

From bazooka to backstop: the political economy of standing swap facilities

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The permanent international lender of last resort consists of a swap line network between six major central banks (C6), centring around the US Federal Reserve. Arguably, this network is a solution to a long-debated problem as it provides public emergency liquidity provision to the world's largest financial market, the Eurodollar market. Drawing on exclusive interviews with monetary technocrats as well as a textual analysis of Federal Open Market Committee meeting transcripts over the course of 14 years, we reconstruct how this facility came into being. Building on [Kalyanpur and Newman \(2017\)](#) and [Braun \(2015\)](#), we develop an interpretive framework of bricolage to contextualise its formation: in times of crisis, central bankers rely on retrospection, experimentation and creative re-deployment to develop their tools. In non-crisis times, however, the tools that prevail are those that offer what we call 'bureaucratic familiarity': the C6 swap line network became a permanent feature of international finance because technocrats had got used to it.

Key words: Standing swap facilities, Lender of last resort, International monetary policy, Central bank cooperation, Monetary technocrats
JEL classification: E52, E58, F5

I would like to put on the table a request for authorization for swap lines. I prefer not to put a limit on it, so I know I've got my own bazooka here.

Ben Bernanke (FOMC, 2008)

Throughout the experience with the crisis, people became more familiar and comfortable with [swap lines] and were able to say: this is necessary.

Interviewee 16 (Federal Reserve NYC, 2019)

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1. Introduction

The Great Financial Crisis (GFC) of 2007/08 was global. While extraordinary measures by central banks backstopped banking systems within their domestic jurisdictions, bilateral central bank liquidity swap lines put a floor under funding stress in offshore, that is, Eurodollar, markets (Mehrling, 2015; Tooze, 2018). In 2013, the US Federal Reserve, together with its partners, announced that it had made this network of unlimited, reciprocal swap lines a permanent measure. The resulting facility between the six major central banks (C6) thus serves as an international lender of last resort (LoLR) (Mehrling, 2021) to a large proportion of Eurodollar markets, addressing a shortcoming that had been lamented as early as 1960. As an international LoLR facility, it has been used in times of global market stress, not least during the onset of the Covid pandemic in 2020 and the March 2023 banking stress that saw the demise of Credit Suisse.

Central banks have backstopped central banks in other jurisdictions on an *ad hoc* basis on a number of occasions since the beginning of the nineteenth century (Clarke, 1967; Kindleberger and Aliber, 2005; Schenk and McCauley, 2020). The twentieth century has also seen the installation of permanent domestic LoLR at modern central banks (Calomiris *et al.*, 2016). A permanent, international LoLR facility was never established, however, even though the lack of such a facility was lamented repeatedly (Kapstein, 1994; Fischer, 1999; Bordo *et al.*, 2015). The C6 swap line network thus resembles a solution to a long-debated problem. Many have argued that this feature adds to the ‘global financial safety net’ (Denbee *et al.*, 2017; Weder di Mauro and Zettelmeyer, 2017). This article explains how the temporary swap lines that were opened during the GFC ultimately developed into a permanent, standing facility among the C6 in 2013.

In order to do so, our analysis draws on the anthropological concept of bricolage to engage with central bankers who both intervene in and are constrained by markets (Braun, 2018). As a concept of institutional design, bricolage emphasises a means-based process in which policymakers use the tools available and reshape them according to past experience. By introducing the notion of ‘bureaucratic familiarity’, we expand this concept in International Relations (IR) to explain at what point in time policymakers change their institutional progress and opt for introducing a permanent feature to their design. This article empirically builds this concept. We trace the process (Checkel, 2006; Collier, 2011) of crisis and non-crisis facility decision-making among central bankers in Federal Open Market Committee (FOMC) meetings in order to reconstruct the emergence of the C6 liquidity swap lines. The case of the C6 liquidity swap line network offers ideal grounds to test the concept of bricolage because it follows from 40+ years of practitioner experience and experimentation. It allows us to evaluate precisely how the institutional design came about, and where the process was situated. By providing this empirical evidence, we offer a comprehensive reading of the C6 swap line network from an International Political Economy (IPE) perspective. We further conduct expert interviews with monetary technocrats, central bank policymakers and theorists of monetary policy that allow us to deepen the analysis and broaden the empirical basis. We find that during crises, central bankers act as bricoleurs in that they (i) are retrospective, (ii) experiment with given means and (iii) creatively re-deploy them. However, the use of new tools creates path dependencies that leads technocrats to preserve previously ‘shelved’ tools once they gain familiarity

with them. Finally, we are able to offer an explanation of the decision to make the swap line network permanent¹ in 2013 during calm financial markets by referring to what we call ‘bureaucratic familiarity’: that is, forward-looking by judging from past experience; when bricoleurs become familiar with certain tools they have used in the past and the perceived cost of abandoning that tool in the future becomes too high, they preserve it at a non-random point in time. Our conceptual framework thus allows for future predictions in the evolution of the central bank toolkit.

1.1 Related literature

Our study relates to at least three different strands of literature. First, we contribute to the literature in IPE and economics that engages with central banks’ standing swap facilities. To date, it analyses swap lines as a tool for offshore lending of last resort (Bahaj and Reis, 2022) and liquidity provision (Mehrling, 2021) or offshore governance (Binder, 2019). Our results do not contradict these studies, but provide a more nuanced understanding and a different account on the evolution of swap lines.

Second, we join existing literature on central bank cooperation during the GFC. In particular, most papers are divided along the fault line of agency versus structure in IR. While some emphasise the agency of the Fed during and after the crisis (McDowell, 2017; Sahasrabudde, 2019; Schwartz, 2019), others argue that the integrated nature of global financial markets constrained US policymakers (Hardie and Maxfield, 2016). Our argument goes beyond this dichotomy and understands central bankers as agents in their own right, operating within the constraints of financial markets.

Finally, we contribute literature engaging with the role of bricolage. We argue that the design process of the C6 liquidity swap line network followed a ‘design by bricolage’. This theorisation refers to the work of the anthropologist Lévi-Strauss (1966), who understands the ‘bricoleur’ as constrained by the tools available to her, but able to creatively redeploy them. The bricoleur can use one tool, re-combine it with another and redeploy this newly created tool. Existing formalisations of ‘bricolage’ as a process of institutional design in IR (Cleaver, 2002; Engelen *et al.*, 2010; Kalyanpur and Newman, 2017) stress the retrospective re-deployment of existing tools within the process. Building on this work, we extend this interpretive framework by explaining why monetary technocrats chose to add permanence to their design. Taking on the bricoleur’s perspective, we ask: what are the circumstances that lead the craftswoman ‘to put tape to her work’, that is, ‘to make it stick?’ Drawing on the notion of ‘bureaucratic familiarity’, we argue that a tool made permanent when taking it back would be more costly.

