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Abstract

This article intends to debate important aspects related to old and recent experiences of monetary policy accommodation, focusing on unconventional monetary policies (UMPs). We intend to draw lessons from these past experiences to discuss the design of current monetary policy frameworks.

First, by reporting several historical experiences of major central banks, we highlight that policies which after the 2008 crisis were considered “unconventional” were not new, with central banks intervening to avoid broader deterioration of macro-financial conditions. Second, analyzing the recent experience of the European Central Bank after 2008, we observe this institution has adapted its measures according to its former programs and to other central banks' experiences, to face numerous challenges and enhance its framework. Third, UMPs should not be simply removed, and may have four possible treatments in current frameworks, according to the measure: i) Be discarded, due to their predominantly adverse effects (“exit”); ii) Not be regularly implemented, but be adopted as backstop mechanisms in times of crisis (“normalization”); iii) Be incorporated as regular measures of monetary policy frameworks (“new normal”); iv) Become the main monetary policy instrument, with larger and extended tools to deal with the effects of severe crises and structural challenges (“extension”).

Furthermore, we argue that unconventional monetary policies can be successfully implemented both in advanced and emerging economies. In emerging economies, UMPs can have different roles from the ones observed in advanced economies. In emerging countries, they can also act as shields against pressures in capital flows, foreign exchange, and public/private bond markets, reducing external vulnerabilities and improving monetary policy transmission in these nations when needed.

Keywords: unconventional monetary policy, monetary policy frameworks, advanced economies, emerging economies

Resumo

Este artigo pretende debater aspectos importantes de experiências passadas e recentes de políticas monetárias acomodatórias, focando em políticas monetárias não convencionais. O objetivo é de extrair lições dessas experiências passadas para discutir como devem ser configurados os arcabouços de política monetária no presente.

Primeiramente, ao relatar diversas experiências históricas dos principais bancos centrais mundiais, evidenciamos que políticas que após 2008 foram consideradas como “não convencionais” na verdade não eram novas, com os bancos centrais intervindo para evitar uma deterioração mais ampliada das condições macroeconômicas e financeiras. Em segundo lugar, analisando a experiência recente do Banco Central Europeu após

2008, observamos que a instituição adaptou suas medidas de acordo com seus programas passados e experiências de outros bancos centrais, buscando enfrentar diversos desafios e aprimorar seu arcabouço de política. Em terceiro lugar, argumentamos que as políticas monetárias não convencionais não devem ser simplesmente removidas, e podem ter quatro tratamentos possíveis nos marcos atuais, de acordo com a medida: i) Serem descartadas, devido a seus efeitos predominantemente adversos (“saída”); ii) Não serem implementadas regularmente, mas serem usadas como mecanismo de seguro quando necessário (“normalização”); iii) Serem incorporadas como medidas regulares dos arcabouços de política monetária (“novo normal”); iv) Tornar-se o principal instrumento de política monetária, com ferramentas maiores e ampliadas para lidar com os efeitos de crises severas e desafios estruturais (“extensão”).

Além disso, argumentamos que políticas monetárias não convencionais podem ser implementadas com sucesso tanto nas economias avançadas quanto nas emergentes. Nas economias emergentes, essas políticas podem ter papéis diferentes dos observados nas economias avançadas. Nos emergentes, elas também podem atuar como mecanismos de proteção contra pressões nos fluxos de capital, câmbio e mercados de títulos públicos/ privados, reduzindo vulnerabilidades externas e melhorando a transmissão da política monetária nestes países quando necessário.

Palavras-Chave: política monetária não convencional, arcabouços de política monetária, economias avançadas, economias emergentes

1 Introduction

This article intends to analyze important aspects related to old and recent experiences of monetary policy accommodation, with particular attention to unconventional monetary policies. We draw lessons from these past experiences to discuss the design of current monetary policy frameworks.

The main questions we aim to answer are the following ones. First, on which occasions the measures that are known today as “unconventional” monetary policies have been previously adopted? Second, how was the evolution of the monetary framework implemented by the European Central Bank (ECB) since 2008? Third, can we expect the removal of unconventional policies, with a return to pre-2008 standards, or incorporation of unconventional policies as new tools in current monetary policy frameworks?

To answer these questions, the article is structured as described in the sequence. After this introduction, section 2 centers its analysis on old experiences of monetary accommodation. We describe the historical background of unconventional monetary policies (UMPs), mentioning experiences which they were implemented before 2008 (i.e., UK 1825, USA 1932, UK and USA 1940s and 1950s, USA 1961, Japan 2000s). In section 3, we discuss UMPs’ recent experience in the Euro area. Following numerous macroeconomic and financial challenges that occurred in this jurisdiction after 2008, we observe the evolution of ECB’s framework, with the institution trying to improve more recent programs based on shortcomings observed in initial measures. In section 4, we turn our attention to the debate on current monetary policy frameworks. In particular, to which extent policies previously classified as “unconventional” should be removed (promoting a return to pre-2008 standards), or maintained (and considered as new tools available in current monetary policy frameworks). Section 5 presents the conclusions.

By performing this analysis of old and recent experiences of monetary policy accommodation, we draw important lessons for current monetary policy frameworks. First, by reporting several historical experiences of major central banks, we highlight that policies which after the 2008 crisis were considered “unconventional” were not new, with central banks intervening to avoid broader deterioration of macro-financial conditions. Second, analyzing the recent experience of the ECB after 2008, we observe this institution

has adapted its measures according to its former programs and other central banks' experiences, to face numerous challenges and enhance its framework. Third, UMPs should not be simply removed, and may have four possible treatments in current frameworks, according to the measure: i) Be discarded, due to their predominantly adverse effects (“exit”); ii) Not be regularly implemented, but be adopted as backstop mechanisms in times of crisis (“normalization”); iii) Be incorporated as regular measures of monetary policy frameworks (“new normal”); iv) Become the main monetary policy instrument, with larger and extended tools to deal with the effects of severe crises and structural challenges (“extension”).

In particular, we underline the importance that current monetary policy frameworks adopt adequate coordination with fiscal and regulatory policies, in order not only to stabilize inflation but also to provide stimulus to income/employment creation and ensure financial stability. This coordination of macroeconomic policies is essential, taking into account the constant challenges posed by the recurrent economic crises lived by our society, leading to a scenario of radical uncertainty (Keynes, 1921[1978]). This policy coordination is also in line with Keynesian theoretical principles: Effective Demand (Keynes, 1936 [1996]), Financial Instability Hypothesis (Minsky, 1982), which are capable to explain more appropriately why economic crises occur and what economic policy responses are more effective in dealing with them.

