble those for the subcomponent on central bank lending to the central government (Panel B), while the coefficient from the quantile regression exercise for other subcomponents appear to be much more stable across quantiles.



Similar conclusions emerge from the estimation of a linear probability model. In particular, we define episodes of high inflation as years when inflation crosses a specific threshold. For robustness purposes, we define three high inflation thresholds, the 80th percentile of inflation in our sample, the 90th percentile, and the 95th percentile. The results from these exercises, which are presented in Table 6, show that higher values of the CBI index reduce the likelihood of high inflation episodes, and in all cases the estimated coefficient is statistically significant. The result suggests that a 30-point increase in the CBI, roughly equivalent to moving from the 25th to the 75th percentile of the CBI distribution, results, all else equal, in reductions in the likelihood of crossing the high inflation threshold that range from 8 percentage points (in the case of the 80th percentile threshold) to close to 5 percentage points (in the case of the 95th percentile threshold). The dimmed importance of CBI in reducing the likelihood of high inflation outcomes as we increase the threshold appears to be related to the increased preponderance of central bank lending to the central government for higher values of the inflation threshold. This stresses the crucial role played by de facto limits to central bank lending and the perils of fiscal dominance.

An exercise exploring the role of each subcomponent in preventing high inflation episodes confirms the importance of de facto limits to central bank lending (Table 7). All subcomponents of the index are negatively associated with episodes of high inflation at low thresholds, suggesting that higher values of each of the subcomponents reduces the likelihood of these episodes. At the highest high-inflation threshold, however, the point estimates for all subcomponents drop

substantially, in some cases losing statistical significance, and the importance of de facto lending increases.

Table 6. Central Bank Independence and high inflation

Dependent variable: High inflation dummy	(1) 80th pctile threshold	(2) 90th pctile threshold	(3) 95th pctile threshold
CBI	-0.00287** (0.00125)	-0.00177* (0.000988)	-0.00149* (0.000894)
Inflation (t-1)	8.18e-05*** (2.18e-05)	5.27e-05** (2.43e-05)	3.22e-05 (3.73e-05)
Change in Central Bank Claims to Central Govt. (% of Base Money, t-1)	1.84e-05 (0.000119)	0.000269** (0.000132)	0.000866*** (0.000183)
Output gap (t-1)	0.0161*** (0.00448)	0.0122*** (0.00345)	0.00339 (0.00326)
Banking crisis dummy (t-1)	0.0871** (0.0391)	0.0951** (0.0417)	0.0457 (0.0322)
Fixed exchange rate dummy (t-1)	-0.647*** (0.0383)	-0.597*** (0.0395)	-0.302*** (0.0401)
Semi flexible exchange rate (t-1)	-0.624*** (0.0436)	-0.582*** (0.0382)	-0.288*** (0.0388)
Flexible exchange rate (t-1)	-0.596*** (0.0445)	-0.592*** (0.0441)	-0.302*** (0.0410)
US inflation (t-1)	0.00726* (0.00386)	0.00298 (0.00237)	0.00371 (0.00323)
Constant	0.848*** (0.0939)	0.713*** (0.0884)	0.392*** (0.0846)
Observations	1,133	1,133	1,133
Number of id	17	17	17
Standard errors clustered at the country level			
*** p<0.01, ** p<0.05, * p<0.1			

Table 7. Central Bank Independence and High Inflation Episodes, by CBI sub-components