1.2 Roadmap

The remainder of this paper proceeds as follows. Section 2 offers an introduction to swap line genealogy and lays out the necessity for a public LoLR to offshore dollar markets. Section 3 provides the empirical analysis, and data description as well as a theoretical foundation for our argument. Section 4 discusses the perpetuation of standing swap facilities in terms of a design by bricolage and introduces the notion of ‘bureaucratic familiarity’. Section 5 concludes.

¹ That is, to introduce an international LoLR.

2. C6 swap lines: History and essentials

The US Dollar is the international reserve currency. Dollar markets can be onshore, that is, connected to the Federal Reserve balance sheet providing a public backstop, or offshore, that is., trading in dollars but possibly not connected to a US bank (Avdjiev *et al.*, 2015). When faced with funding problems, onshore banks may turn to the Fed and ask for liquidity. Eurodollar (i.e. offshore dollar) banks facing dollar liquidity mismatches, however, typically did not have this kind of backstop at their respective central bank since US dollars can only be issued by the Fed. Remarkably, private offshore US Dollar issuance by volume is even larger than onshore US Dollar issuance (Murau and van't Klooster, 2022). The following section lays out the need for, and relevance of, a public backstop for these markets.

2.1 The Eurodollar market

Global trade is facilitated by an intricate web of assets, loans and hedges. These trades are typically financed through short-term borrowing of currency or currency-like instruments, including sovereign bonds. To illustrate this monetary interconnectedness, consider the following example (as common transaction expressed in terms of balance sheet relations). When following the money involved in the payments received for the process of shipping 100 Million barrels of crude oil from Russia to Germany, various things may be uncovered. On the one hand, it may be Euro-denominated bonds that finance the tanker. The commodity exposure of the financing banks' balance sheets, on the other hand, may be hedged by dollar-denominated derivative trades. And yet another party involved could, for instance, be a Japanese pension fund with hedged exchange-traded funds exposure to the importer's share price.

This example points towards the complicated, yet very common chain of global balance sheets that interconnect in different time zones, maturity terms and legal requirements. Notably, these trades are characterised by short-term debt financed by currency borrowing, as currency is pledged as a backstop of last resort. In other words, if any of these balance sheets are unable to refinance their liabilities in the short-term, their currency collateral will suffer.

If we understand the essence of banking as maturity transformation, the associated liquidity risks loom large. Given that maturity risk is notoriously difficult to hedge *ex ante* (McGuire and von Peter, 2009), mismatches are prone to bank runs (Diamond and Dybvig, 1983; Checkel, 2006). The '*Art of Central Banking*' (Hawtrey, 1932) is to prevent these balance sheet squeezes from getting too large and cause financial crises; central banks and deposit insurances thus provide public backstops. As pointed out most prominently by the former Bank of England director and foreign exchange market specialist Sir George Bolton (1963, cited in Einzig (1977), p. 49), however, the non-existence of such a backstop for the offshore dollar market was striking: '*[B]anks participating in the market have to fend for themselves and cannot have automatic recourse to the Central Bank for assistance in case of an awkward stringency*'.

2.2 C6 swap lines

Liquidity emergency situations due to such funding stress in offshore dollar markets began to unfold from August 2007 onward (see Figure 3). As estimated *ex post*, the dollar reserves held by central banks would not have been sufficient to contain the crisis

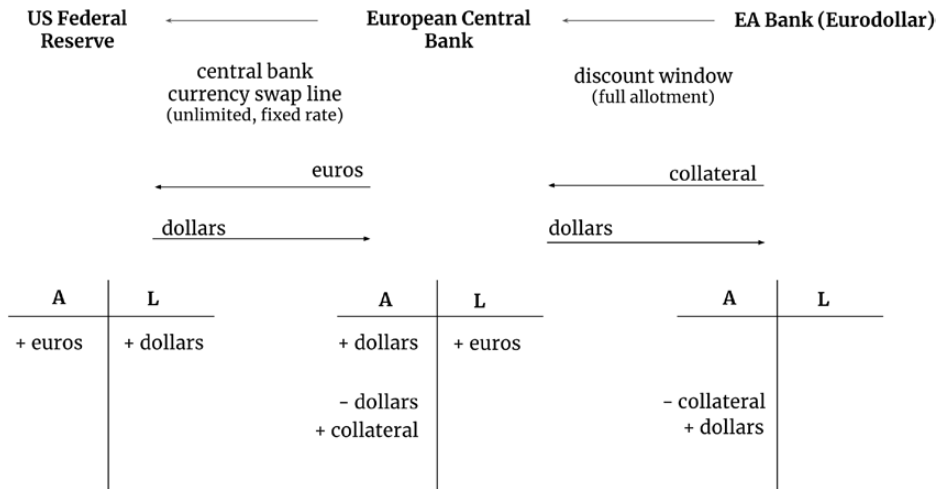


Fig. 1. Example of balance sheet depiction.

Notes: Figure depicts the dollar-borrowing process of a Eurodollar bank through the ECB. The depiction is a stylised version of respective balance sheets and only shows the borrowing step without the principal repayment or interest. Own depiction.

(Obstfeld *et al.*, 2009; Allen and Moessner, 2010). In a first *ad hoc* measure in December 2007, the Fed extended liquidity swap lines to the European Central Bank (ECB) and the Swiss National Bank (SNB). The facility was subsequently increased in volume and expanded to a total of 14 other central banks, including four Emerging Market Economies (EME). This paper examines the network of six major central banks² that announced bilateral standing and unlimited swap lines with each other in 2013.³

In their simplest form, the central bank liquidity swap lines now in place amongst the C6 may be understood as discount window borrowing of a foreign central bank that provides its own currency as collateral. The lending/borrowing occurs in two stages. First, the foreign central bank borrows the allotted amount of dollars and puts up its own currency as collateral at current market exchange rates. In this step, both central banks create the volume of the contracted currency—in the words of former vice-president of the Federal Reserve Bank of New York, Charles Coombs (1976),—‘out of thin air’. The amount of international reserves, that is, available liquidity, is increased. The borrowing foreign central bank contractually agrees to repurchase its currency at a future date at the spot exchange rate. The contract, therefore, involves no exchange rate risk for either counterparty⁴ (Fleming and Klagge, 2010). The foreign central bank then allocates the acquired funds to its Eurodollar banks. At contract maturity, the second step, the foreign central bank repays the borrowed sum⁵ and retains its own currency. In this stylised

² The C6 major central banks are the US Fed, ECB, BoE, SNB, Bank of Canada (BoC) and Bank of Japan (BoJ).

³ On Monday, 9 March 2020, this unequal system of onshore and offshore dollar markets was put to the test when the Covid-19 pandemic hit the financial epicentres of New York, London and Tokyo.

⁴ As central banks are not profit-seeking institutions, no opportunity costs result from exchange-rate fluctuations.

⁵ The foreign central bank will be repaid by its Eurodollar banks at maturity as well. However, this maturity mismatch of the foreign central bank is not part of the swap line contract.

form, the money supply expands in the first step and contracts in the second (Mehrling, 2015), just as private money supplies move elastically in any other form of bank lending (Borio and Disyatat, 2011). The interest rate (penalty fee) on these loans is contractually agreed upon. See Figure 1 for a balance sheet depiction.

