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WHAT DID CENTRAL BANKS LEARN FROM FINANCIAL CRISES?

Abstract. During the global financial crisis (GFC) of 2007–2009 and the current Covid-19 debacle, central banks acted quickly, boldly, and effectively. The paper argues that they did so thanks to the lessons learned from the past financial crises, which provided them with opportunities to reconsider their previous beliefs. A case in point is the banking crisis in the United States during the Great Depression of the 1930s that taught central banks to act rapidly and decisively in order to prevent an initial liquidity crisis from escalating into a solvency crisis leading to bankruptcies of banks with potentially disastrous consequences for the entire economy. The paper revisits the consequences of the currency crises of the 1990s, which transformed exchange rate regimes across the world: the EMS one of 1992–1993 that accelerated the launch of the euro, and the Asian one of 1997–1998 resulted in the proliferation of floating exchange rates in emerging economies.

Keywords: banking crisis, financial crises, central banks.

1. Introduction

Central banks acted quickly and decisively during both the recent Covid-19 crisis and the global financial crisis of 2007–2009. The aim of this paper is to argue that the urgency and the audacity of central banks' actions resulted from the evolution in central banking informed by the experiences of successive financial crises. On each and every occasion, central banks learned useful lessons that made it easier for them to tackle subsequent crises.

Especially important were the event unfolding in the United States in the early 1930s, which taught central banks that if they fail to address a liquidity crisis, it would build up into a solvency crisis with disastrous consequences for the economy. This lesson from the 1930s was the main reason why central banks successfully responded to the Global Financial

Crisis (GFC) of 2007–2009, considered by many to be the most damaging financial emergency in history.

The Eurozone sovereign debt crisis of 2010–2012, an aftershock of the 2007–2009 GFC, proved to the European Central Bank that in order to avoid a serious fiscal crisis it should have followed the example of other, older and more experienced central banks, which launched their quantitative easing programs (QE) with much less hesitation in order to prevent a precipitous fall in treasury bond prices.

The GFC of 2007–2009 led to the emergence of the macroprudential policy, which has since become an important stabilization tool and will remain a pivotal part of central banking, because low inflation and zero interest rates are likely to remain with us for some time, which may bring about a twilight of monetary policy as we know it (Rachel, Summers 2019).

After the World War II, the international monetary system evolved under the pressure of successive currency crises. The most spectacular instances occurred in the wake of the foreign exchange liberalization at the turn of the 1980s and the 1990s, which dramatically increased the mobility of capital flows. The wave of speculative attacks of 1992–1993, which hit the European Monetary System member states, provided an important stimulus for the introduction of a common European currency. Subsequent speculative attacks of 1997–98 in South-East Asia accelerated the proliferation of floating exchange rates among the emerging economies.

The paper is organized as follows. Section 2 highlights the role of lender of last resort as the crucial task of central banking. Section 3 focuses on the impact which currency crises of the 1990s exerted on exchange rate regimes. Section 4 discusses how the experiences of the Great Financial Crisis of 2007–2009 caused a major rethinking of the role of central banking. Section 5 elaborate on the new central banks' tasks and tools in the coming period of low inflation and low interest rates. Section 6 concludes.

2. Lessons from banking crises

Money is created by commercial banks which monetize the future streams of loans repayments by borrowers. Technically speaking, banks appear to be creating money *out of thin air*, as it takes only entering the same amounts of loan and deposit on both sides of their balance sheets (McLeay et. al. 2014, Goodhart 2009). This is why James Tobin called deposit money *fountain pen money* (Tobin 1963).

From the very beginning, banks faced the problem of assets illiquidity (i.e. their assets were difficult to monetize during a crisis), while their liabilities (deposit money) were highly liquid, which exposed banks to depositors' runs. The need to prevent such runs was one of the most important reasons for establishing central banks, of which the most spectacular example was the founding of the U.S. Federal Reserve Bank in 1913 with a mandate to solve precisely this problem.

2.1. Why was the Federal Reserve created in 1913?

During the so-called free banking era, the United States had no central bank. Commercial banks issued both deposit and paper money, with hundreds of different banknotes in circulation across the country.

Both deposit and paper money were universally trusted due to their convertibility into gold at a fixed rate, whereas interbank payments were settled by clearing houses based in the largest towns. The obligatory means of payments in interbank settlements were *gold certificates*, which represented the amount of gold deposited by banks at a given clearinghouse.