Dep. Variable: High inflation dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	50 percent threshold				100 percent threshold				150 percent threshold			
Central Bank Governance	-0.000747 (0.000637)				0.000103 (0.000548)				-0.000763 (0.000492)			
Central Bank Policy Objective		-0.000918** (0.000439)				-0.000349 (0.000248)				-0.000271* (0.000151)		
Central Bank Policy Formulation			-0.00173** (0.000867)				-0.00112 (0.000856)				-0.000833 (0.000602)	
Central Bank Lending				-0.00186* (0.00105)				-0.00148** (0.000745)				-0.00100* (0.000603)
Inflation (t-1)	8.29e-05*** (2.18e-05)	8.15e-05*** (2.34e-05)	8.60e-05*** (2.23e-05)	8.25e-05*** (2.20e-05)	5.36e-05** (2.40e-05)	5.31e-05** (2.38e-05)	5.55e-05** (2.41e-05)	5.26e-05** (2.47e-05)	3.23e-05 (3.74e-05)	3.24e-05 (3.71e-05)	3.42e-05 (3.75e-05)	3.27e-05 (3.71e-05)
Net Central Bank Claims on Central Government (% of Money, t-1)	-2.84e-05 (0.000123)	-5.54e-05 (0.000131)	-0.000110 (0.000130)	3.86e-05 (0.000132)	0.000227 (0.000140)	0.000229 (0.000139)	0.000187 (0.000148)	0.000298** (0.000130)	0.000848*** (0.000187)	0.000826*** (0.000193)	0.000804*** (0.000197)	0.000881*** (0.000182)
Output gap (t-1)	0.0156*** (0.00444)	0.0158*** (0.00436)	0.0155*** (0.00438)	0.0160*** (0.00447)	0.0119*** (0.00348)	0.0120*** (0.00340)	0.0118*** (0.00347)	0.0123*** (0.00339)	0.00320 (0.00325)	0.00316 (0.00320)	0.00310 (0.00318)	0.00339 (0.00324)
Banking Crisis Dummy (t-1)	0.0708* (0.0393)	0.0790* (0.0409)	0.0763* (0.0390)	0.0875** (0.0369)	0.0889** (0.0394)	0.0893** (0.0409)	0.0874** (0.0401)	0.0991** (0.0397)	0.0371 (0.0313)	0.0404 (0.0317)	0.0397 (0.0307)	0.0464 (0.0313)
Fixed Exchange Rate Dummy (t-1)	-0.667*** (0.0437)	-0.665*** (0.0387)	-0.641*** (0.0384)	-0.662*** (0.0364)	-0.619*** (0.0472)	-0.611*** (0.0431)	-0.590*** (0.0415)	-0.605*** (0.0396)	-0.308*** (0.0418)	-0.314*** (0.0468)	-0.300*** (0.0409)	-0.310*** (0.0444)
Semi flexible Exchange Rate Dummy (t-1)	-0.652*** (0.0412)	-0.637*** (0.0393)	-0.625*** (0.0462)	-0.643*** (0.0362)	-0.610*** (0.0423)	-0.597*** (0.0387)	-0.579*** (0.0422)	-0.593*** (0.0369)	-0.300*** (0.0403)	-0.300*** (0.0441)	-0.290*** (0.0397)	-0.298*** (0.0423)
Flexible Exchange Rate Dummy (t-1)	-0.616*** (0.0509)	-0.606*** (0.0462)	-0.600*** (0.0446)	-0.613*** (0.0409)	-0.614*** (0.0514)	-0.603*** (0.0476)	-0.592*** (0.0452)	-0.603*** (0.0435)	-0.310*** (0.0439)	-0.313*** (0.0468)	-0.304*** (0.0420)	-0.311*** (0.0440)
US Inflation (t-1)	0.0102** (0.00435)	0.00876** (0.00391)	0.00924** (0.00399)	0.00917** (0.00386)	0.00572** (0.00277)	0.00455* (0.00267)	0.00417 (0.00264)	0.00375 (0.00275)	0.00464 (0.00319)	0.00509 (0.00373)	0.00484 (0.00327)	0.00466 (0.00374)
Constant	0.703*** (0.0456)	0.708*** (0.0499)	0.783*** (0.0727)	0.799*** (0.0920)	0.597*** (0.0412)	0.617*** (0.0523)	0.674*** (0.0761)	0.708*** (0.0852)	0.337*** (0.0618)	0.310*** (0.0446)	0.353*** (0.0668)	0.370*** (0.0716)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,133
Number of id	17	17	17	17	17	17	17	17	17	17	17	17

Standard errors clustered at the country level in parentheses

*** p<0.01, ** p<0.05, * p<0.1

VI. Conclusion

Leveraging a novel index of central bank independence for 17 Latin American countries spanning, in some cases, 100 years, this paper shows how the inflationary process in Latin America was tightly linked to changes in legislation governing the region's central banks and, relatedly, to the central bank's ability to finance the central government. A steady erosion in the aftermath of the great depression resulted in a period of high and volatile inflation, and in some cases, hyperinflation. By contrast, the decisive steps taken in the early 1990s to grant independence to central banks from political influence led to the taming of inflation in the region.

