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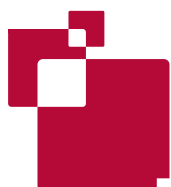
CENTRAL BANK COOPERATION DURING THE GREAT RECESSION

FRANCESCO PAPADIA

Highlights

- During the Great Recession, central banks went well beyond their normal operations and provided liquidity in unlimited amounts, in foreign currency and to foreign banks. Central bank cooperation took the form of a swap network, and amounted to an episode of global monetary policy.
- However, though bank cooperation will continue to contribute to global governance, the swap network should not be made permanent and given an institutional basis to provide international lending of last resort. Swaps are a monetary policy tool and should continue to be decided on by central banks like all other monetary policy tools, to avoid impinging on their independence, which a difficult historical process has shown to be the best basis for price stability.
- In comments appended to this Policy Contribution, Edwin Truman, Senior Fellow, Peterson Institute for International Economics, concludes in favour of making the swap network permanent, while William Dudley, President of the Federal Reserve Bank of New York, stresses the importance of central banks around the world being able to coordinate closely so that there can be a viable, credible backstop on a global basis.

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CENTRAL BANK COOPERATION DURING THE GREAT RECESSION

FRANCESCO PAPADIA, JUNE 2013

1 INTRODUCTION

Central banks normally provide liquidity:

1. In carefully controlled quantities and
2. Only in national currency to national banks.

During the Great Recession however central banks provided liquidity in unlimited amounts, also in foreign currency and to foreign banks. While central banks could provide on their own unlimited liquidity in national currency to national banks, the provision of liquidity in foreign currency or to foreign banks could take place only through cooperation with other central banks. The form this cooperation took was a swap network, through which central banks committed to lend to each other large, in some cases unlimited, amounts of their currency, which other central banks could lend on to their own banks. Thus monetary policy became potentially more complete for both the lending and the borrowing central bank: foreign counterparties could be reached by the former, foreign currencies could be provided by the latter. The swaps were the foreign component of an overall response to the crisis. The Great Recession had a global character and, through the swap network, central bank cooperation rose to the same level, to the point of being an episode of global monetary policy.

This exceptional development can only be understood taking into account both the extreme gravity of the crisis and the long history of central bank collaboration, which allowed them to unite to avoid a repeat of the Great Depression.

In examining central bank cooperation during the

Great Recession, I notice that while the actions of central banks in advanced economies had much in common, the ECB took a more guarded attitude than the Federal Reserve to the extension of the swaps. This Policy Contribution attempts to identify the reasons for this difference.

I also advance the thesis that central bank cooperation contributes to global economic governance, a substantially under-produced international public good (Kindleberger, 1986). However, I also conclude that the swap network should not be made permanent and be given an institutional basis to provide international lending of last resort. Swaps are a monetary policy tool and should continue to be decided on by central banks like all other monetary policy tools, to avoid impinging on the independence of central banks, which a difficult historical process has shown to be the best basis for price stability.

I also flag up the risk that the forcefulness of central banks in reacting to the crisis could engender the illusion, similar to what happened when the gold standard was abandoned, that monetary policy is some kind of panacea.

Two clear borders limit this paper. First, it will not deal with the central bank cooperation that led to European monetary union. Second, it does not address regulatory aspects, which have already been covered (Angeloni 2008).

Section 2 illustrates central bank cooperation during the Great Recession. Section 3 assesses the link between the international lender of last resort function and the swap network. Conclusions are drawn in section 4.

'During the Great Recession central banks provided liquidity in unlimited amounts, in foreign currency and to foreign banks. Through the swap network, central bank cooperation increased to the point of being an episode of global monetary policy.'

2 CENTRAL BANK COOPERATION DURING THE GREAT RECESSION

The swap network

The most visible aspect of central bank cooperation during the Great Recession was the establishment of a swap network in which one central bank granted funding in its currency to another central bank, to allow it to provide liquidity in that currency to banks located in its jurisdiction.

important. In particular the Fed decided that the European Central Bank, the Swiss National Bank, the Bank of England and the Bank of Japan could draw an unlimited amount of dollars from the swaps, up to a three month maturity. Another 10 central banks could draw sizeable amounts. However, it was not only the size and scope of the swaps that were exceptional. It was also nearly unprecedented¹ that the swaps took place in liquidity management and not in the traditional domain of exchange rate management.