2.3 Timeline

Central bankers were long aware of the lack of an international LoLR facility. During the 1960s and 70s, all liquidity intervention based on some form of ‘early swap lines’ was (i) initiated by one of the participating central banks and (ii) discretionary, meaning that each drawing followed its own approval process. In contrast, today’s lines are (i) drawn upon after partner central banks run dollar auctions, that is, drawings are initiated by private banks, and they are (ii) symmetrical, meaning that each drawing follows the same pre-approved process (McCauley and Schenk, 2020) laid out in specific legal documentation (Pistor, 2013).

Kapstein (1994) discusses how Fed officials argued for a permanent international LoLR facility for Eurodollar markets in the late 1970s, but were turned down by Bundesbank bureaucrats due to moral hazard concerns. With the failure of Bankhaus Herstatt in 1974, public authorities provided, for the first time, an implicit backstop to the Eurodollar market through the Bank for International Settlements (BIS) (Goodhart, 2011).

Swap lines are not new to the toolkit of central bankers. In 1962, the Fed established a network of swap facilities with ECBs to manage the gold parity negotiated in Bretton Woods (Bordo *et al.*, 2015, pp. 354–60). They were then used for foreign exchange interventions. Mexico received a limited dollar swap line from the Fed, beginning in 1967, to help contain its international debt issues (Bordo *et al.*, 2015, p. 363). Under the North American Framework Agreement, bilateral swap agreements were in place with Mexico and Canada throughout the 1990s and provided an explicit backstop to these markets. In 1998, after the Mexican crisis, the FOMC argued for a mechanism ‘capable of providing emergency dollar liquidity in the event of a payments-system meltdown’ (Bordo *et al.*, 2015, p. 365). The first time that the Fed explicitly—albeit

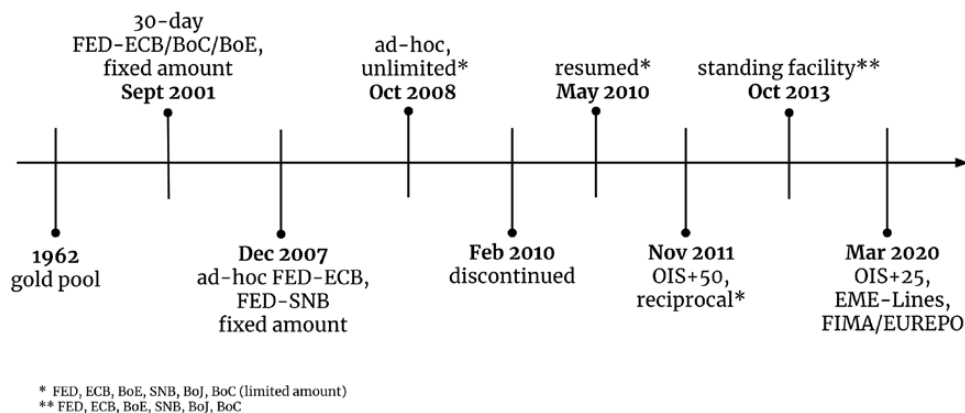


Fig. 2. Stylised timeline of the C6 swap line network.

Notes: Timeline of selected re-deployments and evolution of C6 swap line network. Not to scale, own depiction.

temporarily—backstopped large Eurodollar markets was after the 9/11 attacks when it extended swap line lending to the ECB for a maturity of 30 days. FOMC meeting minutes contain only a little discussion of this period.⁶

From August 2007, the Eurodollar funding market began to seize up (Borio and Disyatat, 2011; Tooze, 2018).

This lack of liquidity can be gauged from deviations in on- and offshore funding costs, that is, between the Overnight Index Rate (OIS)⁷ and Libor rates, as noted in Figure 3.

In December 2007, following discussions on the staff level, the FOMC granted limited-amount⁸ swap lines to the ECB and the SNB. When Congress passed legislation allowing the Fed to pay interest on excess reserves in early October 2008, the US central bank removed the volume caps on its existing lines with the ECB, SNB, BoE and BoJ. These central banks thus gained access to unlimited dollar funding and could provide tender operations in their jurisdictions at the full allotment. Subsequently, the Fed extended swap facilities to a number of EME central banks. The latter lines involved borrowing limits, conditionalities and additional safeguards for the US monetary authority. At its peak in mid-December 2008, central banks borrowed a total of \$580 billion from the Fed (Sheets *et al.*, 2018). The facilities' legal documentation shows that they were established for a duration of six months, but could be unilaterally terminated at any time. These initial facilities allowed foreign central banks to borrow from the Fed at a rate of OIS plus 100 basis points. The foreign central banks passed this cost on to the banks borrowing at their tender operations. Thus, it was quite expensive for these Eurodollar banks to borrow at this facility.

As market conditions calmed and trust in the system was restored, private borrowing through the facilities declined through 2009. In November 2009, Fed staff proposed to the FOMC that the swap lines with major central banks be converted to

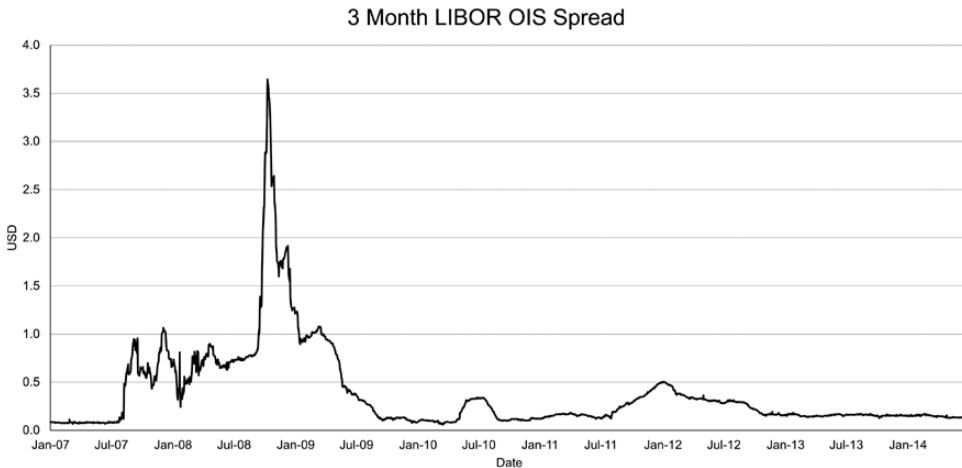


Fig. 3. *Libor-OIS spread.*

Source: Mehrling (2015, p. 318) & Bloomberg.

⁶ The ECB drew three times on its swap line, for a total of 20bn USD.

⁷ OIS may be understood as an implied one- or three-month Fed funds rate.

⁸ The ECB line was limited to \$20 billion, the SNB line to \$4 billion.

standing arrangements. The proposal was rejected, and all swap line facilities were discontinued in February 2010.