The paper shows that the conclusions stemming from the narrative evidence are supported econometrically. More precisely, we find that there is a statistically and economically meaningful negative relationship between central bank independence and inflation, with effects becoming stronger years after changes in central bank independence. Moreover, the paper shows that a deterioration (improvement) in central bank independence is associated with a rightward (leftward) shift in the right tail of the inflation distribution and an increase (decrease) in the likelihood of a high-inflation episode.

In light of its findings, the paper highlights the perils of eroding central bank independence through the lens of Latin America's hard-fought historical fight against inflation. Latin America's historical experience is particularly relevant at a time when central banks around the world took decisive and unusual steps to support the economy at the height of the pandemic. While these measures without doubt were instrumental to stabilize financial markets and avert an even more severe economic crisis, they could be used as arguments to reshape the role of central banks going forward, specially at a time when fiscal policy is mired by political impasses that effectively make it futile. But if Latin America's history is any guide, pursuing such strategy runs the risk of opening the floodgates to future high and persistent inflation.

Thus, this is the time to underpin central bank independence. Shielding monetary authorities from political influence and reaffirming their mandate is critical, not only to fight the current inflationary bout that have reached record highs in more than 20 years, but to secure price stability in the medium term.

Annex I. Modified Cukierman et al. Index— Criteria and Coding

Central bank governor and board (0.20)

1. Term of office of the governor (0.20)

More than the presidential term	1
Same than the presidential term but the period does not coincide, or the term is not defined	0.67
Same period than presidential term	0.33
Less than the presidential term	0

2. Who appoints the governor (0.15)

Double process (executive/legislative, shareholders/executive)	1
The central bank board appoints directly or private shareholders directly	0.67
The government nominates and central bank board appoints, or vice versa	0.33
The government directly	0

3. Term of office of the rest of the board (0.15)

More than the presidential term	1
Same than the presidential term but the period does not coincide, or the term is not defined	0.67
Same period than presidential term	0.33
Less than the presidential term (for most members), or most are ex-officio members	0

4. Who appoints the rest of the board (0.15)

Double process (executive/legislative)	1
Shareholders/the legislative directly (50% or more)	0.67
The government appoints more than 50%	0.33
The government directly all members	0

5. Government representation at the board (0.15)

No representation/the Minister of Finance without vote	1
The Minister of Finance has vote	0.80
Ex-officio members are minority	0.60

The minister of finance is the chairman of the board	0.40
Ex-officio members are majority	0.20
All are ex-officio members	0

6. Dismissal of Board members (majority) (0.20)

Executive proposes and legislative/independent authority confirms/approves for violations codified in legislation, or office become vacant if directors stop fulfilling legal requirements for the appointment	1
Central bank board decides (if 50% or more of the board members are appointed independently of the government) either at its own initiative or at the request of the government for violations codified in legislation, or the law does not specify reasons for removal	0.67
Executive branch directly for violations codified in legislation	0.33
Government directly at discretion or if most board members are executive officials	0

Central bank objective (0.15)

7. Objective/functions

Preserve price stability/financial stability/payments system	1
Regulate the circulation of money, or preserve external value of the currency/ promote employment, together with preserve internal value of the currency (without priority), implicit under the gold exchange standard, or only relevant functions are specified	0.67
Economic growth/development is one of the objectives (without priority)	0.33
Development is the final goal and price stability is not an objective	0

Policy formulation (0.15)

8. Of monetary policy and policy tools (0.67)

Central bank independently, including gold-exchange standard rule and currency board arrangement	1
The central bank in coordination/agreement with the government	0.67
A government committee that includes the central bank sets monetary policy, or the central bank sets monetary policy following government directions, the government approves changes in reserve requirements, or the government has veto power about monetary policy decisions	0.33
The government sets monetary policy	0

9. Of exchange rate policy (0.33)

Central bank independently	1
The central bank, in coordination/agreement with the government.	0.67
Gold exchange standard rule/currency board	
A government committee that includes the central bank, or a committee led by the government with central bank advice, sets exchange rate policy	0.33
The government sets exchange rate policy	0

Central bank lending (0.50)