Table 1 shows the size and scope of the swaps granted by the Fed, which were by far the most

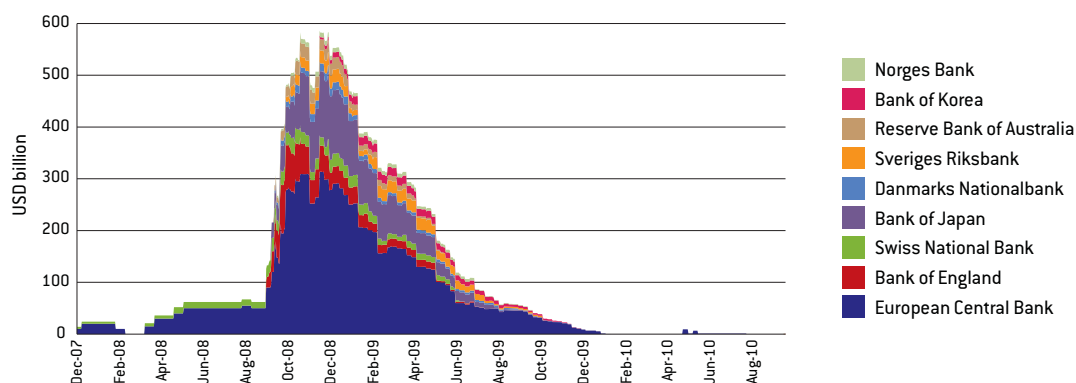
At the peak of the crisis the swaps surpassed the half trillion dollars level, with most being taken by the ECB.

Table 1: Swaps agreed by the Federal Reserve of the United States to other central banks

Central bank counterparty	Line size (US\$ bns)	Total amount extended (US\$ bns)*	Average interest rate (%)	Foreign currency	Average exchange rate	Total foreign currency amount received (bns)	Number of transactions
ECB	Unlimited	8,011.00	1.54	Euro	1.35	5,942.00	271
Bank of England	Unlimited	918.00	1.78	British pound	1.65	540.00	81
Swiss National Bank	Unlimited	465.00	1.49	Swiss franc	1.13	521.00	114
Bank of Japan	Unlimited	387.00	1.41	Japanese yen	94.56	37,494.00	35
Danmarks Nationalbank	15	72.00	1.25	Danish krone	5.58	409.00	18
Sveriges Riksbank	30	67.00	1.09	Swedish krona	7.93	535.00	10
Reserve Bank of Australia	30	53.00	1.56	Australian dollar	0.68	77.00	10
Bank of Korea	30	41.00	1.72	South Korean won	1333	56,852.00	19
Norges Bank	15	29.00	1.37	Norwegian krone	6.64	198.00	8
Banco de Mexico	30	10.00	0.73	Mexican peso	13.28	128.00	3
Bank of Canada	30	N/A	N/A	Canadian dollar	N/A	N/A	N/A

Source: Bruegel based on Goldberg *et al* (2010). Note: * The 'Total amount extended' is the accumulated funds drawn from the Fed by a foreign central bank between 17 December 2007 and 13 July 2010.

Figure 1: Fed swap amounts outstanding, by foreign central bank



Source: Board of Governors of the Federal Reserve System (daily data), updated from Goldberg *et al* (2010). Note: Figure 1 ends in October 2010. The swap arrangements of the Fed with the Bank of Canada, the Bank of England, the ECB, and the Swiss National Bank are still in place through March, 2014, but the amounts drawn in the recent period are too small to be represented.

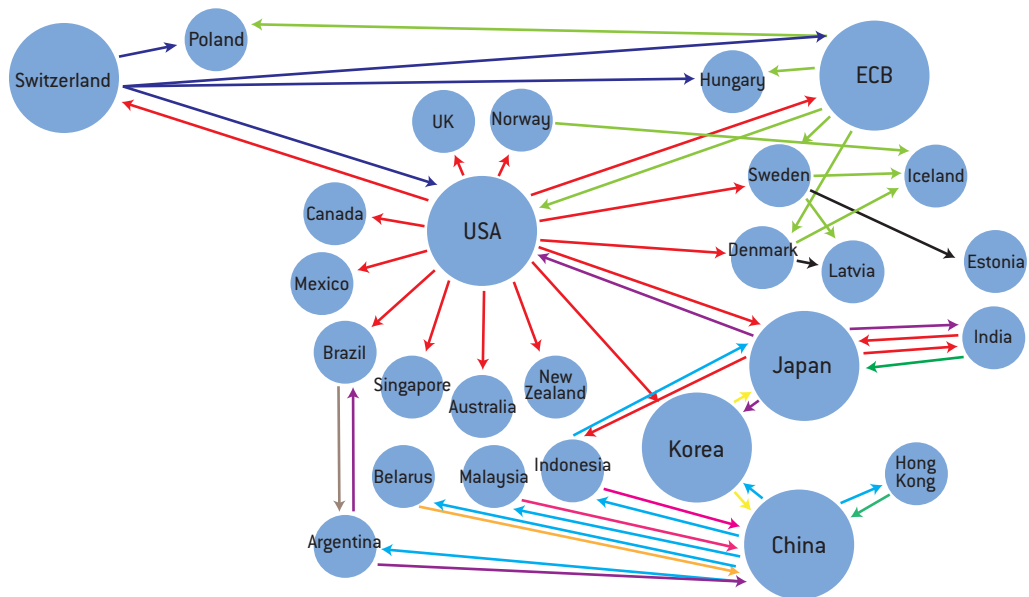
1. With the limited exception of the swaps established after the 11 September 2001 attacks in the United States.