The monetary system without a central bank functioned fairly smoothly, which was reflected in a fairly stable level of inflation. One reason was that at that time, commercial banks (especially in Anglo-Saxon countries) were extending only short-term self-liquidating working capital loans in order to fund the running stocks kept by firms. Under the circumstances, the money supply (as the result of banks' extending short-term loans) increase more or less in line with the supply of goods produced by firms. The other reason behind the relative price stability was the happy coincidence that the supply of gold (from new discoveries) grew at a rate commensurate to that of global GDP growth (Cassel 1936).

The Achilles' heel of commercial banks was that their incomes fell during recessions, which tended to trigger runs on banks, as panicked depositors withdrew cash from banks *en masse*. On their part, banks were unable to issue more banknotes since they had to ensure their convertibility into gold. Even though clearing houses extended liquidity loans to their member banks (the so-called *loan certificates*) in emergency situations, there were limits to such liquidity provision since loan certificates were not covered by gold and thus were not convertible into banknotes (Moen, Tallman 2013).

The difficulties in the provision of extra liquidity during banking crisis clearly showed the need to establish a central bank in the United States. The especially painful banking crisis of 1907 accelerated the decision to launch the Federal Reserve System in 1913, which was given the right to issue unlim-

ited liquid reserves in times of crisis. These reserves were, in turn, convertible into banknotes issued by the Federal Reserve. The monetary system was still based on gold, however, in an emergency, the Federal Reserve could (as was the case with other central banks at that time) suspend the convertibility of its banknotes into gold without eroding the trust in them, since they had become legal tender.

No limits were imposed on the Fed's capacity to supply banks with liquid reserves during banking crises; thus, theoretically, the Fed was able to stop any run on banks. Unfortunately, it failed to put these powers in good use during the banking crisis of the early 1930s.

2.2. Why did the recession of 1929 turn into the Great Depression?

The 1929 stock market crash also triggered a banking crisis due to the losses incurred by investment trusts, which often belonged to the same holdings as banks. As a result, banks stopped lending liquidity to one another. This was the moment when the Federal Reserve should have stepped in and provided the banks with unlimited amount of loans to restore their liquidity and to prevent what was to become an insolvency crisis.

Regrettably, the Federal Reserve failed to do this, which led to massive bankruptcies of US banks with disastrous consequences. The bankruptcies, in turn, led to the disappearance of money deposited with them, the money supply shrank by a third, and this was precisely the factor that turned initial recession into the Great Depression (Friedman, Schwartz 1963, Evans et. al. 2004).

Why did the Federal Reserve make such a grave error? Some Fed officials and academics (Cogley 1999, Hawtrey 1932) suggested that it should purchase securities from banks in order to provide them with the lacking liquidity. However, the early 1930 were dominated by the Hayekian view that interventionist policy during recession might make an economic crisis longer by preventing the elimination of excessive investment made during the preceding boom (DeLong 1990). In the 1970s, Friedrich Hayek openly admitted that he had been wrong in expecting a much shallower recession than actually occurred (Hayek 1975). Nonetheless, in the 1930s, his liquidationist views effectively prevented the Federal Reserve from taking decisions which could have saved many banks.

The underlying reason why central banks on both sides of the Atlantic did not supply banks with sufficient liquid reserves was the gold standard system. In 1931, after gold outflows to the United States, European central banks had to abandon the gold standard in order to supply banks with sufficient liquidity to overcome banking crises as was the case e.g. in Austria,

Germany, and the United Kingdom. The US did not abandon the gold standard until 1933 (Eichengreen 1992).

The lessons of the Great Depression were learned. In 1933 the Federal Deposit Insurance Corporation was established with a view to prevent runs on banks. In the same year, the Glass-Steagall Act was passed to separate commercial and investment banking, which gave the US six decades without a major banking emergency until the Act was phased out in 1999, which paved the way to the banking crisis of 2007–2009.

An impressive proof that lessons from the banking crisis of the early 1930s had been learned was the central banks' response to the outbreak of the Great Financial Crisis (GFC) of 2007–2009, when they injected massive liquidity loans into the banking systems immediately after the outbreak of the crisis in August 2007, and when they launched massive quantitative easing (QE) programs following the collapse of Lehman Brothers, which grossly aggravated the crisis. It was not by accident that the Fed's decision to launch QE in 2009 was taken by Ben Bernanke, well-known for his books on the Great Depression of the 1930s (Bernanke 2004).