Our contribution to the literature is twofold. First, we highlight the important role of old and recent UMP experiences as lessons to improve current monetary policy frameworks under an evolutionary perspective. Second, we argue that UMPs can be successfully implemented both in advanced and emerging economies. In emerging economies, UMPs can have different roles from the usual ones observed in advanced economies (i.e., liquidity provision, stimulus to inflation/output in an environment of very low inflation). UMPs in emerging economies can also act as shields against pressures in capital flows, foreign exchange, and public/private bond markets, reducing external vulnerabilities and improving monetary policy transmission in these countries when needed.

2 Historical background

Although the expression “unconventional monetary policies” gained notoriety to name the set of extraordinary measures implemented by central banks after the 2008 crisis, it does not mean those policies are entirely new or have never been adopted before. In fact, what is called “conventional monetary policy” today - central banks keeping short-term interest rates at positive levels, controlling them according to a Taylor rule to achieve price stability (Borio and Zabai, 2016) - has become a common practice only after the 1990s. This definition of “conventional monetary policy” was forged under a scenario of low volatility in inflation and output in advanced economies, and with the belief that by guiding short-term interest rates, it would be possible to keep prices under control and address macroeconomic and financial stability concerns.

In fact, on many occasions before 2008, central banks have used other instruments than short-term interest rates, and achieving price stability was not necessarily the primary objective of monetary policy. Hence, we highlight in the sequence some periods in the past when instruments that are now being called “unconventional” (e.g., expanded liquidity provision facilities, asset purchase programs, yield curve control measures) have already been used by major central banks, and explain the context of their implementation.

2.1 Bank of England as lender of last resort in 1825

The 1825 banking crisis in London is considered to be one of the first systemic financial crises in modern history. According to authors as Morgan and Narron (2015), this crisis did not have a single event as a trigger. Actually, it had several factors behind it: i) Expansionary monetary policy fueled an increase in asset prices and stock market boom; ii) Stimulus in demand for financing infrastructure projects - including in newly independent South American countries - fostered an increase in debt issuance; iii) New financial instruments blurred the distinction between sound projects and speculative/fraudulent “investments”; iv) Lack of discipline by banks and market oversight by authorities helped to spread risky activities. All of them precipitated into an

environment of “panic” and contagion, with a bubble burst and a bank run. Surprisingly, the Bank of England (BoE) did not react to those problems initially, later receiving sharp criticisms from authors as Bagehot (1873). Bagehot argued that on those occasions, the central bank should have a crucial role in stopping the panic by following three rules. First, supplying all the liquidity needed by financial institutions. Second, supplying this liquidity at high interest rates. Third, supplying liquidity against good-quality collateral. Only after the failure of some large banks in London, the BoE assumed this lender of last resort role. It performed extensive credit provision against different types of collateral, purchased public bills, and used other tools, to put a floor on asset prices and avoid a liquidity freeze. So, after some delay, the BoE ended up using many mechanisms it had on its hands at that time to backstop the banking system. The institution managed to contain the panic, although the stock market downturn and recession lasted into 1826.

2.2 Federal Reserve System asset purchase program in 1932

In the aftermath of the New York stock exchange crash in 1929, the USA experienced a “Great Contraction” until 1933. The Federal Reserve System (Fed) was faced with a tradeoff during that occasion (Eichengreen, 2019). On the one hand, there was a call to pursue an expansionary monetary policy to try to provide stimulus to the economy. On the other hand, the Fed had to keep a relatively tight monetary policy stance to avoid further capital outflows, which were undermining the convertibility of the dollar during the gold standard. Faced with this dilemma, the Fed opted to try to safeguard dollar convertibility, by keeping a relatively tight monetary policy stance (a contraction of monetary base and decline of nominal interest rates lower than of inflation, implying an increase in real interest rates). Even if Fed discount rates were lowered, banks were not using the discount window, for two reasons: i) For reputational effects, to avoid that depositors interpreted it as a sign of weakness and withdrew their funds; ii) Banks were unable to borrow from it because they lacked eligible collateral. This “inaction” by the Fed after the 1929 crash (neither serving as lender of last resort nor using its tools to prevent deflation or the collapse of real economic activity) was considered one of the major policy flaws at that time, as mentioned by Friedman and Schwarz (1963).

One exception of Fed inactivity during the Great Contraction was a brief period from April to August 1932. On this occasion, under pressure from Congress, the Fed engaged in the purchase of US\$ 1 billion in Treasuries, around 2% of GDP at that time (Anderson, 2010). According to Bordo and Sinha (2016), this program had significant effects in reducing Treasuries yields: short-term bills -90 basis points (bps); medium-term notes -114 bps; long-term bonds -48 bps. It also temporarily reversed the decline in the money supply and led to a quick revival in industrial production and real output. This effectiveness would be explained by the high segmentation in bond markets that prevailed at that time (non-bank agents had difficulty in accessing public bond markets, concentrated in few banks). This fact allowed that central bank purchases increased Treasuries prices and lowered their yields, providing a positive stimulus for output.

Nevertheless, the Fed opted to end this asset purchase program just five months after its implementation, for several reasons. Bordo (2014) argues the Fed feared that the expansionary policy reinvigorated stock market speculation, created inflationary pressures, and threatened gold convertibility. Epstein and Ferguson (1984) point to an additional reason: the banking sector did not want that asset purchases continued pushing interest rates down, a fact that could reduce further their profitability, which was already weak. That is why Epstein and Ferguson (1984) argue that facing conflicting objectives – protecting the soundness of a specific sector (financial) and overseeing the protection of the broader real economy (non-financial firms/households) – the Fed ended up opting for the former.

2.3 Yield caps on sovereign bonds by the BoE/Fed in the 1940s/1950s

exerted upward pressure on long-term interest rates of major economies. Central banks in the United Kingdom and the United States reacted by implementing a cap on long-term sovereign bond yields, to curb the cost of government financing and to stabilize government bond markets.

In the United Kingdom, the significant expansion of government debt led the Treasury to commission a National Debt Enquiry in 1945. The Enquiry report recommended that the

government should establish a term structure of yields on government securities and allow the maturity structure of the government's debt to be determined by investors. The policy implemented came to be known as "ultra-cheap money", as described by Allen (2012). According to this author, this policy was implemented with the Treasury refusing to issue government securities at yields higher than those which the government deemed acceptable. For long-term gilts, it was adopted a cap of 2.5%, with the Treasury and Bank of England conducting gilt purchases to try to keep this cap. Conversely, the Treasury had to reduce the debt maturity profile, by increasing significantly the issuance of short-term bills to ensure its financing. Concerns with the rapid growth of credit and inflation led the Treasury/BoE to abandon the 2.5% cap in 1947, although net gilt purchases continued until 1948.