10. Advances (0.20)

Central bank is not allowed to provide advances	1
Allowed up to 10% of government revenues, limited by monetary program, in terms of central bank liabilities/its capital, or up to a level defined by the central bank. Can also allow government overdrafts	0.75
Allowed up to 20% of government revenues or bank deposits	0.5
Allowed up to 30% of government revenues or bank deposits	0.25
Allowed for more than 30% of government revenues or without limit	0

11. Other credit—securitized in the secondary market (0.15)

Not allowed except for monetary policy purposes	1
Allowed up to 10% of government revenues or bank deposits, limited by the monetary program, in terms of central bank liabilities or its capital, or by the rules of the gold-exchange standard	0.75
Allowed up to 20% of government revenues or bank deposits	0.5
Allowed up to 30% of government revenues or bank deposits	0.25
Allowed for more than 30% of government revenues, bank deposits, or without limit.	0
The central bank transfers international reserves	

12. Beneficiaries of central bank lending (0.20)

No beneficiary	1
Only the government	0.67
Plus public enterprises	0.33
Plus local government	0

13. Interest rates charged (0.15)

At market rates	1
-----------------	---

At rates defined by the central bank or rates cannot be lower than a floor	0.75
The interest rates cannot exceed certain ceiling, the rate is agreed with the government, or defined in the law below market rates	0.5
No explicit legal provisions	0.25
Defined by the government or the law stipulates no interest rate is charged	0

14. Maturity of advances (0.15)

No advances	1
Maximum 6 months	0.75
Maximum 1 year or defined by the central bank	0.5
Not specified	0.25
More than a year	0

15. In the primary market (0.15)

Prohibited	1
Allowed	0

Annex II. The Evolution of Central Bank Independence in Latin America

Figure 2A: Central Bank Independence 1930
(Modified Cukierman index)

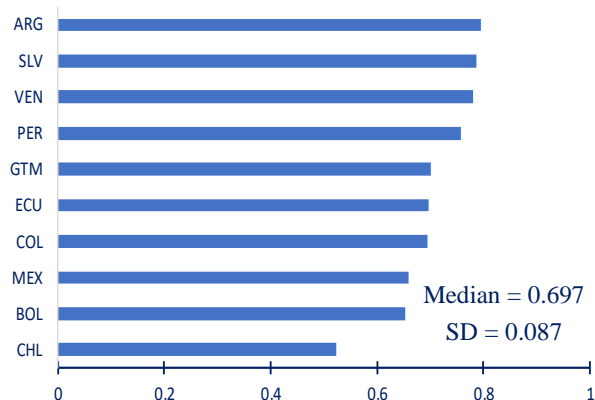
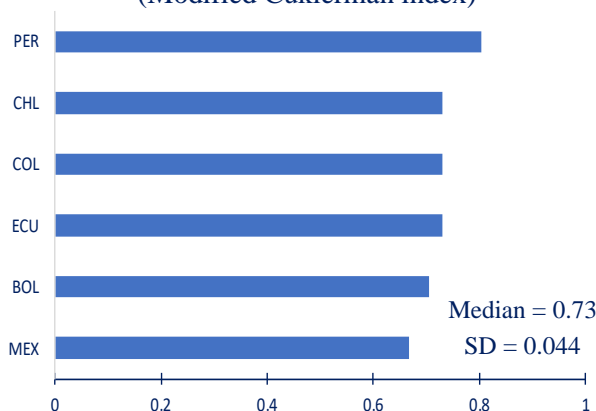


Figure 2C: Central Bank Independence 1960
(Modified Cukierman index)