3. The impact of currency crises

The 1990s witnessed the wave of spectacular currency crises. The reason was the liberalization of short-term capital flows initially in the developed economies in the second half of the 1980s, followed by emerging economies in the early 1990s. The two most spectacular ones were the European Monetary System (EMS) crisis in 1992–93 and the Asian crisis in 1997–98. The former accelerated the introduction of the common currency in Europe, whereas the latter contributed to the proliferation of floating exchange rates in emerging countries.

3.1. The EMS crisis of 1992–1993 and the escape into a common currency

The liberalization of short-term capital flows resulted in the rapid increase in the volumes of trading (short-term arbitrage) on the global financial markets. This considerably increased markets' capacity to attack fixed exchange rates, as central banks usually did not have sufficient foreign exchange reserves to defend the parities of their currencies.

This is precisely where George Soros saw his opportunity to attack the British pound in 1992. He was well aware that his speculative attack may not succeed, since at the time, the United Kingdom was a member of the

European Monetary System (EMS) and the Bank of England could take advantage of the Very Short-Term Financial Facility (VSTFF) – a credit line for EMS members with potentially unlimited access to short-term loans from the Bundesbank (Kenen 1995).

Soros knew that access to the VSTFF enabled the Bank of England (BoE) to effectively defend the pound through massive sales of the German mark, which was, in fact, the key currency in the EMS. However, he bet on something else: he assumed that the speculative attack would result in sharply increased short-term interest rates leading to recession, which the UK would not want to suffer for long, since the country did not intend to join the planned monetary union in Europe (Millman 1995).

The reason why speculative attacks tend to result in increased interest rates is that the common form of speculation entails borrowing the currency that is expected to be devalued in order to sell it immediately afterwards with a view to profiting from repurchasing it once its exchange rate has fallen. Such a form of speculation exerts an upward pressure on market interest rates due to the increasing demand for short term loans (speculators take such loans from banks in the country whose currency is under attack).

George Soros won his bet: the British pound was floated and its exchange rate fell considerably. However, the reason was different from what Soros had anticipated. The Bank of England was a loyal member of the EMS and kept defending the pound for several weeks. Actually, it was the Bundesbank that asked the Bank of England to cease to defend the pound amidst concerns that the German marks sold by the Bank of England and deposited with German banks might add to inflation in Germany, which was already increasing due to the vast fiscal costs of economic reconstruction of the former German Democratic Republic (Kenen 1995).

The speculative attack against the British pound in autumn 1992 attracted much media attention, but in fact, in 1992–1993, almost all the EMS currencies were attacked under the pretext that they were overvalued against the German Mark. The wave of speculative attacks against the EMS currencies was so spectacular that it became an important factor accelerating the launch of the euro in 1999, which led to the emergence of a pan-European foreign exchange market so large that it is next to impossible to attack (Gros 2104).

It is only to be regretted that the Eurozone member states did not decide to issue common treasury bonds on top of adopting a common currency. The market for the former would have been the biggest one worldwide and likewise immune to speculative attacks. Had it been the case, the Eurozone sovereign debt crisis, analyzed in section 4.2., might not have occurred.

3.2. The Asian crises of 1997–98 and the escape into floating exchange rates

In the 1980s, the South Asian countries were becoming increasingly successful export-oriented economies. This attracted capital flows in the form of FDIs, portfolio investments, and bank loans; consequently, the capital inflows pushed these economies on the boom-bust trajectory as macroeconomic imbalances began to accumulate.

This gave the markets a pretext to attack the region's currencies. Unsurprisingly, central banks in the South-East Asia did not have sufficient foreign exchange reserves to withstand speculative attacks further aggravated by panic and capital flight. The considerable depreciation of the region's currencies generated large balance sheet losses in banks leading to a series of banking crisis, of which the most acute one hit Indonesia.

Most South-East Asian countries quickly returned on the path of high economic growth, nonetheless, they took three lessons from the currency crises of 1997–1998. The first one was to introduce floating exchange rates, which are much more difficult to attack than fixed ones. Second, they tightened their regulation and banking supervision to prevent their economies from being put on paths leading to unsustainable lending booms. Third, the capital adequacy ratios were increased. In general, South-East Asian countries started to implement macroprudential policy, which improved resilience of their economies during the global financial crisis of 2007–2009 (Ren 2011).

Imprudently, developed countries assumed that the lessons of the 1997–1998 Asian crisis did not apply to their economies, which boasted highly sophisticated financial systems. The GFC of 2007–2009 was to prove them wrong.