In the United States, the Fed policy to control the rise of government bond yields began before, in 1942, as described by Meltzer (2003). The Fed imposed a cap not only for long-term bond yields (2.5%) but also for three-month bills yields (0.375%), incurring in large bond purchases to try to keep those caps. The cap on short-term bills yields was gradually raised to around 1% and finally abandoned in 1948, but the cap on long-term bond yields was kept in 2.5% until 1951.

Generally speaking, those policies managed to control long-term government bond yield levels. However, some agents at that time posed sharp criticisms to it, as mentioned by Shirai (2018): i) Market excessive reliance on central banks' actions could not develop proper trading volumes/pricing mechanisms by its own; ii) Central banks' purchases were raising inflationary pressures; iii) Central banks' policies became subordinated to governments' debt management framework, instead of pursuing central banks' objectives (e.g., control inflation). All these criticisms led to the removal of the sovereign bond yield caps previously implemented.

In the UK, after the removal of the cap, the objective of monetary policy in the 1950s shifted towards managing a balanced growth of aggregate demand and supply, containing excessive credit growth, inflation, and keeping exchange rate parity (Allen, 2012). However, debt management policies and lending controls were still seen as relevant parts of the monetary framework, as mentioned in the Radcliff Committee Report in 1959. Therefore, there was some coordination between the Treasury and Bank of England, with

government funding operations trying to support monetary policy efforts to control credit. For instance, the Treasury carried out operations to sell gilts and absorb short-term bills, thus reducing banks' liquidity and adding to efforts of containing credit growth.

In the USA, the removal of the yield cap happened in March 1951, when the Treasury-Federal Reserve Accord was signed. This accord not only removed the 2.5% cap but also paved the way to strengthen the Fed's operational independence, as mentioned by Meltzer (2003). Fed's independence was confirmed in 1953 when this institution stated that the goal of monetary policy was to achieve price stability. Furthermore, it announced the implementation of the "Bills Only" policy, limiting the target of its open market operations to Treasury Bills. This policy was based on the idea that both short-term and long-term interest rates should be determined by market forces. By then, Treasury Bills were large in terms of amounts outstanding and transaction volumes. By limiting its scope to Treasury Bills, the Fed intended to influence reserve amounts held by commercial banks, attenuating direct effects of open market operations on the entire term structure of interest rates.

2.4 Fed "Operation Twist" in 1961

In the aftermath of the Korean War in 1960, the USA was found in a difficult economic situation, both in external (dollar/gold outflows) and domestic (output downturn) terms. In this context, the priorities of incumbent President Kennedy were to improve the country's balance of payments and recover economic activity.

Under these circumstances, in 1961 the Fed conducted a program that was coined "Operation Twist". The purpose of this program was to reduce capital outflows by keeping short-term interest rates high and to promote stimulus to the domestic economy by lowering long-term interest rates. To do so, the Fed sold short-term bills (US\$ 7.4 billion) and purchased long-term bonds (US\$ 8.8 billion, or 1.7% of GDP, according to Ehlers, 2012). The Fed was also supported by the Treasury to reduce the maturities of the securities issued.

In theory, Operation Twist was expected to be effective if markets for long-term and short-term bonds were segmented, and the two classes of bonds were not perfect substitutes, as claimed by market segmentation theory (Tobin, 1958) and preferred habitat hypothesis (Modigliani and Sutch, 1966). Conversely, from the viewpoint of the expectations theory of the term structure (Hicks, 1939 [1975]), long-term bonds and short-term bonds were highly substitutable, which would turn Operation Twist ineffective.

Among several evaluations of the program that were conducted on that occasion, one of the most influential was published by Modigliani and Sutch (1966). Even if these authors supported the preferred habitat hypothesis, the analysis performed by them showed that the reduction of spreads between long-term and short-term debt was minimal, and not statistically significant. According to Amamiya (2017), this study ended up supporting a view that gradually spread after that occasion: “central banks can control short-term interest rates, but not long-term interest rates”.

After the 2008 crisis, this view lost some support, in the sense that even mainstream economists, who continue arguing against direct control of long-term interest rates by central banks, now recognize sometimes it is desirable to let long-term interest rates be indirectly “guided” by central banks through UMPs, to achieve their price stability objectives. For instance, a new “Operation Twist” was implemented by the Fed from September 2011 until December 2012. This time, the Fed did not count on explicit support of the Treasury, shortening the maturity of its issuances like in 1961. Instead, the Fed used open market operations, selling short-term Treasuries (less than 3 years), and buying US\$ 667 billion in medium/long-term bonds (from 6 to 30 years). The intention was to induce a reduction in long-term yields, without needing to expand its balance sheet like in previous asset purchase programs. According to Ehlers (2012), the effect of 2011-2012 Operation Twist in long-term yields was temporary and partly offset by new issuances of long-term bonds by the Treasury. However, the reduction in overall maturity of outstanding debt held outside the Fed’s balance sheet (from 7.7 to 5.5 years during the program implementation) may have lowered term premia and created a stimulative effect on the real economy.

2.5 Quantitative easing in Japan in the 2000s

Japan experienced in the early 1990s the collapse of a bubble in real estate and stock market prices, subsequently followed by a financial crisis in the second half of the 1990s. In the view of authors as Koo (2009), this crisis was a typical case of a balance sheet recession: instead of maximizing profits, the Japanese private sector as an aggregate tried to minimize debts/deleverage at the same time, pushing down asset prices and economic output.

At the beginning of 1999, Japan registered deflation in its two main measures of underlying inflation: core (CPI excluding fresh food) and core-core (CPI excluding fresh food and energy) indexes. Those deflationary pressures took the Bank of Japan (BOJ) to lower interest rates and implement a Zero Interest Rate Policy (ZIRP) between February 1999 and August 2000. Based on initial indicators of lower downward pressures on inflation, in August 2000, the BOJ decided to remove ZIRP and raised interest rates to 0.25%. However, in the following months, the Japanese economy showed signs that it had been negatively affected by the dot-com bubble burst in the USA, with exports and output dropping sharply in early 2001, while inflation remained negative. Hence, BOJ's decision to increase the policy rate was reversed six months later. In February 2001, the interest rate was lowered from 0.25% to 0.15%.