The swaps granted by the Fed were the most prominent, but, as Figure 2 shows, other central banks also established swaps, thus making the network genuinely global. In addition, the swaps between the Fed, the ECB, the Bank of Japan, the Bank of England, the Bank of Canada and the Swiss National Bank were reciprocal, with each central bank making its currency potentially available to the other central banks².

The main reason for the swaps granted by the Fed was the unprecedented illiquidity in the foreign exchange swap market, combined with the substantial gap between lending and stable liabilities of non-US banks, in particular European ones, in dollars³. Until the failure of Lehman Brothers, non-US banks could fill much of this gap

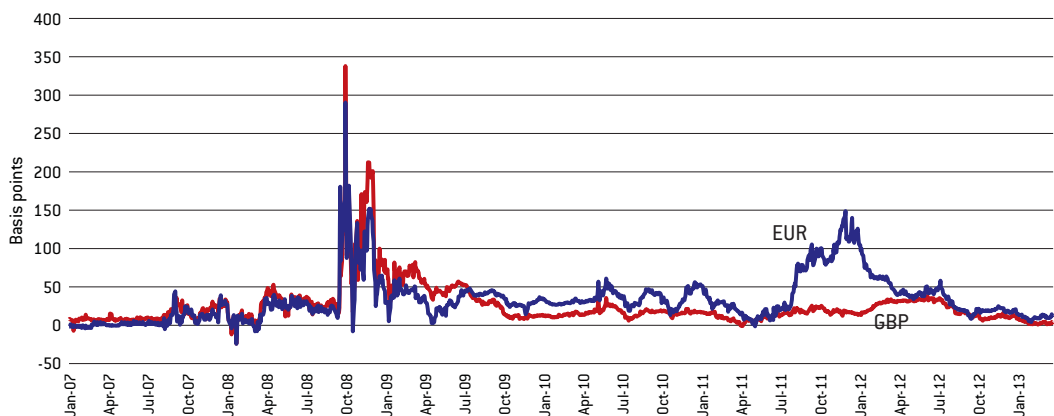
by exchanging their national currencies in the swap market against dollars. The price they paid for borrowing indirectly through the foreign exchange swap market was very close to what they paid when borrowing directly on the Libor market. Indeed, covered interest parity, whereby the interest rate differential between two currencies is equal to the forward discount or premium of one currency against the other, has been one of the more robust empirical regularities in international finance. With the crisis, the foreign exchange swap market dried up and borrowing dollars via that route became much more difficult. Figure 3 shows that the cost differential between the direct and the indirect borrowing of dollars moved from around zero to a peak of a few hundred basis points for the euro and the pound

Figure 2: Foreign currency-swap arrangements between central banks



Source: Bruegel reproduced from Allen and Moessner (2010).

Figure 3: Euro and sterling, covered interest rate differential against the US\$



Source: Datastream and Bruegel.

2. These mutual swap arrangements are not reflected in the figure, but there should be arrows between the relevant central banks as well. These swap lines were authorised as a contingency measure. To date, there has been no drawing on them.

3. According to McGuire and von Peter (2009): "A lower-bound estimate of banks' funding gap, measured as the net amount of US dollars channelled to non-banks, shows that the major European banks' funding needs were substantial (\$1.1–1.3 trillion by mid-2007)." They added that: "Until the onset of the crisis, European banks had met this need by tapping the interbank market (\$400 billion) and by borrowing from central banks (\$380 billion), and used FX swaps (\$800 billion) to convert (primarily) domestic currency funding into dollars."

sterling. The issue was not merely one of cost. For some European banks, the foreign exchange swap market was closed, whatever price they would have been willing to pay. Obtaining dollars on the spot market, which remained liquid, was not a practical alternative, as it would have created, given the size of the gap to be filled, unsustainable exchange risk for commercial banks and destabilising appreciation pressure on the dollar.

The swap network: an interpretation

While lending among central banks has a long history, the swap network established in 2007 nevertheless represented a quantum leap in central bank cooperation⁴.