4. The Global Financial Crisis of 2007–2009

Until the 1970s, the ratio of banks' assets to GDP tended to be amazingly stable (Haldane 2009). The reason was that in the past banks (especially in Anglo-Saxon countries) extended almost exclusively working capital loans, which met the demand for money, while the latter tended to be stable with respect to the GDP (Friedman 1959).

All this changed in the 1980s, when the ratio of banks assets to GDP began to sharply increase due to the rapid growth in trading and mortgage portfolios as a consequence of liberalization of capital flows and the emergence of IT technologies. The liberalization of short-term capital flows

enabled the development of many global spot and forward markets, which created ever-increasing opportunities for short-term arbitrage transactions conducted in swiftly expanding dealing rooms of large banks. The emergence of IT made it equally easy for traders to conduct transactions with their counterparts based in dealing-rooms across the same street and in other countries. Trading became such an important part of banks' business lines that investment banks turned effectively into broker-dealer institutions with huge trading portfolios.

The sharp rise in banks' mortgage portfolios resulted from their entry into markets previously dominated by mortgage banks and building societies. In order to promote mortgage lending, large banks established securitization funds which purchased mortgage loans from banks in order to convert them into Mortgage Backed Securities (MBS), including the especially risky ones known as Collateralized Debt Obligations (CDOs). The main source of securitization were short-term interbank deposits created by banks themselves on wholesale, mainly repo markets (Singh, Stella 2012). Further increases in the demand for mortgage loans involved the liberalization (or more appropriately, collapse) of lending standards of which the best-known example were the infamous subprime loans (Allen, Moessner 2011).

4.1. Should we blame central banks for boom-bust cycles?

In the run-up to the outbreak of the 2007–2009 GFC, central banks enjoyed a high level of trust earned in the 1980s and 1990s, when they managed to overcome high inflation and stabilize it at low levels. Their credibility had never been higher, yet shortly after the outbreak of the GFC of 2007–2009, central banks were accused of failing to sufficiently raise interest rates in order to contain unsustainable credit booms on mortgage markets (Taylor 2014).

Such an argument is legitimate, but according to the widely-held view before the crisis, a low and stable inflation demonstrated that and economy was on an equilibrium growth path (Alesina et al. 2001). In this context, central banks tended to underestimate the risks associated with the inflation of property prices (Turner 2015).

It was also thought that changes which were taking place in financial markets were making them safer. Due to the progress in measuring and managing risk, banks were considered perfectly capable to adjusting the risks they took (potential losses) to the volume of their capital buffers which would have shielded them from insolvency risk. This was supposed to be enough to protect any economy from banking crises.

The response to these beliefs, at the Jackson Hole conference in 2005, Raguram Rajan presented a paper, in which he warned that risks were, in fact, accumulating within the banking system, because the incentives at play encouraged bankers to take excessive risks (Rajan 2005). Despite his warnings, the Basel II Accord permitted large international banks to use their own risk models to decide on the volume of capital necessary to cover their potential losses. Exactly as Rajan had feared, banks misused this opportunity and applied these models to lower the volume of their equity in order to boost their leverage, rate of return, and the bonuses for their CEOs (Bayomi 2017).

The situation in which central banks did not perform due in-depth analyses of the financial sector, while regulators and supervisors adopted the attitude of benign neglect, resulted to a large extent from the lobbying efforts by big banks (Lall 2012, Wilmarth 2013). Thus, blaming central banks for causing global financing crisis on the ground that they did not sufficiently increase the interest rates is only partly justified.

4.2. How did the Eurozone sovereign debt crisis of 2010–2012 transformed the ECB?

The GFC of 2007–2009 worsened the fiscal position of the Eurozone's peripheral economies to such extent that in 2010, the governments in Greece, Portugal and Ireland lost possibility to raise funds through selling their treasury bonds on capital market. The main reason was that their prices took a sharp fall, which reflected investors' concerns that their governments would soon be unable to service their debt.

The Eurozone's core countries kept calling this situation as 'fiscal crisis', which implied that the main reason behind it was allegedly 'irresponsible' fiscal policy of the peripheral countries. In point of fact, it was not true. Before the crisis, Greece was the only Eurozone country whose public debt to GDP ratio was increasing. In other peripheral countries of the Eurozone, this ratio was stable or was falling, as was the case in Ireland and Spain (De Grauwe 2016). The actual culprit of the crisis was the irresponsible lending policy of large European banks which engaged in underwriting the credit booms in the Eurozone peripheral countries¹. Eventually, these booms turned to bust and the ensuing recession led to a sharp deterioration in the fiscal standing of the latter, which was the actual cause of the sovereign debt crisis.