Facing a more adverse scenario in March 2001, the BOJ decided to adopt a new monetary easing framework, that later came to be known as Quantitative Easing (QE). This new framework was composed of three essential elements, as explained in BOJ's Statement of Monetary Policy at the occasion. First, there was a shift from nominal interest rate targeting (uncollateralized overnight call rate) to reserve targeting (commercial banks' current account balances at BOJ, which roughly corresponded to the sum of required and excess reserves). The reserve target amount was raised nine times: from an initial 5 trillion yen to around 30–35 trillion yen in January 2004, a level that was maintained until the end of QE policy in March 2006. To achieve this reserve target, the BOJ provided short-term funds (maturities of one year or less), expanding excess reserves. Although the determination of the overnight call rate was left to market forces, the expansion of excess reserves effectively meant that markets priced this rate at zero percent. Second, the BOJ provided a formal commitment to maintaining QE policy until the core CPI registered

“stably zero percent on a year-on-year increase”. This commitment was clarified further in October 2003 by the introduction of two QE exit conditions: (i) Most recently published core CPI registered zero percent or above, and this level needed to be maintained for several months; (ii) Projected core CPI would be no lower than zero percent. These conditions were *state-contingent forward* guidance, based on the actual and expected performance of core CPI. Third, it was decided to increase government bond purchases if it was found necessary to facilitate meeting the reserve target.

Observing economic developments after the implementation of QE, authors as Shirai (2018) point out that, after reaching a trough in January 2002, Japan’s economy was able to enter a moderate recovery phase. The main engines of this recovery were exports and domestic manufacturing activities associated with them, supported by favorable global growth and depreciation of yen’s effective exchange rate. Yen’s depreciation, especially against euro and U.S. dollar, occurred due to interest rate differentials and risk-taking behavior of investors, which engaged in carry trade activities (selling yen and buying foreign currencies without hedge). Regarding the core CPI index, after remaining in slightly negative territory in the early 2000s, it finally turned positive in late 2005, followed by higher levels from early 2006 onwards.

Considering these developments, at the March 2006 BOJ meeting, the institution concluded that the conditions laid out in its previous commitments had been fulfilled. More specifically, the Board presented the following reasons: (i) Positive core CPI from end-2005 until January 2006 (the latest data available then); (ii) Projections of further improvements in GDP growth; (iii) Expected wage increases and tighter labor market conditions, partly as a result of growing economic activity; (iv) Rising inflation expectations of firms and households, also boosted by yen’s depreciation and increase in international commodity prices. By then, BOJ estimated that core CPI would stay within the range of 0% to 1% in fiscal year 2006, and slightly below 1% in fiscal year 2007.

Therefore, the BOJ proposed to end the QE policy at the March 2006 meeting. Instead of the outstanding balance of current accounts at BOJ, the uncollateralized overnight call rate would be reintroduced as the primary monetary policy instrument, with the level set at zero percent. Furthermore, at this policy meeting, the BOJ introduced a longer-run inflation outlook, named “*understanding of medium-to-long-term price stability*”. This

understanding was not an official inflation target, but a level of CPI inflation recognized as price stability by the BOJ Board. This long-run outlook was initially implemented in the range of 0% and 2%, with a median of 1%, and it could be revised on an annual basis. The BOJ acknowledged that this long-run outlook was below average inflation targets in other advanced economies (2%). However, it preferred to take into account Japan's experience of very low inflation during the last decades, considering the inflation range in which agents would perceive prices to be stable would also be lower.

After March 2006, the BOJ voted in favor of two interest rate hikes: in July 2006 (from 0% to 0.25%) and in February 2007 (from 0.25% to 0.5%). This policy rate was maintained until October 2008.

The decision to exit the QE policy in March 2006 was controversial, as it was the decision to lift ZIRP in August 2000. Criticism gained strength in the middle of 2006, after the release of a revision in CPI data. According to the Japanese Statistics Bureau, this revision resulted in an average decline of -0.5% from January to July 2006. So the actual core CPI in January 2006 was -0.1%. This number meant that one of BOJ's exit conditions - most recently published core CPI is zero percent or higher for several months - was not satisfied. Furthermore, year-on-year changes in core-core CPI remained negative during 2005 and 2006. Nevertheless, BOJ's long-term inflation expectations projections remained positive and around 1%, revealing some upward bias in the institution's inflation expectations forecasts. For those reasons, Shirai (2018) argued that BOJ's decision to abandon QE in March 2006 was premature.

Koo (2009) considered that, once Japan had faced a prolonged balance sheet recession, it was found in a liquidity trap with a deflationary nature. Hence, in such context, indebted agents do not spend, but try to pay off debts; banks do not lend, due to lack of demand from new borrowers; consumption and investment are postponed and do not recover by themselves. In those situations, expansionary monetary policies are inefficient, and what would be needed was a proactive fiscal policy. In Koo's view, the collapse was not worse because of two mitigating elements. First, despite government efforts to cut the fiscal deficit on some occasions (i.e., 1997 and 2001, following IMF and OECD recommendations), this deficit increased, with a parallel increase of government borrowing. In fact, fiscal deficit allowed some periods of temporary economic growth,

avoiding a deeper recession. Second, the government provided capital injections in the banking sector twice between 1997 and 2009 to avoid a more broad-based financial crisis. These capital injections were in accordance with the view that, under balance sheet recessions, liquidity injections are not enough to solve insolvency problems.

3 The evolution of ECB framework since 2008

The Euro area faced substantial economic and financial challenges in recent years: in 2008, liquidity problems after Lehman Brothers bankruptcy in September; in 2011, aggravation of the banking and sovereign debt crisis, notably in periphery countries; in 2014, the threat of deflation, especially after the collapse of energy and industrial commodity prices; in 2020, the COVID-19 pandemic. Due to these challenges, the ECB had to implement numerous conventional and unconventional measures.

Our aim in this section is not to describe in detail all the measures implemented by the ECB since 2008. Conversely, our focus is to show how the ECB framework evolved, with the institution trying to improve more recent programs based on shortcomings of its previous measures (i.e., seniority problem in SMP; liquidity not being destined to the real economy in three-year LTROs), and based on other central banks experiences.

3.1 The seniority problem: SMP *versus* OMT and PSPP

The Securities Markets Programme (SMP) was implemented in May 2010, the same month when the first Greek aid package was agreed, but periphery bond spreads to German bonds were still high. To reduce financial fragmentation in the Euro area and improve monetary policy transmission, the ECB engaged in purchasing periphery countries securities in secondary markets, in an attempt to prevent their yields from rising. The program's focus was not to adopt a more expansionary monetary policy or to finance member countries. As a consequence, the ECB conducted weekly open market operations to provide fixed-term deposits (with a weekly duration), to sterilize the liquidity injected through its purchases.