Shortly thereafter—with the Eurocrisis unfolding—the Fed re-established unlimited swap lines with the ECB, SNB, BoE, BoJ and BoC at the same pricing in May 2010.⁹ These temporary arrangements were continuously reapproved by the FOMC. In November 2011, two changes were introduced. First, pricing was reduced to OIS plus 50 basis points in order to address stigma concerns and encourage the facilities' usage (Murphy and Fisher, 2018). Second, the existing swap lines were converted into reciprocal arrangements. Thus, not only foreign central banks were able to borrow from the Fed, but the Fed could also access the other central banks' currencies and lend them in its domestic market. Finally, in October 2013, the FOMC agreed to convert this established network into a standing facility at the same conditions¹⁰ that were recently negotiated and subject to annual review. In a coordinated statement, all six participating central banks announced their network of standing bilateral swap arrangements. Of all the 30 ways to unidirectionally send currency, only the Fed's facilities with its five counterparties had been activated until early 2019. While all five non-dollar counterparties have held weekly dollar auctions, only banks at the ECB and at the BoJ have regularly made use of them. In March 2019, amid Brexit pressures, the BoE activated its facility with the ECB. Since then, UK banks have had access to euro funding at the BoE on a weekly basis. Furthermore, in March 2020 amid market turmoil in the wake of the Covid-19 pandemic, funding restrictions through the swap line arrangements were eased and the Fed provided additional swap lines to emerging market central banks (see Figure 2). Most recently, in March 2023, banks in Europe and Switzerland made heavy use of the facility again in the wake of the collapse of Credit Suisse.

Below, we propose six dimensions of swap line design (Figure 4) that may allow for future predictions. If we assume that central bankers are more likely to ease monetary restrictions, we can use the stylised depiction to roughly predict which dimension might be eased next. In the current form, volume and status seem to be maxed out. However, room for decision-making remains in the dimensions pricing, auctions and maturity. March 2020 is an example for such an easing decision that would have been anticipated by the table.

In the following sections, we will iterate through these decisions to test hypotheses about the evolution of the design process. In doing so, we focus on decisions taken at the FOMC, since dollar lines are of particular importance, and documentation on Fed decisions is most comprehensive.

2.4 Formation and institutional assessment of C6 swap lines

In this analysis, the 2013 decision by six major central banks to establish a permanent backstop for the Eurodollar market is understood as the culmination of prior decisions. These can be divided into a past awareness of the lack of a Eurodollar backstop and historical central bank swap arrangements, *ad hoc* decisions during the GFC of 2007/08, decisions during the European debt crisis and the announcement to make the network permanent in 2013.

⁹ The Bank of Canada did not receive an unlimited swap line, but one with a limit of \$30 billion. Due to its geographic proximity to the USA, however, USD liquidity is less of an issue in Canada, making Canadian banks structurally different from European or Asian banks.

¹⁰ To make the facilities 'symmetrical', the Bank of Canada's swap line was also converted to an unlimited line. (Many thanks to an anonymous reviewer for pointing this out.)

	2001	2007	2008	2010	2013	2020
Collateral	ECB, BoC, BoE	ECB, SNB	ECB, SNB, BoE, BoJ	all	ECB, SNB, BoE, BoJ, BoC	ECB, SNB, BoE, BoJ, BoC
Pricing	-	TAF bid-price	OIS+100 bps		OIS+50 bps	OIS+25 bps
Volume	\$ 50 bn (ECB) \$ 10 bn (BoC) \$ 30 bn (BoE)	\$ 20 bn (ECB) \$ 4bn (SNB)	unlimited		unlimited	unlimited
Status	temporary	temporary	temporary	February: discontinued May: renewed	standing	standing
Auctions	one-time	weekly	weekly	weekly	weekly	daily (for 7-day maturities)
Maturity	-	Maturities between 1-95 days				

Fig. 4. Fed swap line evolution.

Notes: Six stylised dimensions of the Fed’s C6 US Dollar swap line facility. Highlighted: First formalisation of facility. Pricing and Maturity for 2001 lending are unknown. Own depiction.

The GFC was a game changer for the international financial architecture. The C6 swap lines network that has formed in response to the GFC is what [Weder di Mauro and Zettelmeyer \(2017\)](#) call the ‘safety net’ of this system.

This standing network is an international monetary institution that comprises of a legally defined ([Pistor, 2013](#)) set of ‘persistent and connected sets of rules (formal and informal) that prescribe behavioral roles, constrain activity, and shape expectations’ ([Keohane, 1989](#), p. 87). In IPE, the study of market and government institutions, in general, has a long history. A particular focus in this regard is given to the role of monetary institutions.

[Figure 4](#) outlines the historical development of the rules governing C6 swap lines. Accordingly, there are six technical features of the Fed’s swap line program. The horizontal axis shows the years when the FOMC decided to take easing steps concerning one of the technical features. The y-axis lists the technical features. As discussed above, the striking difference to the swap line network as used in the 1960/70s is the Fed’s decision in 2001 to allow, for the first time, dollar auctions at foreign central banks.

This decision warrants special attention: the 9/11 terrorist attacks brought global finance to a standstill. Around the globe, flights were grounded; there was a rapid selloff in offshore trading; and the New York Stock Exchange was closed for several days, not least because engineers had to repair telecommunication lines. Ben Bernanke was flown back to the USA from meetings in Basel with military aircraft, while other Fed staff were stuck in Europe. Central bankers scrambled to backstop both domestic and international financial markets, and Fed staff came up with the idea of allowing a one-time, limited-volume auction of US Dollars at both the ECB and the BoE.

The event is significant because it explicitly allowed US-Dollar auctions for the first time. It also specified that Euros or Pound Sterling would serve as collateral. There is no documentation on the pricing of these auctions at the time. With pressures in offshore markets increasing in late 2007, such a price was specified for the first time. Swap lines were to be made symmetrical to the domestic term auction discount window facility (TAF) and offer offshore funding at the same price. During 2008, the OIS was introduced as a pricing benchmark. Of course, Bernanke's bazooka in the fall of 2008, when swap lines among the C6 were expanded to unlimited amounts, marked a high point in the design of the new international discount window. To reassure market participants, the volume caps were removed in the swap lines' official documentation. Technically, the Fed's Foreign Currency Subcommittee committee could still prohibit swap line drawings by foreign central banks. But the signal was clear: the full firepower of the US Federal Reserve would now backstop offshore dollars.

Since this paper is primarily concerned with the 2013 decision to establish the C6 network as a permanent institution of international financial architecture, the next section will outline and contextualise the importance of this decision.