The unprecedented nature of the swaps also derived from the fact that they were mostly the international extension of domestic 'non-standard' monetary policy measures⁵. Indeed the swaps granted by the Fed extended the Term Auction Facility (TAF)⁶ beyond the borders of the US (Baba and Packer, 2009). Essentially, during the crisis the Fed, the ECB, the Bank of Japan, the Bank of England and the Swiss National Bank did something that is normally anathema: giving up control over their balance sheets, because of both domestic liquidity measures and the swaps. For those with a monetarist inclination, believing there is a constant or easy-to-forecast money multiplier and a stable money demand function, this heresy can be brought into sharper relief by noting that central banks no longer controlled the growth of the monetary base. Of course, the swaps were priced so that they would not attract banks in normal circumstances, and thus would have an effect on central bank balance sheets only in crisis conditions. Still, given the crisis, the pricing was convenient for banks, which indeed drew very large amounts of liquidity from central banks.

As mentioned, the swaps were the international dimension of non-standard monetary policy. They extended the counterparties that the issuing central bank could access: in a way, the ECB acted as the thirteenth District Bank of the Fed⁷. In addition, the swaps allowed a central bank to issue central bank liquidity in a currency other than its own. So monetary policy became potentially more complete for both lending and

borrowing central banks (foreign counterparties for one, foreign currencies for the other). The Great Recession had a global character and central bank action rose to the same level in order to provide an effective response to it.

The swap lines can be understood within an overall interpretation of the action of central banks during the Great Recession: they complemented the impaired intermediation of the market by bringing part of it onto their books, to avoid even more extended damage to the economy⁸. This implied moving from the provision of the net amount of liquidity necessary to keep interest rates at the desired level to carrying out proper financial intermediation. This implied, in turn, moving into areas normally outside the sphere of central banks. This explains why the ECB extended its operations from a maximum of three months to three years and broadened it to other currencies.

The extended intermediation of central banks was made possible by the fact that there were no inflationary risks from the loss of control of the balance sheet. In particular, the textbook chain of causation from base money to wider money aggregates, through the money multiplier, and then to inflation, through the money demand function, was totally broken during the crisis⁹. Had there been inflationary risks, central banks would have not been able to pursue such 'non-standard' measures, to remain faithful to their mandates.

While the swap lines did not bring inflationary risk, they inevitably created some moral hazard. Banks were in a vulnerable situation because they were filling the structural gap between assets and liabilities in foreign currency with short-term funding. When this vulnerability transformed itself into a fully-fledged crisis, central banks softened the crisis' impact by providing the foreign currency funding that markets were no longer providing. Thus banks suffered only partially the consequences of their decisions. Central banks had to accept a degree of moral hazard in order to avoid major damage to the economy, but they priced the swaps in a way that this negative outcome was attenuated. In fact, the interest rate on the swaps was lower than the foreign exchange swap market indicated, but higher than what would have prevailed in normal circumstances¹⁰.

4. Caruana (2012) gave an historical slant to the assessment observing that, "the extension of such swaps in unlimited amounts represents a turn in central bank cooperation that the founders of the BIS would have found unimaginable." A similar point was made by Niall Ferguson at a seminar sponsored by the Bank of Japan and the International Monetary Fund in Tokyo on 14 October 2012.

5. This is the approach chosen by Lenza *et al* (2010) to analyse the effects of non-standard measures.

6. Under the TAF, the Federal Reserve auctioned term funds to banks.

7. Allen and Moessner (2010) note that: "..., swap arrangements were used during the credit crisis as a means of providing currency-specific liquidity to banks outside the home territory of the currency concerned, thus, in effect, widening the geographical reach of national open-market operations."

8. As argued in Papadia and Välimäki (2011).

9. See the Bruegel blog by Francesco Papadia and Giuseppe Daluiso, of 25 March 2013.

10. Specifically the banks had to pay initially 100 and then 50 basis points over the relevant Overnight Index Swap rate.

Thus, albeit to a limited extent, banks were penalised for having put themselves in a dangerous situation.

The size of the Fed's balance sheet in proportion to GDP reached, during the Great Recession, the same level as in the 1940s, when there was absolute fiscal dominance, and this hints that central banks also paid a price in terms of getting closer to a fiscal function. The price, again, had to be paid, or the economy would have suffered even more.

These observations apply to all central banks in advanced economies. However, one can detect a difference between the Fed and the ECB on the extension of the swaps. Of course, the clearly central position of the Fed in the swap network (Figure 2) reflects the fact that the dollar was the currency most used by banks in foreign currency business. One may, however, ask whether the swaps agreed by the ECB were commensurate with the role of the euro as second most important international currency¹¹. Two indicators shed light on this question.