At the beginning (from May 2010 to February 2011), purchases were limited to Greece, Ireland, and Portugal bonds. After a pause between February and July 2011, the ECB resumed its purchases in August 2011, including also bonds of Spain and Italy. The program officially ended in September 2012, although purchases have occurred only until February 2012. According to ECB data, the program has acquired bonds with an average maturity of 4.3 years and a nominal amount of € 218 billion, of which almost half belonged to Italy.

Several studies have evaluated the effectiveness of SMP. In general, most authors agree that interventions succeeded in reducing sovereign yields of periphery countries, but the effect was usually only temporary: a few weeks (Pattipeilohy et al., 2013), or only one day (Doran et al., 2013). According to Doran et al. (2013), although after an ECB intervention yields fell on the same day, with adverse macroeconomic events and a possible lag for a new intervention, yields resumed rising to pre-intervention levels in the next day. SMP was also criticized by some analysts for its interventions having a limited amount and sterilized nature, which did not allow an expansion in ECB's balance sheet. For private investors, the issue which concerned the most was that the ECB had legal *seniority* over them. ECB seniority implied that private investors would be the first to bear the losses of any default in these bonds, and the ECB could only be charged after all private investors had been wiped out. This fact was one of the reasons why SMP interventions had only very short-term effects, with yields soon returning to rise.

Indeed, the great controversy both in public opinion and among ECB members themselves were factors that led interventions to be discontinued in time and interrupted seven months before the official end of the program. The disagreement within the ECB was such that it was pointed as a reason for the resignation of Bundesbank President Axel Weber and ECB's German Chief Economist Jurgen Stark. Helm (2012) noted that ECB core countries (notably Germany) considered that the program did not respect the ECB mandate to keep price stability. According to them, SMP would have just tried to disguise monetary financing (debt monetization) of periphery governments. Although the ECB did not purchase government securities in primary markets under the SMP, this program would have allowed periphery countries to delay the "necessary" fiscal adjustments.

With periphery countries bond yields rising to unsustainable levels and sovereign contagion threatening to reach even core countries (e.g., France), the ECB introduced a different communication approach. From July 2012 onwards, it started a "verbal intervention" strategy, trying to contain negative expectations on markets and aiming to increase monetary policy credibility. At a speech on July 26, 2012, Draghi stated the ECB would do "whatever it takes to save the euro".

This change in the communication strategy continued in the following months. In the August 2012 ECB meeting, it was mentioned the possibility of undertaking "outright

open market operations”, to address seniority concerns by investors. The main features of the Outright Monetary Transactions (OMT) program were announced in September 2012. This new program intended to restore the monetary policy transmission mechanism, which was notoriously disrupted. It opened the door for the ECB to buy sovereign debt of specific countries in secondary markets to stabilize their yields, once they signed a Memorandum of Understanding with fiscal and reform conditionalities attached.

ECB purchases would be of bonds with maturities between 1 to 3 years, in amounts consistent with avoiding market fragmentation. The OMT focus was not on countries that were already receiving assistance from the Troika (Greece, Portugal, Ireland). Instead, it aimed to avoid spreading contagion to countries which had their debt trading on markets, but at high yields (e.g., Spain, Italy). Most importantly, the ECB would be treated *pari passu* with other sovereign bond creditors, eliminating the problem of ECB seniority. Evidence of significant drops in sovereign yields of Italy and Spain, related to the announcement of the *pari passu* clause in OMT, is provided by Steinkamp and Westermann (2014).

The OMT also received some legal challenges in the German Constitutional Court (GCC) and the European Court of Justice (ECJ), related to accusations such as monetary financing of government debt. Both courts dismissed OMT’s charges and gave a final ruling of “approval with conditions”. Nonetheless, the OMT was never activated in practice, only remaining in the lines of verbal intervention.

Besides, the main unconventional program announced (in January 2015) and implemented (in March 2015) by the ECB – the Public Sector Purchase Programme (PSPP) – also contained significant improvements when compared with the SMP. In the PSPP, the ECB/national central banks purchased bonds issued by governments, national agencies, and EU’s supranational institutions. Differently from the SMP, the ECB received *pari passu* (not senior) treatment with private creditors. Furthermore, bond purchases were not sterilized; new liquidity was being injected into markets. Also, due to the much larger amount of securities bought by the ECB during the PSPP (around € 2.3 trillion until September 2020, according to ECB data), there is strong evidence that it

lowered borrowing costs of almost all nations in the Euro area, and reduced sovereign spreads between periphery and core countries (Rostagno et al., 2019).

3.2 Incentive to lend for the real economy: LTROs *versus* TLTROs

Before 2008, the ECB usually offered Longer-Term Refinancing Operations (LTROs) monthly, to be repaid in 3 months. In 2008, it also began to offer operations to be repaid in 6 months. In June 2009, it added to its tender procedures operations with repayment in 12 months. In November 2011, when the ECB noticed the sovereign crisis had worsened, and the liquidity available for banks and the economy as a whole had shrunk, the institution announced two major three-year LTROs, which were held in December 2011 and February 2012. On those occasions, the ECB lent to banks amounts to be paid over three years, charging only the main refinancing rate (then at a level of 1.0%). The first operation amounted to € 489.2 billion and the second operation € 529.5 billion, thus totaling a liquidity injection of € 1018.7 billion within three months.

Despite some authors argued that three-year LTROs reduced some of the most acute liquidity constraints in the Euro area financial markets (Darracq Paries and De Santis, 2015 and Andrade et al., 2018), several other studies showed that due to the scenario of high uncertainty prevailing in 2011-2012 in the Euro area, a large amount of the liquidity provided by three-year LTROs had two undesired destinations: i) Carry trade operations with public and private bonds; ii) Bank holdings as excess reserves in ECB's current account or deposit facility. Furthermore, even if three-year LTROs allowed a modest increase in lending, corporations did not use these new funds for productive purposes (Daetz et al., 2018; Crosignani et al., 2020). Overall, the evidence suggested that, although three-year LTROs have avoided a massive bank deleveraging and relaxed liquidity constraints, those operations did not achieve the goal of restore credit market dynamics and stimulate lending to productive purposes on a broader basis.

To address the problems above, the ECB decided to change its strategy in the following longer-term refinancing operations. Between September 2014 and June 2016, the institution implemented eight quarterly *Targeted Longer-Term Refinancing Operations*,

TLTRO I. The idea was that banks could borrow funds respecting their initial limit (7% of their loan portfolio in the first two operations), which could be gradually expanded in the following operations if their loan portfolio directed to non-financial companies and households (except for house purchases) increased. All operations matured in September 2018 (i.e., operations would last between two and four years). The fees charged over banks would be 0.15% in the first two operations, dropping to the main refinancing rate in the following six operations (0.05% until December 2015 and 0% in March and June 2016).