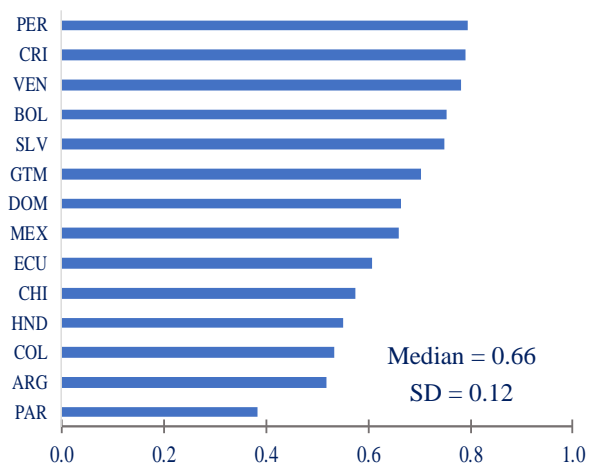
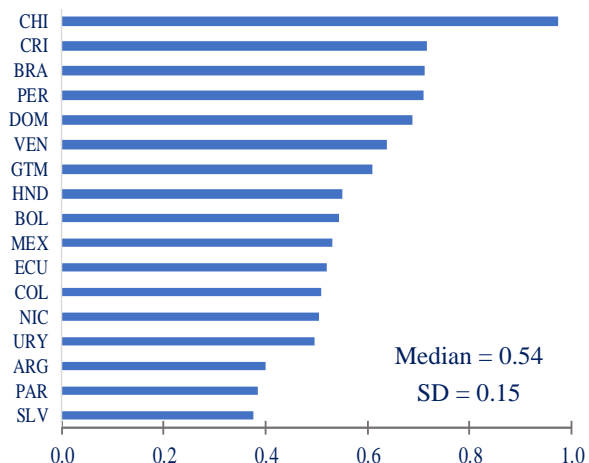


Figure 2D: Central Bank Independence 1990
(Modified Cukierman index)

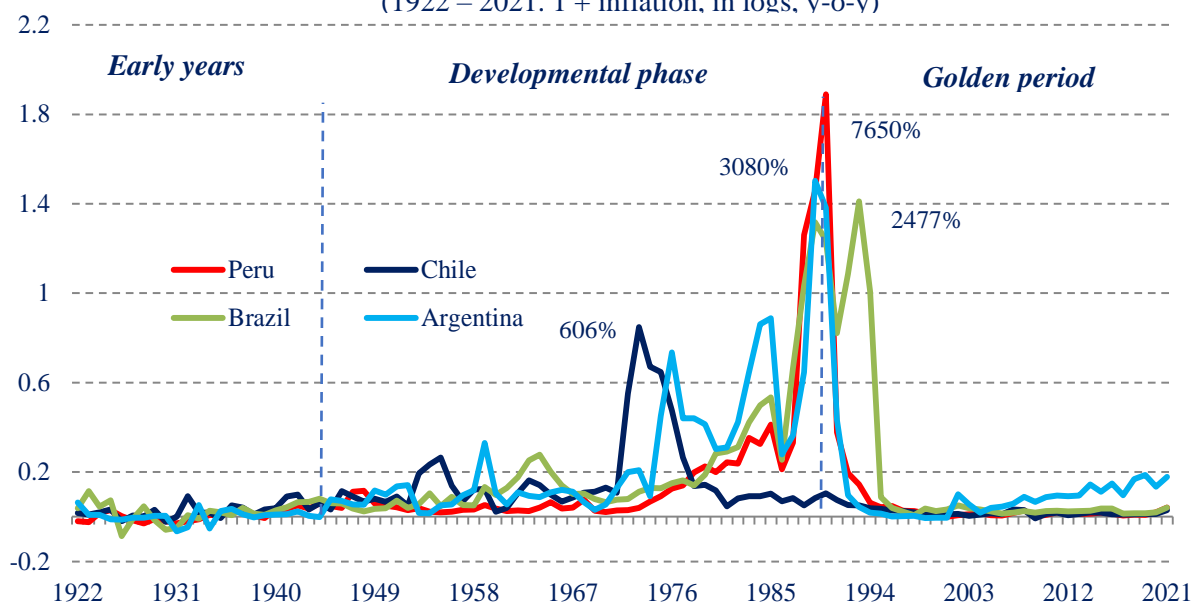


Source: Central bank legislation (central bank laws, reforms to the laws and relevant constitutional provisions).

Note: The CBI index is codified based on the criteria and sub-criteria laid out in Annex 1.