The first is the stock of central bank reserves denominated in euro (\$1.4 trillion at the end of 2011 (ECB, 2012)) as a proportion (40 percent) of the amount denominated in dollars (\$3.5 trillion)¹², and to compare this proportion to the swaps granted by the ECB relative to the swaps granted by the Fed. This comparison indicates that the ECB's swaps (excluding the never-used reciprocal lines extended to the Fed, the Bank of England, the Swiss National Bank and the Bank of Japan) were tiny relative to the Fed's. The ECB's swaps are measured in billions instead of the Fed's hundreds of billions, and were far from the 40 percent represented by global euro reserves relative to dollar reserves.

The second benchmark, which leads to a similar conclusion, is the share of the two currencies in foreign exchange turnover: in 2010, the share of the euro, 39 percent, was a bit lower than a half of that of the dollar, around 85 percent. In conclusion, the swaps extended by the ECB were small in relation to those of the Fed, even taking into account the different importance of the two currencies in global financial markets. Thus, while

other factors should be considered, the conclusion that the ECB had a more reserved attitude than the Fed in extending the swaps is confirmed. ECB reticence was likely based on greater concerns about moral hazard and a more conservative approach towards the expansion of its balance sheet.

Another factor, of more political nature, might have influenced the ECB: the absence of a government, which could give backing to the central bank when embarking on exceptional operations, bordering on foreign policy. This is a specific aspect of a broader, and controversial, issue: what are the consequences of the fact that the ECB, a fully-fledged federal institution, does not have as a counterparty a fully-fledged federal executive? Is this positive, because it enhances central bank independence, or is it a weakness, because a strong and independent central bank needs a strong government partner? The former view transforms the principle of central bank independence into one of separation, according to which the central bank works better the weaker the institutional setting in which it operates. This view also assumes that monetary issues can be fully separated from political considerations. The weakness of this view can be seen directly in the case of the swaps: it was politically much easier for the Fed to grant a swap line to Brazil and Mexico than, for example, to Argentina and Venezuela, because the general relationship with the former two countries was better than with the latter. Correspondingly, it would have been easier for the ECB to deal with the difficult case of Hungary, which had an attitude of defiance towards the European Union, if it would have had a fully-fledged European Treasury to talk to. My view is that checks and balances should also apply to central banks and that the ECB could have been more forthcoming if it could have relied on a strong Treasury partner.

An episode of global monetary policy?

Overall, the size and the scope of the swap network support the view that it can be seen as an episode of global monetary policy. The joint reduction of interest rates by 50 basis points decided on by six central banks, including the Fed, the ECB, the Bank of Japan and the Bank of

11. The ECB does not publish data on the size of the swap lines. However, all available information indicates that they were of the order of a few billion euro.

12. Only the amount of reserves whose composition is disclosed can be considered.

England, to react to the acute dislocation following the demise of Lehman Brothers, matched on the price side, albeit on a more exceptional basis, the more long lasting cooperation on the quantitative side¹³.

Of course, the global monetary measures taken during the Great Recession were possible only in the special circumstances that prevailed at that time: economic and financial conditions were so acutely difficult that they acquired a global character and required a global response, trumping any national consideration. In normal circumstances, central bank cooperation will not need to rise again to the level of a common policy response. Cooperation will, however, remain essential since crises are generated by a sequence of choices, including monetary ones, during seemingly tranquil times.

The final history of the action of central banks during the Great Recession still has to be written – bearing in mind that discussions are still continuing about the responsibilities of the Fed during the Great Depression, more than 80 year ago. Still, the evidence collected so far is clearly that joint action during the Great Recession helped at least to shorten the crisis or relieve its effects (Klyuev *et al* 2009).

On the swap lines, the prudent conclusions of Goldberg *et al* (2010) are an effective summary¹⁴: “We conclude that the CB dollar swap facilities are an important part of a toolbox for dealing with systemic liquidity disruptions.” (Goldberg *et al*, page 1). In particular they report from the analyses of McAndrews *et al* (2008): “Noteworthy for our discussion of the central bank swap facilities is that, McAndrews, Sarkar and Wang distinguish between domestic TAF and international (swap facility) announcements in econometric exercises. The announcements along the international dimension of the liquidity facilities were the dominant drivers of the overall announcement effects, both quantitatively and in terms of statistical significance.”

3 THE SWAP NETWORK AND THE ISSUE OF THE GLOBAL LENDER OF LAST RESORT

Inevitably, the establishment of the swaps rekindled the discussion about the need for an international lender of last resort, a discussion with a long history¹⁵.