2.4.1 Institutional design While changes to the international financial architecture have largely been discussed in terms of changes in regulatory regimes (Farrell and Newman, 2010), institutional design by central banks has operated outside of the scope of IPE literature (Adolph, 2018). Economists (Kuttner, 2018; Murau, 2018; Bahaj and Reis, 2022) tend to think of the swap line architecture as a finished institutional feature, and their accounts tend to be timeless and retrospective. However, they struggle to explain specific details of the swap line architecture. In contrast, our study can explain why the Bank of Canada is part of the C6 network despite never drawing on the facility. In addition, we account for the specific steps that led to the design as we know it today and explain why it was not deployed in this form immediately in 2007.¹¹

We follow the typology of institutional design by Voeten (2019) to distinguish four different types of institutional design theories. On the one hand, they argue, such theories are divided along the classic structure-agency dichotomy and emphasise one or the other aspect in their explanation. On the other hand, theories can focus on the means or ends of a design process.

The design process of the swap line network proceeded in multiple steps and continues today. Any feature of the swap line network can be constantly re-evaluated. After the main features were introduced between 2007 and 2008, permanency was added in 2013, and 2020 saw further reiterations. We will therefore focus on the means employed in this process—after all, as an ever-evolving facility, one could say that there are no ends to investigate in and of themselves.

Along Voeten's matrix of institutional design theories, we align closely with those that focus on the means of a design process. With respect to the agency-structure dichotomy, however, we propose a more nuanced approach. Braun (2015) argues that in times of crisis, institutional design is always a form of bricolage. Simply put, policymakers 'throw things at the wall and see what sticks'. With this in mind, however, the question then becomes: if policymakers act like bricoleurs, that is, keep cobbling things together to see what works, tweaking what they used before, playing around until their

¹¹ After all, if the Fed had announced an unlimited swap line facility at low borrowing costs earlier, the 'Lehman moment' of 2007/08 may have been effectively averted.

facility seems to work, when and why do they ‘apply the tape’ to make their work permanent and keep it ready for the next crisis?

Institutional design processes broadly follow two dimensions. First, theories ask about the drivers of the process either by structure, that is, as a ‘*response to the [...] economic environment in which institutions operate*’ (Voeten, 2019, p. 13) or by agency, that is the ‘*values, initiatives, and power of the actors that created the institutions*’ (Voeten, 2019). Second, theories are divided in their emphasis on the design dynamics involved. While process-based approaches stress the means being used, rationalist approaches focus on the ends of the process, that is, their contract (Voeten, 2019). Having argued before that central banking requires a synthesis of agency and structure, an institutional design framework in this area needs to account for this. Functionalist accounts by economists (Kuttner, 2018; Murau, 2018) make the C6 swap line network appear as a conscious design and optimal solution. By emphasising that the practices of central bankers are the ‘*result of inarticulate, practical knowledge that makes what is to be done appear ‘self-evident’ or commonsensical*’ (Kuttner, 2018, p. 258), however, this paper investigates the means-based process of institutional design. In the following, we outline the framework of design by bricolage, which combines both the agency-structure dialectic and the means-based design.

3. Empirical analysis and theoretical foundation

3.1 Bricolage

We build on the concept of ‘bricolage’, first theorised by the anthropologist Claude Lévi-Strauss and subsequently adapted by scholars of IR and IPE (Engelen *et al.*, 2010; Mérand, 2012; Kalyanpur and Newman, 2017).¹² In ‘The Savage Mind’, Lévi-Strauss (1966, p. 219) offers an empirical study of human thought in which he uses the term ‘savage’ not normatively or pejoratively, but as ‘*mind in its untamed state as distinct from mind cultivated or domesticated for the purpose of yielding a return*’. He juxtaposes ‘the scientific’ and ‘the savage’ mind as two modes of thought. The ‘scientific’ mind begins with an initial assessment of the problem at hand and then attempts to design an optimal solution. The scientist creates innovative results from scratch and is able to ‘*go beyond the constraints imposed by a particular state of civilization*’ (Lévi-Strauss, 1966, p. 19).

The savage mind resembles that of a ‘bricoleur’. Translators of Lévi-Strauss’ work stress that the term has no direct equivalent in the English language but is closer to a ‘*kind of professional do-it-yourself man*’ (sic!) than a ‘*handyman*’ (sic!) (Lévi-Strauss, 1966, p. 11). Unlike the scientist, the bricoleur is constrained by the limited stock of tools that are available to her. However, the bricoleur can use one tool, re-combine it with another and re-deploy the newly created tool. The means available are therefore time-dependent because they are ‘*the contingent result of all the occasions there have been to renew or enrich the stock or to maintain it with the remains of previous constructions or destructions*’ (Lévi-Strauss, 1966, p. 17). The bricoleur, therefore, has agency in the creative re-deployment of tools but is constrained by the available means (Lévi-Strauss,

¹² Missing from this debate in IR, however, is a non-dialectical understanding that goes beyond the binary of agency and structure. We address this shortcoming by drawing on work by Wendt (1987) and the bricolage concept.

1966, p. 22). By interacting with the tools, however, the bricoleur also transforms her structural constraints, meaning that she *'build[s] up structures by fitting together events, or rather remains of events'*¹³ (Lévi-Strauss, 1966, p. 22). As Brown (1978, p. 173, emphasis in original) notes, Lévi-Strauss' concept of bricolage thus captures dialectics as the *'kind of reason people use in constituting their cultures'*. Two conditions follow from this discussion. Bricolage is a dialectical process of agency and structure. While constrained by the world and therefore the means available to her, the bricoleur has agency in re-deploying her tools. In doing so, she shifts the future constraints of the means and, accordingly, of the world around her. Bricolage is thus a means-based process. Some IR scholars (Mérand, 2012; Kalyanpur and Newman, 2017) have provided theorisations of the second aspect, contrasting this means-based process with rationalist design processes.¹⁴ We proceed with a short discussion of the literature, embedding the concept as neither agency nor structure dialectic, and provide a framework for the practices of means-based design.

Mérand (2012) argues that security cooperation in Europe has followed a design by bricolage. She strongly argues against rationalist approaches that would have assumed an optimal outcome. This is supported by the findings of Cleaver (2002) who uses bricolage to explain sub-optimal outcomes in the context of natural resource management. Because rationalist accounts make assumptions about the information available to agents, Beunza and Stark (2003) have analysed innovation in a financial trading room that was hit in the American 9/11 World Trade Centre attacks. Under uncertainty, these analysts—like bricoleurs—used what they had and relied on the practices they had employed before. These accounts investigate the precise practices within design processes. This approach, according to Mérand (2012, p. 138), *'carries the promise of overcoming the agency-structure problem that plagues much of IR theorizing'*.

Kalyanpur and Newman (2017, p. 369) have recently provided a formalisation of bricolage as a design process of international institutions under which *'policy-makers mix design elements to create state-of-the-art combinations'*. They define a specific set of conditions for the means-based design process. However, the authors strongly emphasise the agency of bricoleurs. This contrasts with the focus on structural constraints imposed by the available means, which are re-deployed in design by bricolage.

It becomes clear, then, that bricolage overcomes the agency-structure problem not by defining it away or by focussing on agency alone. Rather, the dialectic stressed by Lévi-Strauss in his original account provides a synthesis to the problem.