The Eurozone public debt crisis, as any crisis, was fed by a mixture of speculation and panic. Speculation contributed to the fall in the prices of treasury bonds issued by peripheral countries. The risk of Eurozone breakup

triggered capital flight from peripheral to core countries. Disaster was looming, but the solution was at hand. The ECB could have simply launched a QE program, exactly as did the Federal Reserve and the Bank of England in 2009.

Unfortunately, even in 2010, the ECB did not launch any program of the kind. Instead, it started its Securities Markets Program (SMP) whose scale was insufficient to contain speculation on the bond markets of the peripheral countries. Such a peculiar behavior of the ECB resulted from the doctrinal belief that high long-term interest rates and higher public debt service costs in the peripheral countries were necessary to ‘discipline’ their fiscal policies (Sinn 2012).

Only when the sharply rising long-term interest rates in Italy and Spain pushed the Eurozone on a brink of a break-up the ECB decided to take the necessary steps. In summer 2012, Mario Draghi used the famous phrase ‘whatever it takes’ to imply that the ECB might launch the OMT (Out-right Monetary Transactions) being large enough to overcome speculation on bond markets.

Why did the announcement alone unsupported by any actual action produced a rise in treasury bond prices and the overall fall in long-term interest rates? The reason is obvious. Traders on the bond markets are usually quants with a very good understanding of macroeconomics and immediately recognized the message from Mario Draghi’s words. Actually, he was kind enough to remind the parties concerned that ECB’s interventions on the treasury bond market could be, in principle, unlimited and hence sufficiently large to overcome the crisis.

This was the crucial moment in the history of the ECB as it became a fully-fledged central bank ready, like other central banks, to intervene on the sovereign debt market. The importance of this change stems from the fact that this significantly reduced the risk of Eurozone breakup.

4.3. Political economy of the ECB’s QE

The main reasons why the OMT was announced until the Eurozone faced the existential threat of collapse was its insufficient political integration. The same factor produced the unfortunate way in which the ECB handled its QE program launched in March 2015; unfortunate in the sense that it made it impossible to channel the gains from the program mainly to those Eurozone member states that needed it most.

One of the most important of those gains is that QE programs led to a *de facto* public debt reduction. The part of the public debt which is in the central banks’ assets is actually only an accounting item. It costs the gov-

ernment nothing, as the central bank returns to the budget both the coupon payments when it pays the seigniorage, and the principal payments, when it reinvests them in the new treasury bond issues (Turner 2016). The only fiscal cost related to this this part of public debt that is held by the central bank involves paying interest on banks excess' liquid reserves – being the unavoidable outcome of QE programs. These interest payments are, in fact, a fiscal cost, as they reduce the volume of seigniorage transferred to the government.

The fiscal gains from the QE program should have been directed primarily to the peripheral countries due to their especially difficult fiscal situation. Alas, when the QE was launched in 2015, the ECB used the capital key (mirroring member states' shares in the Eurozone GDP) to determine the proportions in which it bought public debt. As a result, most assets purchased by the ECB were treasuries of the core countries, which had no problems with servicing their public debt due to the high domestic savings. Thus, ECB's QE program did not fully exploit the opportunity to reduce the debt service burden of those countries which needed it most badly. It could have done so by buying mainly the treasury bonds issued by the Eurozone's peripheral countries in order to alleviate their fiscal problems (Sławiński 2016). Fortunately, during the COVID-19 crisis, when the ECB relaunched its QE program, it suspended the capital key in order to buy proportionally more Italian and Spanish bonds, which was a good decision.

5. The emergence of macroprudential policy

As noted in section 4.1., the main reason for unsustainable lending booms that crashed in so many countries in 2006–2007, was the seriously deteriorating lending standards as applied by banks. Another major reason was that not only investments funds but also banks purchased structured bonds, which ultimately were loan securitization products. Despite their high ratings, the market for these bonds was inherently risky. The senior tranches of CDOs were often rated at triple A, even though their market was illiquid., which posed the risk that any instance of distrust in their quality might cause their prices to plunge. This risk materialized when the CDO prices fell by several dozen percent and banks suffered large balance sheet losses. This was exactly why Lehman Brothers went bankrupt in September 2008 (Morris, Shin 2008).