The two basic reasons establishing the need for an international lender of last resort are the same as in a domestic setting: first, the possibility of alternating ‘good’ and ‘bad’ equilibria, with sudden moves from over-abundant to scarce liquidity¹⁶; second, the collective action problem, whereby a multitude of independent agents cannot coordinate to do something (eg not withdrawing bank deposits before everybody else) that would be beneficial for both the lenders and the borrowers. Empirically, the unending series of crises narrated by Kindleberger and Aliber (2011) and measured by Reinhart and Rogoff (2008) proves that crises are as much a characteristic of the international as of the domestic landscape.

While the need for an international lender of last resort has been well demonstrated, the answer to the question of whether the swap network between central banks should be made permanent, receive an institutional basis and fulfil the function of international lender of last resort is more controversial¹⁷.

There are three arguments in favour of transforming the swap network into an institutional set-up, taking on the function of international lender of last resort:

- 1 Central banks create liquidity at will, therefore their action can be very powerful;
- 2 The swap network exists, is very large, functioned effectively and it is therefore natural to build on it;
- 3 If central banks assured protection against liquidity shocks through a permanent, large, and automatic swap network, the need for self-assurance by means of very large international reserves would be obviated.

13. The interpretation that monetary policy took a global dimension at the peak of the crisis is consistent with the assessment of Vice Chairman of the Federal Reserve D. Kohn, as reported by Allen and Moessner (2010, Page 9) and by Friedman and Kuttner (2011).

14. The 2009 IMF Global Financial Stability Report and Allen and Moessner (2010) reach similar conclusions.

15. Sachs (1995), Fischer (1999), Giannini (1999), Borio and Toniolo (2008), Obstfeld (2009), Allen and Moessner (2010), Pickford (2011) and Truman (2011), Kindleberger and Aliber (2011).

16. Buiters and Rahbari (2012) argue that the risk of switches from good to bad equilibrium is a serious one for a sovereign given the illiquidity of most of its assets and the maturity transformation that characterises its balance sheet.

17. Some have expressed themselves in favour (Pickford 2011) or against (Allen and Moessner 2010) this change. Truman (in his 2011 paper) and in the comment attached to this paper builds on the experience of the Bretton Woods swaps and elaborates on a structure in which the swaps would be activated by the converging will of the relevant central banks and, possibly, the IMF. Fischer (1999), Obstfeld (2009), Sachs (1995) supported the attribution of the function of international lender of last resort to the IMF.

‘While the need for an international lender of last resort has been demonstrated, whether the swap network between central banks should be made permanent, receive an institutional basis and fulfil the function of international lender of last resort is more controversial.’

There are four arguments against this solution:

- 1 The swaps were extraordinary measures, taken in very special circumstances but within the mandate of central banks as components of overall monetary policy, if they were institutionalised they would, directly or indirectly, not be decided in full independence by the relevant central banks;
- 2 Central banks are not in a good position to take the measures needed to attenuate the moral hazard problems that a lender of last resort function inevitably implies;
- 3 In analogy with what happens at domestic level, international lending of last resort requires (Sachs, 1995; Giannini, 1999), something akin to bankruptcy procedures, which are alien to the responsibilities of central banks and difficult to establish in an international setting;
- 4 Central banks managed to create the swap network very expeditiously during the Great Recession, thus no special, pre-established setup is necessary.

The first argument against institutionalising the swap network is clearly the most important, so much that the overall conclusion depends on its validity. This validity depends, in turn, on the position one takes on central bank independence. I have already discussed the issue of central bank independence and, while I believe this should not mean isolation, it implies full control of interest rates and the balance sheet. Whether a permanent and institutionalised swap network would be inconsistent with such full control may depend on its fine print. Indeed there is a continuum of arrangements between the present system, in which central banks independently decide to enter into swap agreements, and one in which other bodies – governments or the IMF – could decide on swap agreements. An intermediate setup is the one developed by Truman (2011). The preferable approach is to maintain the present situation and treat swaps as any other monetary policy instrument. A special decision-making procedure, within an institutionalised setup, could lead to central banks being pressured to extend swaps. This could weaken the ‘monetary technology’ that over the decades has given the best results in managing a fiat currency: an independent central bank devoted to price stability.

In conclusion, the disadvantages of attributing to a permanent and institutionalised central bank swaps network the function of international lender of last resort are greater than the advantages. This does not at all imply that the swaps, which assured lending of last resort during the Great Recession, were a mistake. They were, as argued above, a significant component of the overall action that helped avoid a repeat of the Great Depression. Neither does this conclusion exclude that central banks will continue, as they have done for centuries, to lend money to each other, also in a lender of last resort mode. Finally, it does not mean that the International Monetary Fund could not contribute to the task of providing an international lender of last resort. But the decision to grant swap lines to other central banks, and more generally to lend them money, also when this can be configured as lending of last resort, must continue to be taken independently by central banks, in accordance with their overall monetary policy remits. In other words central banks must be fully responsible for controlling their balance sheets also when, in exceptional circumstances, they decide to cede control of them.