3.2 Data

Having outlined our theoretical approach, we now apply it to the swap lines network by bringing the role of bricolage into focus. Since a means-based design

¹³ It should be noted that Lévi-Strauss uses 'structure' broadly as constraints rather than the international system itself.

¹⁴ We note that bricolage does not imply that decisions cannot be not forward-looking. As discussed above, decision-makers using bricolage care about the future. However, their considerations are backward-looking and rely on past data as well as path dependency in forecasting. In contrast to rationalist decision-making (we do not consider rationalist approaches as always having perfect information, but rather as an ends-based design in which the past is balanced against the present and future, and solutions are independent judgements), the intention is to first see and then renew the decision. For instance, the continuation of swap lines is an outcome that—while sometimes discussed at the time of decision—takes place rather spontaneously, is not envisioned, and certainly does not follow a coherent plan or intention even when market conditions and facts would support perpetuation.

process cannot be assumed, we employed a qualitative text analysis to uncover it. First, we studied publicly available transcripts of Fed FOMC meetings to elucidate the practices of ‘retrospective’, ‘experimentation’ and ‘creative redeployment’. More specifically, we analysed all FOMC transcripts from 21 August 2001 to 28 January 2015, that were concerned with swap line decision-making processes and discussions, however remote. Second, we conducted 20 interviews with anonymous policy experts (including central bankers from this period at the Fed, the ECB and the BoE) to collect intimate narratives of key decision-makers and influential agents articulating, reflecting upon, and interpreting the swap line formation process *ex post*.

3.3 Bricolage and the swap line network

We have outlined the conditions of bricolage as three specific practices. Bricolage is a design process of international institutions in which agents creatively re-deploy a constrained set of means. In doing so, they transform both their toolbox and the structure they operate within.

In the following, we offer an example of central bank decision-making. Since the central bank (assumed agent) sets short-term interest rates, the money market is the structure in which this transnational actor operates. The money market provides a certain set of tools. The structure, therefore, generates practices due to its need for monetary policies. A central bank may be mandated to aim for an inflation target. However, the central bank cannot explicitly make or undo inflation. Rather, the money market makes the central bank’s practices possible (Braun, 2018). These practices are (i) retrospective, for example, because they rely on the evaluation of past interventions or DSGE¹⁵-modelling (Tovar, 2008; Silva, 2018), they (ii) experiment with given means, as can be seen with constant re-calibration of interest rate setting or the ‘taper tantrum’ (Bernanke, 2017) and (iii) creatively re-deploy means, for example, by setting negative deposit rates. At the same time, the money market relies on these practices as their aim is to reduce uncertainty. In addition, these practices create their own path dependencies and structure. For example, quantitative easing changes the profitability or practices of private banks in order to safeguard the financial system.

3.1.1. *Means-based design* Both Kalyanpur and Newman (2017) and Mérand (2012) understand the means-based process of bricolage in opposition to rationalist design. While a rationalist design process would emphasise the initial problem diagnosis to which it finds an optimal solution, this framework ‘sees the first step as retrospective where actors look back at the available design stock’ (Kalyanpur and Newman, 2017, p. 369). The design process can thus be seen as a constant evaluation of what has worked in the past. However, bricolage also allows for the careful selection of practices (MacKenzie, 2003) rather than picking any tools available at random. Unlike theories of policy learning (Nelson and Katzenstein, 2014; Grabel, 2018), it emphasises the initial steps and the pool of resources policy-designers draw from. This is important because it can therefore account for the tools policymakers start with in situations of Knightian

¹⁵ Dynamic Stochastic General Equilibrium.

uncertainty.¹⁶ In opposition to rationalist or conscious design, we draw three practices of means-based design from Kalyanpur and Newman (2017, p. 373), who account for three major assumptions: (i) actor orientation, (ii) the process and (iii) outcome bias.¹⁷

Retrospective

When the FOMC discussed removing the caps from swap lines at the height of the crisis, William Dudley pointed to a recent experience with the Primary Dealer Credit Facility (PDCF). Based on past experience with the PDCF, he argues in favour of an unlimited swap line because *‘if you provide a suitably broad backstop, oftentimes you don’t even actually need to use it to any great degree’* (FOMC, 2008, p. 11). Dudley again uses this retrospective reasoning in 2011, when he notes that the track record of international policy coordination has been *‘perceived by the market very favorably’* (FOMC, 2011A, p. 23). This, in turn, leads him to support the coordinated effort of establishing reciprocal swap lines with the other central banks. Through this retrospective revisiting of existing tools, FOMC members learned from experience. While the majority of the committee kept positive attitudes towards the measure over the years, other members continuously pushed back. Most often, policymakers cited the political risk associated with picking counterparties as constraints on their decisions. By 2013, however, they had nearly six years of experience with advanced economy swap lines. Since counterparty risk with other central banks remained negligible, *‘people became more familiar and comfortable with it and were able to say: this is necessary’* (Interview 10).¹⁸ With *‘no real cost to having it there’* (Interview 3), the swap lines resemble something *‘pretty darn close to a free lunch’* or a *‘guaranteed carry-trade’* (Interview 10). Recognising this positive-sum situation, central bankers moved to establish a permanent backstop.

Experimentation

In 2014, the former governor of the BoE, Mervyn King, visited the former chairman of the Fed, Ben Bernanke. In the resulting conversation—broadcast on BBC—Bernanke said that during the crisis, he felt like a driver in a car accident trying to gain control of the wheels (King and Low, 2014). This short-sighted *trying* is evident in the language of FOMC meetings during the crisis. During the conference call that first decided on the \$20 billion swap line with the ECB, Bernanke—in an attempt to convince the voting members—argued: *‘I think it will send a good signal [...] But I don’t know for sure. If we do it, we are just going to give it a try and see what happens’* (FOMC, 2007, p. 14). In the same meeting, he repeatedly states that the swap line is no end to itself but rather a process of trial and error, for example, when weighing between moral hazard concerns and market liquidity: *‘The imperative of trying to help markets function more normally and, therefore, support normal economic functioning is stronger’* (FOMC, 2007, p. 11f.). This experimentation to solve immediate issues is summarised by a close observer of central

¹⁶ Knightian uncertainty describes a situation in which the prospects for future events cannot be quantified, making an objective probability distribution impossible (Knight, 1921).

¹⁷ Bricoleurs are (i) retrospective, (ii) experiment with given means and (iii) creatively re-deploy means, whereas rationalist designers would be (i) forward-looking, (ii) use cost-benefit analysis and (iii) produce novel institutions.

¹⁸ All references through the paper to ‘Interview’ relate to information we have collected over a period from 2016 to 2018. Sources remain anonymous.

banks: *'They were just throwing at the crisis whatever they had, hoping some of it would work'* (Interview 9).