Between June 2016 and March 2017, the ECB introduced a new series of four quarterly *Targeted Longer-Term Refinancing Operations*, TLTRO II. Besides other differences from the TLTRO I, the main change was the price incentive mechanism to provide credit to the real economy, by offering lower interest rates to the banks that increased their credit operations to non-financial corporations and households (except for house purchases). For each operation, the interest rate would be the main refinancing operation prevailing at that time (i.e., 0%). However, for banks that achieved their loan benchmark to the real economy, the interest rate could be as low as the deposit rate (then at -0.4%). A third round of TLTROs (TLTRO III) is being conducted by the ECB from September 2019 until March 2021, with price incentives that are even more generous than TLTRO II². The total amount of liquidity injected by the ECB on TLTRO I and TLTRO II from September 2014 until March 2017 was around € 793 billion, after deducting rollovers from previous operations (net amount). TLTRO III injected a net amount of around € 708 billion between September 2019 and September 2020, according to ECB data.

Both TLTRO I and II received several common criticisms of not being really “targeted” towards the real economy (Gros et al., 2016). One response from the ECB to these criticisms was presented at the May 2017 *Economic Bulletin*, which showed several positive aspects of TLTROs. In this publication (ECB, 2017), the institution shows that

² The ECB announced that from June 2020 onwards, banks which achieved their benchmark of lending to the real economy (i.e., do not reduce lending to non-financial companies and households between March 2020 and March 2021) could borrow at 50 bps below the deposit rate (-1% YoY). This very favorable rate fostered banks to borrow a record amount on the June 2020 TLTRO III operation (€ 1.31 trillion in gross terms).

TLTROs, together with other UMPs, were efficient mechanisms to ensure the transmission of lower policy rates into better borrowing conditions for the Euro area non-financial private sector. They support this argument based on the following information: i) The rates on loans to non-financial corporations declined considerably right after the announcement of TLTRO I. The declines were sharper in countries where lending rates to non-financial corporations had been more elevated (i.e., “vulnerable countries), hence allowing a reduction in cross-country dispersion of lending rates; ii) In “vulnerable” countries, banks that borrowed under TLTRO I reduced their rates by more than banks that abstained from bidding; iii) According to ECB Bank Lending Survey - Third Quarter of 2018 (ECB, 2018), banks have reported that the TLTROs have contributed to an easing of the terms and conditions on loans to enterprises and easier credit standards (albeit to a lesser extent); iv) While lending by banks that did not participate in TLTROs appears to have remained mostly unchanged afterward, the ones which bid in TLTROs went through a considerable change in their lending profile. In more “vulnerable” countries (i.e., usually euro area periphery), banks have significantly reduced the pace at which they had been cutting lending to non-financial corporations. In “less vulnerable” countries (i.e., generally euro area core), bidders seem to have increased intermediation volumes.

Furthermore, one has to recognize that the price incentives in TLTRO II and TLTRO III, when compared with TLTRO I - lower rates for banks that lend more towards the real economy - was one relevant factor in mitigating the compression of negative interest margins experienced by banks after the implementation of negative deposit rates. Actually, credit to households and firms recovered in the period those operations were implemented. According to ECB data, loans to total private sector had declining annual rates of growth since the end of 2011, which became negative in 2012, and only returned to positive territory in May 2015. This growth trend continued with some oscillation, up to 4.7 % YoY in July 2020, close to its long-term average (4.8% YoY between 1998 and 2020).

3.3 ECBs unconventional measures based on other central banks experiences

When it comes to the influence of other central banks experiences on ECB measures, we could mention: i) ECB TLTROs were also inspired by BoE Funding for Lending Scheme (FLS), a program that started in 2012 and had some similarities with TLTROs (allowed the central bank to offer more funding for banks which increased their loans to the real economy); ii) ECB Corporate Sector Purchase Programme (CSPP) adopted in 2016 was inspired by Bank of Japan corporate bond purchases, which were part of BOJ's framework since 2010; iii) ECB forward guidance on low interest rates for an extended period in July 2013 was a sign to markets that Euro area monetary stance clearly differed from the USA, where the Fed had announced in May 2013 that it intended to withdraw its monetary stimulus, surprising financial markets and generating adverse effects (“taper tantrum”). ECB forward guidance was also open-ended, which has proven to be a more flexible option than the date-based or the quantitative-based forward guidance previously introduced by the Fed and the BoE on certain occasions, since they had to be dropped once the date or unemployment thresholds were achieved in those two jurisdictions, while other indicators still justified to keep accommodative measures; iv) Negative interest rates on the deposit facility, introduced by the ECB in June 2014, followed the experience of Denmark's Central Bank in July 2012; v) ECB PSPP in March 2015 followed other unsterilized public bond purchase programs implemented by the Fed, BoE, and BOJ. However, the ECB had to create its own rules, since it was purchasing bonds from all Euro area eligible countries, and not from a single Treasury, like other central banks. Among those rules, we can mention: ECB's purchases according to each national central bank capital key in the ECB total capital; issuer and issue limits of 33% per country and issuance operation; non-investment-grade bonds (e.g., Greece bonds) were excluded. In the context of the COVID-19 crisis and the creation of the Pandemic Emergency Purchase Programme (PEPP) in March 2020 as a response, the rules established for the PSPP were applied with flexibility, so that the ECB could focus its attention on the countries whose spreads had increased the most during the pandemic, such as Italy and Greece. When the ECB received criticisms that it took much more time than other central banks after 2008 to take bolder actions (e.g., QE only in 2015, when compared to the Fed, BoE, and BOJ right after 2008), the authority argued that as it is a supra-national entity composed by heterogeneous economies, its institutional framework is more complex, and hence

required more time to negotiate rules and take decisions. Nevertheless, these difficulties have not stopped the ECB from adopting several UMPs and later modifying these measures, adapting them based both on its former programs (“learning by doing”) and on other central banks' experiences (“learning by observing”) to improve its framework. In other words, some of the main features of ECB’s measures since 2008 were pragmatism, flexibility, and capacity to innovate, as mentioned by Le Heron (2016).

4 Current monetary policy frameworks

With the deep changes in monetary policies and the adoption of UMPs after 2008, there is an ongoing discussion on how monetary policy frameworks (i.e., mandates, targets, instruments, channels) should be shaped going forward. These discussions were already taking place at major central banks (i.e., Fed, Bank of Canada, ECB) during 2019 and the beginning of 2020. By then, these discussions aimed to define to which extent central banks should return to pre-2008 crisis monetary policy standards, or if other measures introduced after 2008 (such as UMPs) should be incorporated into central banks' toolkits under a new set of monetary policy practices.