One may question the validity of this conclusion in a European Union proceeding to a banking union. Should the ECB make swaps available to central banks of non-euro area EU members that participate in the banking union? The argument above on the need to preserve the ability of the central bank to control its balance sheet applies here as well: banking union cannot rely on ECB funding, which must be decided in view of its primary objective of price stability.

If anything, the importance of central bank independence should be reiterated because the recourse to non-standard measures, including the swaps network, may lead to requests for similar interventions when this would not be justified by threats to the economy. More generally, public opinion and governments have seen central banks doing things nobody thought they could do. It is ironic, but the more central banks are successful in containing the crisis, the graver is the risk that they are overburdened with tasks. This is, on a smaller scale, analogous to what happened with the abandonment of the gold standard: nobody (or nearly nobody) thought this

was possible and when it happened it was a sort of epiphany, creating the illusion that monetary policy could achieve nearly any macroeconomic goal. It took several decades, much inflation and the invention of independent central banks devoted to price stability, for that illusion to be quashed. The link to gold, which was inefficient and only insured price stability over the very long run, was substituted by a link to the general price level, moving, so to say, from a gold to a consumer price index standard. Consistently, once central banks were subjugated to the permanent responsibility to pursue price stability, additional instructions were regarded as either redundant, when confirming the price stability objective, or contradictory, if they were not.

In a way, stressing the limits of monetary policy is restating the obvious: monetary policy is a powerful tool to steer the economy and to counter its intrinsic instability. It is not, however, an omnipotent tool and its over-use can have serious consequences. One can indeed go a step further: the more parsimonious a central bank is in normal times in achieving its objectives, the more can it be bold during crises without engendering inflationary risks.

4 CONCLUSIONS

Central bank cooperation will continue to be an important component of global governance. History shows that central banks have long cooperated and can quickly act when they see the need to do it. This is what they did during the Great Recession, when they cooperated in the taking of 'non-standard measures', including the granting of swap lines. Cooperation was so intense during

the most acute phases of the crisis that it was, in effect, a case of global monetary policy action.

International lending of last resort squarely falls within central banks' mandate, particularly when the source of the problem is illiquidity. However, the preservation of the 'monetary technology' that the most appropriate basis for the management of a fiat currency is an independent central bank devoted to the primary objective of price stability, requires that any action in the area of international lending of last resort be decided independently, like any other policy action, by the central banks involved. This excludes making the central bank swap network permanent and giving it an institutional character. Furthermore, there is no particular reason why international lending of last resort should be a monopoly of central banks. In particular, the International Monetary Fund could also play a role in this area, especially when it is not obvious that lending of last resort is needed because of a liquidity crisis deriving from the appearance of a 'bad' equilibrium or of a collective-action problem.

Overall, the prescription not to overburden monetary policy holds at international as well as at domestic level. This prescription is particularly important after central banks have shown during the crisis their ability to do things that nobody thought they were capable of doing: providing liquidity beyond their borders and in a foreign currency and expanding, over a short period, their balance sheets by a factor of three or four. Demonstrating unexpected abilities should not feed illusions that central banks can do more than they actually can.

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COMMENTS ON 'CENTRAL BANK COOPERATION DURING THE GREAT RECESSION'

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This Policy Contribution is a thorough review of central bank cooperation during the great recession based on the earlier history of such cooperation. I have no fundamental problem with the basic framework and agree with many of the paper's observations. I will focus my comments on three principal areas of disagreement.

First, I think history will conclude that the recent era of central bank insulation/isolation from governments was an unsuccessful institutional arrangement. The paper is right that a deal was made: central bank independence with a narrow focus on price stability but in exchange the central bank was otherwise cut off from economic and financial responsibilities. This was an unrealistic and ultimately costly bargain for both parties to the bargain most tellingly in the euro area. The governments lost partners, the finance ministries in particular. Finance ministries, in general, share most of the philosophical orientation and cultural values of central banks. For their part, the central banks were in a never-never land of non-responsibility.

When the crunch came, the governments turned to the central banks. That was where the money was and that was where much of the expertise lay. Central banks had left the theatre, but they were dragged back onto centre stage. That paradigm is likely to persist regardless of protests from central bankers.

The paper makes this point indirectly by noting the ECB's lack of a single politically responsible counterparty, in contrast with the Federal Reserve and other national central banks outside the euro area. It is also the case that the Federal Reserve had a longer history than the ECB and, therefore, more credibility to draw upon when it adopted non-standard measures.