Creative re-deployment

In their discussion of the *ad hoc* lines in 2007, FOMC members repeatedly *'applaud and support the efforts'* (FOMC, 2007, p. 19) that Fed staff had made in crafting and recrafting the proposal up to that point. The *ad hoc* swap lines between the Fed and the BoE in 2008 were based on legal documents that staff had drawn up as early as 2005, improving upon the hastily stitched together 9/11 lines (Interview 4). This underscores the incremental re-deployment of the arrangement and becomes even more evident when considering the flexibility concerning its volume and the counterparties involved.

Chairman Bernanke elaborated on the flexibility for re-deployment in 2007: *'That's the advantage of this – that we can scale it up potentially quite a bit'* (FOMC, 2007, p. 25). Nine months later, with the collapse of Lehman, the FOMC used the existing swap lines but re-crafted them to mimic the open-ended nature of other facilities it had used. At the September 2008 FOMC meeting, SOMA manager William Dudley explains the proposal to remove limits from the swap lines: *'I think a lot of the programs that we have are actually open ended. The discount window is open ended in the sense that it's limited only by the amount of collateral that the banks post there'* (FOMC, 2008, p. 17). Policymakers thus drew from the existing toolkit and were inspired by the features of the discount window. Furthermore, then SOMA manager Simon Potter argued in 2013 that *'[s]tanding swap-lines [...] would limit the risk that decisions regarding the renewal of these arrangements would be misinterpreted [by market participants]'* (FOMC, 2013, p. 9). Making the swap line network permanent would reduce uncertainty, as re-approving the temporary lines could be interpreted as the Fed sensing market stress. Thus, adding the element of permanence became another re-deployment as part of the means-based design process.

3.4 *Considering a counterfactual*

We consider two counterfactuals to address concerns about the possible cherry-picking of FOMC quotes and the likelihood of rationalist design (as opposed to means-based bricolage). For this, we highlight two arguments in particular.

First, under a rational design process, central bankers would have attempted to address the structural lack of an international LoLR with an ends-based solution. However, as shown in Section 3.3.1, central bankers evidently did not plan to perpetuate the C6 swap line network at the time. As the quotes suggest, decision-makers did not intend to make the network permanent during the onset of the GFC in September 2007.

Second, we found no evidence in FOMC discussions that the introduction of the C6 swap line network was based on strategic goals rather than bureaucratic familiarity. As Hao *et al.* (2022) describe, swap line agreements other than the C6 show features of planned, ends-based decisions of geopolitical significance: *'Unlike the swap lines signed by the Federal Reserve, the majority of swap agreements signed by the PBoC¹⁹ with other central banks are not a reaction to an emergency situation; rather, they are long-term policies aimed at internationalizing RMB²⁰'*.

¹⁹ People's Bank of China.

²⁰ RMB stands for renminbi, the official currency of the People's Republic of China.

4. A Permanent international LoLR

4.1 *Why tape: Perpetuation explained*

The decision to make the swap line network permanent came in 2013, notably a year of calmness in Eurodollar markets. However, the debate for and against perpetuation began as early as 2008 and saw a marked shift in discourse. This section discusses several aspects of this decision-making progress and ultimately addresses the question of why policymakers opted to make the network permanent.

When reasoning for a swap line network, FOMC discussions did not consider the possibility of its perpetuation. On the topic of the emergency extension of unlimited swap lines in the wake of the GFC in September 2008, Charles Plosser of the Fed proposed a swap line framework that would be extendable by the FOMC but not permanent by design: *'I think it ought to have a termination point so that, if we wanted to renew it, we would be free to do so, but it wouldn't last forever'* (FOMC, 2008, p. 16). This notion was well received by FOMC meeting participants, especially since it appeared traditionally opposed candidates.

In the November 2009 FOMC meeting, Fed staff made a first push for permanent C6 swap lines. At the time, however, a negative decision was taken and the facility was discontinued in February 2010—only to be brought back three months later in May that year. This back-and-forth suggests that FOMC members at the time placed great importance on the perceived flexibility of a continuously re-approved facility.

Notably, the November 2009 meeting did not conclude with the facility being shelved outright; nor were FOMC members concerned with the economics of the facility or other technical details. Rather, the meeting concluded with the staff being tasked to prepare a memo for the next meeting on how to deal with exiting from swap lines, particularly in light of geopolitical considerations. After all, both the central bank of Canada and the central bank of Mexico had swap line arrangements with the Fed in the 1990s already. It was therefore unclear at the time whether and how these arrangements would be impacted as well.

Ultimately, the Fed decided in February 2010 to shelf all crisis facilities, including all swap lines, thus avoiding political backlash through a uniform decision. It was probably facesaving in this regard that the next round of swap lines was not initiated by the Fed itself, but rather by partner central banks: *'Yesterday Jean-Claude Trichet called me and made what I would characterize as a personal appeal to reopen the swaps that we had before. This morning I have gotten, again, personal calls from Mervyn King, of the BoE, and Masaaki Shirakawa, of the Bank of Japan, also asking us to reopen the swaps'*. (Bernanke in, FOMC (2010A)). The swap lines were re-established with little concern by FOMC members and carried on as continuously renewed facilities until 2013. The October 2013 FOMC meeting brought the permanent swap lines. It concluded with little discussion on the matter; one regional Fed president expressed concerns, but no one voted against the measure. Below, we outline the reasoning that led up to the 2013 meeting and analyse the ultimately rather swift decision to make the lines permanent.

4.2 *Bureaucratic familiarity*

Throughout FOMC meetings over the years and in our collected interviews, Fed staff offered, broadly speaking, two lines of reasoning as to why having a standing facility

is superior to a tool that is being continuously renewed or (temporarily) shelved. One line of argument holds that central bankers have, over time, converged on an understanding of how the swap line facility interacts with markets. More specifically, financial agents may react adversely to the withdrawal or reinstatement to such a facility. Either decision by central bankers would be immediately priced into markets and could therefore have adverse effects. The second set of arguments in support for a permanent solution are presented mainly on the staff level of participating central banks, with staff repeatedly expressing the view that the institutional knowledge about the operation of such facilities is best preserved if they were permanently in action.

We propose to subsume both lines of argument under the concept of ‘bureaucratic familiarity’ to indicate why a process of bricolage is preserved at a given point in time. Bricoleurs will preserve their means-based process and establish a permanent institution when they are concerned that their acquired familiarity with the means may be threatened. Importantly, this adds a forward-looking element to bricolage: judging from past data, policymakers evaluate their stock of options to limit adverse effects in the future. However, our empirical evidence suggests that such reasoning always comes from comparisons with what happened before, and simply choosing to re-deploy a policy decision used in a different design process to make the decision for permanence.²¹ This process is outlined below.

Early in the discussions on the introduction of swap lines, FOMC members showed strongly divergent view on how (offshore) money markets work in practice and how a backstop facility would function. On the one hand, some FOMC members suggested having foreign central banks ‘inject’ their international reserves into their banking systems (FOMC, 2007, 2008, 2009, 2010A). This was met with an analysis that pointed out the disadvantages of this: first, this would not add additional liquidity to the markets; second, it would not signal international cooperation amongst central banks; and third, installing the swap lines would give the Fed insight into liquidity needs in foreign markets. President of the St. Louis Fed, William Poole, and President of the Richmond Fed, Richard Lacker, have been particularly outspoken with regards to swap lines. They are also the only ones who ever voted against any of the changes to the swap line specifics.