Annex III. High Inflation and Moderate Inflation in Latin America

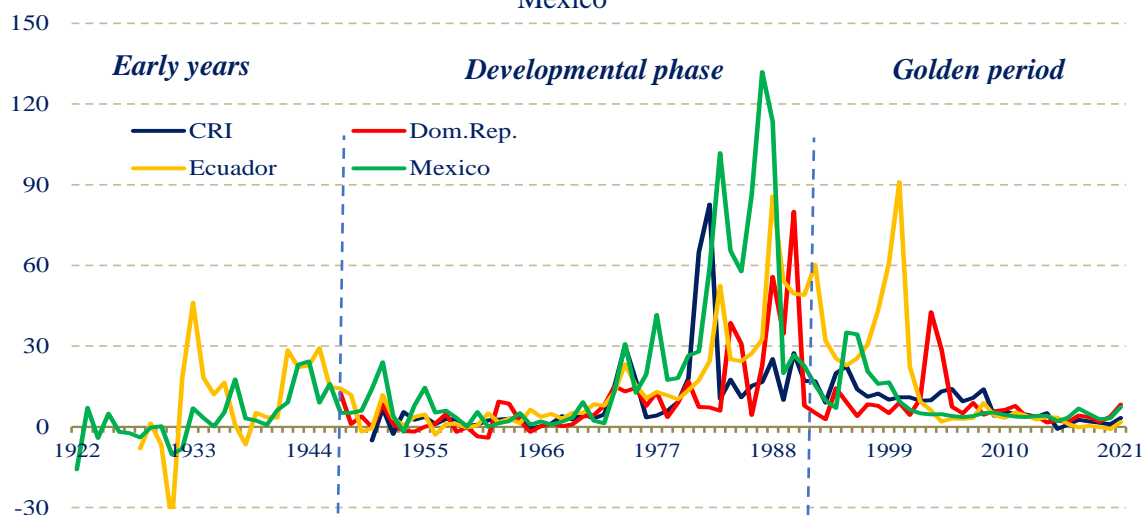
Figure 3A.1: Inflation in Argentina, Brazil, Chile, and Peru
(1922 – 2021. 1 + inflation, in logs, v-o-v)



Sources: Argentina: Ferreres (2010) and Banco Central de la República Argentina; Chile: Diaz and others (2010); Brazil: 1901–08: Suzigan and Villela (2001); 1909–47: Haddad (1978); 1948–2013: Instituto Brasileiro de Geografia e Estatística. Peru: Banco Central de Reserva del Perú.

*/ Argentina, Chile, and Peru: Annual inflation rate. Brazil: Annual implicit deflator; from 1981 onward CPI.

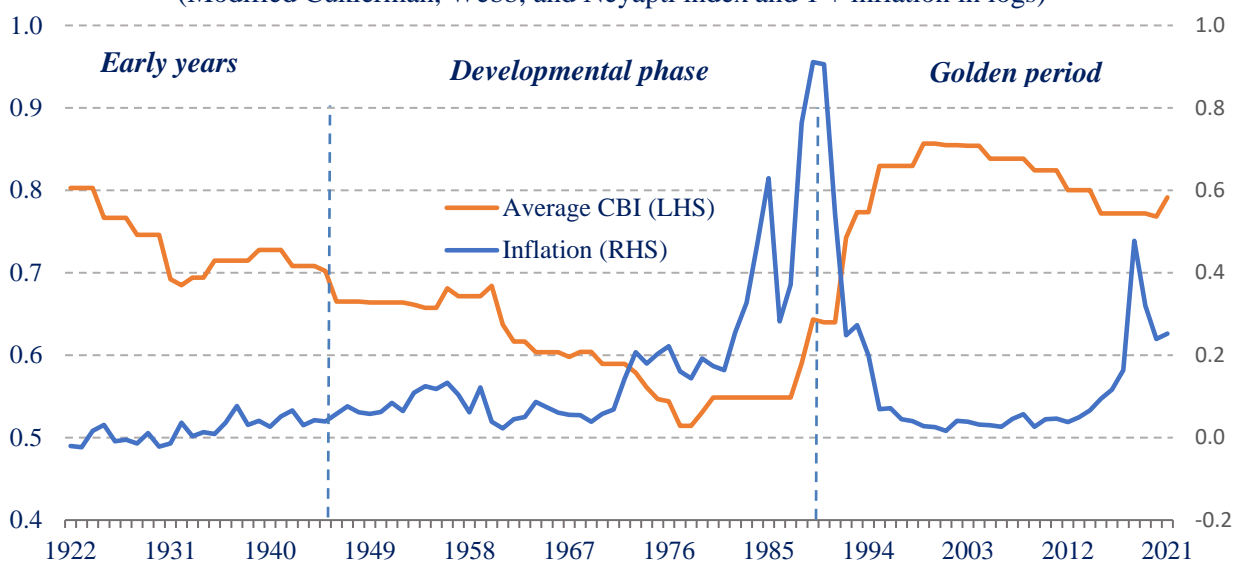
Figure 3A.2: Inflation in Costa Rica, Dominican Republic, Ecuador, and Mexico