Second, on the topic of central banks as international lenders of last resort, I strongly differ

with the arguments in the paper which to my mind are naïve and excessively defensive.

To start with, we have had a permanent global swap network. It was centred on the Federal Reserve. It was established in 1962 and lasted a quarter of a century until 1998. That structure's permanence did not compromise central bank independence. The key point about that history is not just that the structure was in place, but also that use of it required a request by central bank A and acceptance of that request by central bank B. Thus, central bank B retained almost complete control. To argue that the arrangements put in place during the Great Recession could easily be replicated if the need were to arise ignores the fact that even in central banks there is a tendency to forget about tools that are never used. The global swap network was able to be cranked up in 2008 because it had only been wound down in 1998. It also had been resurrected for potential use at the time of the millennium change-over, and it was used in the wake of the 11 September 2001 attack. But substantial inertia had to be overcome even with this recent history before the structure could be re-employed in 2008.

My proposals for a global swap network (Truman, 2011) build on that earlier structure via three keys. Those three keys guarantee that there would be no automaticity. One key would be held by the IMF, though that is not necessary; it would declare a global liquidity need. The second key would be held by the central banks, which had previously set up the swap network based on membership criteria of their own collective design. The central banks as a group would agree or disagree with the IMF declaration of a global liquidity need. The third key would be held by the individual central banks. Each member of the pair would have to agree to an activation of a particular line. Of course, nothing in this approach would rule out *ad hoc* swap arrangements.

Moral hazard concerns associated with such a global swap network could be addressed in many ways. One approach would be via the criteria for membership in the network. The analogy would be to banks that, in some countries, are granted discretionary access to the discount window and that access, itself, is linked to supervision of their

condition. Moreover, the moral hazard associated with fire departments is not reduced by pretending the firehouse does not exist. Central banks should be prepared to dispense liquidity because doing so gives confidence to markets. Central banks should have more confidence in their judgment than to be afraid of being asked to do so.

Contrary to what is argued in the paper, the IMF itself is not a viable alternative to a global swap network among central banks because no country would want to put, say, \$1 trillion openly at the IMF's disposal (in 2008-09 the maximum outstanding was more than \$600 billion, and next time it will be at least double that amount). Emergency liquidity for balance-sheet support requires the use of leverage. The IMF cannot leverage itself. Central banks create money and, therefore, can leverage themselves. As an alternative to my three-key approach, one could adopt, as I have also suggested, a more IMF-centric approach in which central banks have swap lines with the IMF that could be used by the IMF with the consent of the central bank (and its government) in a global financial meltdown to advance funds to governments and central banks that need to support their financial institutions.

On the third issue, central banks and control of their balance sheets in the global financial crisis, the argument that central banks extraordinarily gave up control of their balance sheets is overstated. Central banks decided to open up their

balance sheets. As the paper notes, if conditions were different, for example with higher inflation, the central banks might not have done so (indeed, the ECB used its standard measures to raise its policy interest rate in the first year of the crisis out of a (misplaced) concern about inflation). The core issue is not whether central banks are 'able' to adopt these non-standard measures, but whether they are 'willing' to do so though always in a manner that is consistent with their mandates.

As far as moral hazard is concerned in this context, I would note that even standard monetary policy measures involve an element of moral hazard. Central banks respond to economic and financial conditions when they change their policies by tightening and easing. They build credibility and anchor expectations through their predictable reaction functions. In the process, they contribute to a moral hazard built on expectations about their actions. And, of course, any use of the discount window involves opening up the balance sheet of the central bank, which in principle has the discretion to offset or not the impact on the monetary base.

My disagreements aside, I agree with the paper's view that we do not have a final verdict on the role of central banks in the Great Recession. We still debate this issue with respect to the Great Depression, when, in fact, many of the powers that the Federal Reserve used in the Great Recession were put on the books.

COMMENT ON 'CENTRAL BANK COOPERATION DURING THE GREAT RECESSION'

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During the recent crisis, international cooperation among central banks played an important role. Not only were there occasional episodes of coordination in monetary policy rate adjustments, but also a network of foreign exchange swap facilities was established. These swap arrangements helped facilitate the ongoing financing of dollar-

based assets around the world during a period of acute stress and were critical in restoring market function following the failure of Lehman Brothers in the fall of 2008. Francesco Papadia's paper does an exemplary job defining the key characteristics of central bank cooperation, with close attention to the period of the crisis. This is a very important subject both then and now. Because there is no well-defined institutional entity empowered to act as an international lender of last resort to financial intermediaries, central banks around the world must be able to coordinate closely so that there can be a viable, credible backstop on a global basis.