However, these discussions had to be postponed in those jurisdictions with the spread of the COVID-19 pandemic in March 2020. It has affected business activities across the world, forcing central banks to act quickly to avoid a collapse of financial markets. Central banks took several bold measures with significant size and scope (e.g., liquidity provision, asset purchase programs, foreign exchange swap lines) and have committed to continue implementing those measures as long as the economic activity remains subdued. But when the economy starts to show signs of recovery, some of those stimulus measures will be withdrawn, and the previous discussion will again come to the floor of policymakers.

In the academia, the debate on monetary policy frameworks was even broader, including the possibility of adopting alternative monetary targets (i.e., average inflation, price level, nominal GDP) and instruments (e.g., monetary finance, central bank digital currencies), as well as enlarging mandates (e.g., incorporating wages, inequality, and environmental objectives) or new transmission channels (portfolio rebalancing, signaling channel, fiscal channel). Some of these instruments and channels raise fierce criticisms and political/legal obstacles in some jurisdictions (e.g., monetary finance, forbidden in the Eurosystem by article 123 of the Treaty of Functioning of European Union). Furthermore, one can mention the "conservative bias" (preference to remain within the pre-2008 monetary policy paradigm, for reasons such as fearing a loss in central banks' credibility, which is reported by Carré et al., 2013) as an additional factor which turned monetary policy frameworks harder to be changed.

Nevertheless, with the unprecedented scale of the COVID-19 crisis, a few central banks actually implemented some of those instruments which were still proposals or were under preliminary discussion in academic/technical levels, so some indication of the possibility of what we call an iv) “extension” of UMPs. For instance, the Bank of England ended up temporarily opening the door to monetary finance with its “Ways and Means Facility”, so that the UK Treasury can eventually borrow money from the BoE to cope with its financial needs during the pandemic if needed. Furthermore, the decline in the use of physical cash due to contamination during the pandemic fostered a larger use of digital payments and accelerated the implementation of central bank digital currencies (CBDCs). For instance, the People’s Bank of China was the first large central bank to launch its pilot CBDC in April 2020, and several other central banks have also announced pilot CBDC projects, or consider to implement CBDCs in the next few years. Besides, in August 2020 the Fed announced the adoption of a “flexible average inflation targeting framework”, aiming to achieve average inflation of 2% over the medium term. So it will tolerate inflation moderately above 2% for some time to compensate for past deviations below 2%, hence establishing an additional tool to fight inflation persistently below the target. Therefore, the response to the COVID-19 pandemic has allowed the implementation of some alternative measures, including ones that were under preliminary analysis. Moreover, the broader discussion of how monetary policy frameworks will be shaped going forward will continue to take place in the ECB, Bank of Canada, and other central banks.

On the continuation of the use of (what was called so far) unconventional monetary policies, there is not a consensus on this topic, with different opinions according to the jurisdiction and instrument considered. The post-2008 experience has been a blow to Monetarist/Classical theories such as the Quantitative Theory of Money (the rise of central banks’ reserves has not caused an automatic rebound in inflation) and the Loanable Funds Theory (banks do not lend out of reserves, so raising credit supply does not necessarily ensure credit demand). Instead, it vindicated alternative theories emphasized by Keynes and his successors, such as the Liquidity Preference (Keynes, 1936[1996])) and Endogenous Money (Kaldor, 1970) as capable of explaining more correctly monetary policy transmission mechanisms and their economic effects. Nevertheless, the actions that were taken immediately after the 2008 and 2020 crises

have prevented a collapse in the financial system, and later other measures have given some support to output and inflation (in different degrees, according to the jurisdiction). Hence, it is likely that part of UMPs remain in central banks' toolkits. Having learned with this experience, central banks could consider implementing again UMPs which they evaluate that had net positive effects according to their objectives.

However, on the discussion of monetary policy frameworks, we can say that there is an agreement among most participants that central banks should have certain common elements, such as a more active/ transparent communication than before the 2008 crisis, broader mandates (i.e., including financial stability into their previous narrow goal of inflation stabilization), and increased coordination with fiscal/financial regulatory authorities, although with some differences in implementation of those elements.

In particular, the inclusion of financial stability into central banks' mandates is a recognition (especially after the 2008 crisis) that financial systems' cyclical behavior can lead to regular crises of endogenous nature. These crises have been previously described by authors as Keynes (1936 [1996]) and Minsky (1982). More recently, the expression which represents this idea is that the financial system operates according to a "financial cycle" (Borio, 2012). Because of these regular financial crises, central banks' historical role of "elastic" liquidity providers (e.g., BoE in 1825, Fed creation in 1913) and lenders of last resort (or "big banks" as defined by Minsky, 1986) should continue to be included in monetary policy frameworks. Furthermore, this role should be supported by macroprudential measures and other regulatory initiatives of continuous implementation, aiming to increase financial systems resilience and improve instruments to face new financial crises, under an evolutionary perspective (e.g., periodic update of regulations to cope with profit-driven financial innovations), in line with Minsky (1986).

Moreover, the need for more coordination with fiscal authorities is a recognition that monetary policies cannot act alone, especially in periods of very low interest rates, when monetary policies are less effective to stimulate the economy ('pushing on a string' metaphor, attributed to Keynes). Monetary and fiscal policies, when adequately coordinated, may lower the cost of government debt service, and increase governments' space to pursue expansionary policies when needed (i.e., the fiscal channel of UMPs). Actually, fiscal policies with appropriate implementation are crucial on a continuous

basis: not only in the short term as a countercyclical tool to pull countries out of recession, but also in the medium/long terms, to address structural challenges faced by our society (e.g., demographics, technology, and climate change). Public investments in strategic areas (e.g., infrastructure, health, education, innovation, decent job creation, environment) are required to face those challenges and foster aggregate demand/employment levels on a sustained basis.

5 Conclusions

This article analyzed important aspects related to old and recent experiences of monetary policy accommodation, with particular attention to unconventional monetary policies. We draw lessons from these past experiences to discuss the design of current monetary policy frameworks.