Sources: Costa Rica and Dominican Republic: IMF's International Financial Statistics and World Economic Outlook; Ecuador: Morillo (1996) and World Economic Outlook; Mexico: 1922 to 1940, Índice General de Precios al Mayoreo de la Ciudad de México, Bach y Reyna (1943) and from 1940 onward, National Institute of Statistics and Geography (INEGI) and IMF World Economic Outlook.

Annex IV. Central Bank Independence and Inflation in Latin America

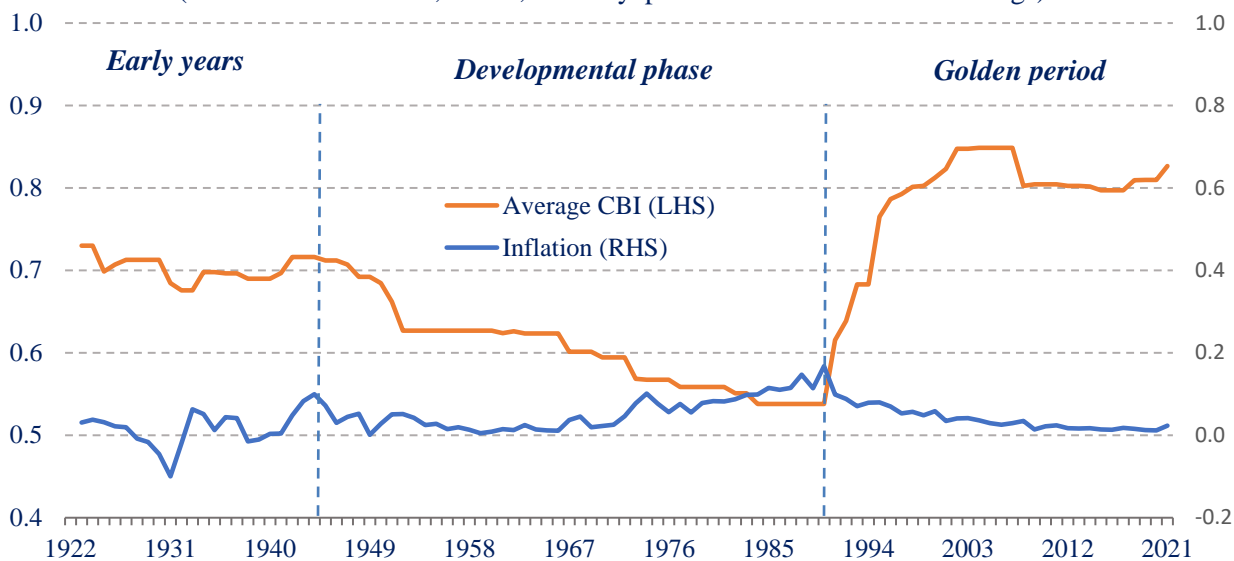
Figure 4A.1: 100 years of central bank independence and inflation in high-inflation countries
(Modified Cukierman, Webb, and Neyapti index and $1 +$ inflation in logs)



Source: Central bank legislation (central bank laws and reforms and relevant constitutional provisions). Inflation: IMF's International Financial Statistics and World Economic Outlook, end of year data.

Note: Includes Argentina, Bolivia, Brazil, Chile, Nicaragua, Peru, and Venezuela. The CBI index is codified based on the criteria and sub-criteria laid out in Annex 1. Inflation corresponds to the simple average in all countries each year.

Figure 4A.2: 100 years of central bank independence and inflation in “moderate” inflation countries
(Modified Cukierman, Webb, and Neyapti index and $1 + \text{inflation in logs}$)



Source: Central bank legislation (central bank laws and reforms and relevant constitutional provisions). Inflation: IMF's International Financial Statistics and World Economic Outlook, end of year data.

Note: Includes Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Paraguay, and Uruguay. The CBI index is codified based on the criteria and sub-criteria laid out in Annex 1. Inflation corresponds to the simple average in all countries each year.

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