The general collapse of the lending standards and the emergence of highly illiquid structured bonds markets were the two factors which contributed to large losses sustained by banks. Nonetheless, the underlying cause of the crisis was that the large international banks possessed an infor-

mal, yet very real status of institutions too big to fail, which induced them to take excessive risk with a view to boosting their rates of return (Johnson, Kwak 2011).

The main lesson from the GFC of 2007–2009 was the emergence of macroprudential policy as an important tool of stabilization measures. The main feature of macroprudential policy is that it can effectively address the sources of financial instability and as such, it may strengthen the impact of or even substitute for monetary policy tightening (Blanchard 2012).

Macroprudential policy has the potential to prevent the development of excessive imbalances in the economy and the financial systems or at least substantially dampen their consequences. The latter can be illustrated by the situation in Poland during the GFC of 2007–2008. While Poland did experience a boom in foreign exchange indexed mortgage loans, the bust that followed did not produce big balance sheet losses domestic banks in contrast to many other countries in the region.

The reason was that since the mid-2000s, Polish banking supervision authorities tightened their lending standards (LtV and SDTI ratios) in order to direct foreign exchange indexed loans mainly to those households which could afford to service these debts even if the domestic currency considerably depreciated. When it did occur in 2008 after the collapse of the Lehman Brothers, the borrowers continued to service their foreign exchange denominated loans and there was no banking crisis in Poland (Sławiński 2020).

If future indeed holds a long period of low inflation and low interest rates in developed economies, macroprudential policy may become an important tool of stabilization policy (Beau et al. 2011). This does not necessitate locating banking supervision bodies within central banks, which might undermine their credibility in the case of solvency problems face by individual banks. It is, however, necessary to give the central banks a crucial role in taking decision on tightening or liberalizing macroprudential policy, as such decisions should be taken by independent public institutions immune from political pressures (Borio 2015).

6. Concluding remarks

In the wake of the GFC of 2007–2009, the prospect that developed economies would one by one enter a long period of low growth and low inflation looked like the twilight of central banking as we knew it (Rachel, Summers 2019). The focus of the discussion on the future of central banking started to shift towards its potential contribution to the containment

of the looming climate crisis, which may turn out to be a fat tail event endangering the future of mankind. Accordingly, central banks began to analyze the role of monetary and macroprudential policies in reducing the costs of CO₂ and other gas emissions (Krogstrup, Oman 2019, Schoenmaker 2019). When discussions on these issues were gaining momentum, the Covid-19 pandemic unexpectedly broke out and triggered the current painful financial crisis.

The Covid-19 crisis is very different from the previous ones in that it was caused by epidemic, nonetheless, its global reach forced central banks to resort to all the instruments they had developed during the previous crises. They resumed QE programs providing commercial banks with considerable liquidity and implemented new measures such as large scale of corporate debt purchases conducted not only on the secondary, but also on the prime markets. By doing this, central banks entered the uncharted waters of allocating credit which they should not do under normal circumstances.

This is one of the signs that central banking have reached the limit of their possibilities. The problem that still remains unsolved is the lacking international lender of last resort.

Until now, only the Federal Reserve Bank has played this role on a large scale. Already in the late 1980s, the Fed allowed large international banks to become its prime dealers, i.e. institutions authorized to take part in the Fed's open market operations. Thus, during the 2007–2009 crisis large foreign banks (mainly European ones) drew dollar liquidity directly from the Fed (Shin 2011). Moreover, in 2007–2009, the Fed was providing dollar liquidity loans to the ECB and some other central banks in the form of FX swaps (Broz 2015). During the COVID-19 crisis, the Fed expanded the list of central banks having access to the Fed's FX swap lines².

Yet, the Federal Reserve alone cannot solve the problem of lacking international lender of last resort in a global crises owing to a number of thorny issues such as moral hazard, adverse selection, and overstepping central bank's mandate (Cecchetti 2014). Finding an optimal solution to this problem would require a much higher level of international cooperation than has been the case so far.

NOTES

¹ In fact, this was a major setback to the future of the Eurozone. The capital flows which could have otherwise enabled the modernization of the Eurozone's peripheral economies and their real convergence with the core countries, were rerouted to fund speculative investments in housing.

² https://www.federalreserve.gov/monetarypolicy/bst_liquidityswaps.htm

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