First, we have analyzed old experiences of monetary policy accommodation. By reporting several historical experiences of the BoE, Fed, and BOJ, we have observed that policies which after the 2008 crisis were considered “unconventional” (i.e., broad liquidity provision operations, asset purchase programs, yield curve controls) were not new. Even if in some of those old experiences (e.g., BoE as lender of last resort in 1825, Fed asset purchases in 1932), central banks took considerable time to act, they ended up intervening to avoid broader deterioration of financial and macroeconomic conditions. Moreover, in the case of bond yield caps adopted by the BoE and the Fed in the 1940s/1950s, those policies were not considered as “extraordinary” measures to face acute financial distress. Conversely, they were part of these central banks’ frameworks at that time (which had as a priority to control long-term interest rates and the rise of public debts, and price stability was a secondary objective). Therefore, while measures that today are known as “unconventional” were already adopted in the past to deal with difficult situations in the financial system and macroeconomic scenario, some of them were not considered as “extraordinary” alternatives to be implemented in a huge financial crisis, but as regular measures of the monetary framework prevailing at that time, as shown by bond yield caps in the 1940s-1950s.

Second, on recent monetary policy accommodation experiences, we have analyzed the evolution of ECB's framework. During UMPs implementation, one can say that ECB's measures have been gradually enhanced, based on its former programs and experiences from other central banks. Related to ECB's own former programs, we can mention the following experiences: i) Correction of previous problems in SMP (ECB senior when compared to other investors in case of default, and sterilized bond purchases) in OMT (ECB *pari passu* with other investors in case of default) and PSPP (ECB *pari passu* and unsterilized bond purchases); ii) Correction of previous problems in LTROs (a large amount of liquidity lent to banks not generating new loans to the real economy) with

TLTROs (ECB liquidity operations started to offer incentives for banks to create new loans for firms and households, except for house purchases). TLTRO I quantity incentive was extended in TLTRO II and TLTRO III with the inclusion of a price incentive as well.

When it comes to the influence of other central banks experiences on ECB's measures, we could mention: i) ECB TLTROs were also inspired by BoE Funding for Lending Scheme (FLS); ii) ECB CSPP adopted in 2016 was inspired by Bank of Japan corporate bond purchases; iii) ECB forward guidance on low interest rates for an extended period adopted in July 2013 on an open-ended basis has proven to be more flexible than the date-based and quantitative-based forward guidance previously introduced by the Fed and BoE; iv) ECB negative interest rates on the deposit facility adopted in June 2014 followed the Danish experience since July 2012; v) ECB PSPP in March 2015 followed other unsterilized public bond purchase programs implemented by the Fed, BoE, and BOJ, but adapting rules according to the Euro Area. Those rules were applied with flexibility in PEPP to contain the sovereign spreads of the countries which increased the most during the COVID-19 pandemic, such as Italy and Greece.

Therefore, one can say the ECB had to make several modifications during UMPs implementation, adapting measures according to its former programs (“learning by doing”) and to other central banks' experiences (“learning by observing”) to improve its framework.

Finally, we have centered our attention on the debate on current monetary policy frameworks. Despite the different opinions on this debate, our view is that central banks should not merely promote a complete return to pre-2008 standards. Instead, they need to take advantage of old and more recent experiences, to improve their monetary policy frameworks under an evolutionary perspective. Based on this, measures implemented in the post-2008 crisis would have four possible treatments in current frameworks, according to the measure: i) Be discarded, due to their predominantly adverse effects (“exit”); ii) Not be regularly implemented, but be adopted as backstop mechanisms in times of crisis (“normalization”); iii) Be incorporated as regular measures of monetary policy frameworks (“new normal”); iv) Become the main monetary policy instrument, with larger and extended tools (e.g., average inflation targeting, monetary finance, central bank purchase programs of specific assets like “EU bonds” or “green bonds”), to deal

with the effects of severe crises (e.g., COVID-19) and structural challenges as climate change (“extension”).

For instance, in the case of the Euro area, we would have the following examples: i) Exclude SMP, once sterilized bond purchases during its course did not solve financial fragmentation in periphery countries, sometimes increasing these countries sovereign yields; ii) Do not implement TLTROs regularly but keep TLTROs (especially ones with price incentives) as alternative facilities to improve liquidity conditions, and foster targeting credit to the real economy when needed; iii) Keep forward guidance as a permanent tool to clarify the central bank’s reaction function and improve communication, and macroprudential measures to expand the resilience of the financial system against imbalances; iv) The extension of UMPs implemented during the COVID-19 crisis (e.g., reinvestments of the assets purchased by the Pandemic Emergency Purchase Programme - PEPP beyond 2022 and for a more prolonged period).

We also believe that unconventional monetary policies have a role in monetary frameworks of emerging economies. In the aftermath of the 2008 crisis, although UMPs were implemented on large scale by advanced economies, measures such as liquidity facilities and asset purchase programs were already adopted by some emerging economies (e.g., Mexico, Korea, China, Brazil), as described by BIS (2019). Those policies were adopted in those countries to complement other actions already applied to address destabilizing liquidity pressures or excessive volatility in asset and foreign exchange markets (e.g., macroprudential measures, capital flow management initiatives, and foreign exchange interventions). With the COVID-19 crisis, a large number of emerging economies central banks adopted a wide range of unconventional measures since 2020. For instance, central banks have created lending facilities to foster credit to private companies (in particular SMEs) and individuals, in countries such as China, India, Saudi Arabia, Turkey, Hungary, Poland, Brazil, Mexico, and Chile. Moreover, they have implemented asset purchase programs of public/private assets, in jurisdictions like India, Indonesia, Thailand, Philippines, South Africa, Turkey, Poland, Hungary, Romania, Chile, and Colombia.

Differently from advanced economies, where nominal interest rates are in their effective lower bounds, most emerging economies still have positive nominal interest rates. So the

use of UMPs was neither lack of conventional tools nor with a primary objective to fight deflation. Instead, UMPs were more focused on facing dysfunctionalities in exchange rates and public /private bonds yields, in the context of exchange rate depreciation, increasing fiscal deficits, and lack of liquidity by private firms. UMPs may continue to be used in emerging economies, not only to protect them against pressures in capital flows, foreign exchange, and bond markets, but also as tools to foster lending in the real economy and improve monetary policy transmission when needed.

In the case of asset purchase programs, operations should be carried out in close cooperation with national treasury departments, to allow a more coordinated policy mix between monetary and fiscal policies. In the case of operations to foster credit to private firms, there should be a recommendation for firms to use those resources for operational/productive purposes, instead of financial/speculative purposes (e.g., paying dividends, bonuses, share buybacks). Besides, UMPs in emerging economies should not take place with unlimited size or timeframe, but in amounts and terms consistent with each country's share of government debt owned by foreign investors and respective international reserves level, to avoid undermining the country's credibility in international markets.

In conclusion, monetary and financial stability authorities in advanced and emerging economies will need to be institutions with an increasingly evolving profile, in a continuously adaptive and innovative process, to face challenges posed by markets that are on the one hand each day more dynamic, innovative, complex, but on the other hand subject to uncertainty and susceptible to recurrent economic and financial crises.

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