Reviewing the specific meeting transcripts, it is clear that Poole held views on the workings of the financial system that derived from the loanable funds myth. Bernanke challenged him and explained liquidity issues in asset funding where ‘*the presumption is that some assets are more liquid and easily fundable than others*’ (FOMC, 2007, p. 24). Lacker remained sceptical to the theoretical underpinnings of the swap line rationale: ‘*On the swap lines, I have never been a real big fan of these. My affection rose slightly earlier in the year, but it was a transitory rise. [Laughter] I find my enthusiasm waning. Basically, I don’t think they solve an economic problem worth solving. [...] maybe I am just really sanguine about the ability of the system to move dollars around*’ (FOMC, 2009, p. 41).

On the other hand, FOMC members such as Janet Yellen (in 2009 still President of the San Francisco Fed), suggested the installation of a standing swap line network and also considered more than just the C6 central banks. She was the only Fed president at the meeting to explicitly use monetary theory to make her case. Drawing on the

²¹ We thank one of our anonymous reviewers for the fruitful discussion on the juxtaposition of rationalist and bricolage design, which highlighted that bricolage can indeed allow for forward-looking decisions using past data.

seminal work by [Gurley and Shaw \(1960\)](#), she argued convincingly and with much acclaim from her peers ([FOMC, 2009](#), p. 51 *et seq.*) that reserves as inside money would not be sufficient to stem a liquidity crisis. Furthermore, in 2011, Yellen supported lowering the pricing of existing swap lines together with the President of the Boston Fed Eric Rosengreen. Referring to these latter presidents, both of whom were closer to the interventions in the payments system, interviewee 10 recalls that *'the people who were in the plumbing knew the plumbing needs dollars'* (Interview 10). Two sets of ideas about how to resolve liquidity crises, therefore, preceded the GFC, and the shortfall in Eurodollar funding was equally evidenced to all FOMC members through metrics like LIBOR-OIS spreads. *'During the fall of 2007, central banks became aware of something on which they had not previously focused'* ([Cecchetti, 2008](#), p. 15), or put differently, *'the crisis has dramatized the remarkable extent to which financial markets have become globally integrated'* (Nathan Sheets in [FOMC, 2009](#), p. 15). This structural component of the money market created the opposing agencies in the FOMC.

One way to read the FOMC discussions over the years is that central bankers kept their discussions alive and gradually became familiar with both the workings of money markets and the facility they had deployed. While swap lines remained a topic of discussion over the course of six years after their first introduction in 2007, arguments shifted away from technical questions of reserves versus liquidity towards market reactions in case of withdrawal of the facility. In 2013 *'it may have become difficult to shut things down'* (Interview 3), simply because both markets and central bankers had become so familiar with the facility.

In the lead-up to the 2013 permanence decision, Fed staff repeatedly argued that introducing swap lines as a permanent measure would *'reduce uncertainty among market participants as to whether and when these arrangements would be renewed'* ([FOMC, 2013](#), p. 9). Already in 2010, as the Eurocrisis intensified, Sheets suggested at the FOMC to *'try to remind the markets that these swap-lines will still be there'* which *'will be taken in stride by the markets as something reassuring'* ([FOMC, 2010B](#), p. 16). Fed staff addressed similar concerns when they moved a decision on the continuation of temporary swap lines to an earlier meeting because they feared that *'as the deadline grew closer, the markets would start to worry about whether the swap-line was going to be there or not'* (Sheets in [FOMC, 2010B](#), p. 16). Swap lines were initially introduced to reduce market stress and create certainty about funding. Having the lines in place for an extended period of time in 2011 led staff to argue for a one-year extension of the facility because *'allowing the swap-lines to expire [would] seem to create unnecessary risks'*. (Sack in [FOMC, 2011B](#), p. 58). Lastly, the decision to convert the temporary measures into standing facilities also resulted from concerns about signalling. As President Kocherlakota pointed out, any renewal of a temporary line could be understood as the Fed being *'concerned about things'*, whereas with a permanent facility the FOMC *'[doesn't] really have to worry as much about the signaling content of our decision'* ([FOMC, 2013](#), p. 12). Interviews with market participants support this view (Interview 1, 6).

Importantly, FOMC members developed two understandings of the markets in the process: first, that markets would react adversely if the swap line facility were withdrawn. Second, over time, discussions among FOMC members (re-)established the importance of signalling this possibility to markets in order to induce liquidity into the financial system. In time, the FOMC reached a consensus on this familiarity, which is consistent with the learning processes described in IPE literature on central banking ([Nelson and Katzenstein, 2014](#)). However, while this familiarity with markets may

have been a necessary condition to the permanent installation of the swap line network in 2013, it is insufficient as an explanation alone. Many FOMC members have held these ideas for some time already, and there is no data suggesting money market stress around the annual renewal dates. Rather, we suggest that it was the need to preserve institutional knowledge about the inner workings of the swap lines that led FOMC members to agree with the staff's suggestion to introduce swap lines as a standing facility. As outlined above, the experience of a second crisis added to this familiarity with the workings both of money markets and the facility.

Nathan Sheets—one of the key designers of the Fed swap lines—noted as early as 2009 that a standing facility would be superior in the event of a future crisis. For the 2007 swap lines, Fed staff had to *'pretty much figure these things out from scratch'* (Sheets in FOMC, 2009). Especially in moments of crisis, this can be problematic for two reasons.

First, the prospect of coordinating with other central banks remained tedious. The swap lines were first used in this form after the 9/11 terror attacks in 2001. The facility between the Fed, ECB and BoE was phased out just a month later. However, since the legal agreements involved had been drawn up *'in a rush'* (Interview 4), BoE staff were preparing contingency plans for offshore money market stresses in 2005. The Fed was not *'very keen'* (Interview 4) to coordinate at the time, but it did draft legal documents which were then later used as a blueprint for the first iteration of the 2007 swap lines. In early 2007, ECB President Trichet in particular did not like the swap line facility (Interview 11), and the coordination efforts continued to have *'the potential to be complicated and time consuming'* (Sheets in FOMC, 2009). While at the BoE *'All governors signed off on whatever we drew up on staff level'* (Interview 4), the ECB's statutes required full governing council approval for any minor changes to the facility (Interview 4). This added to the friction in central bank coordination. In 2009, Sheets argued in this regard that: *'coordinating policy decisions with foreign central banks has the potential to be complicated and time consuming, so it's preferable to have as many as possible of these decisions negotiated in advance. Thus we see the establishment of standing lines as being superior to just having documentation "on the shelf"'* (Sheets in FOMC, 2009).

Second, the institutional knowledge at the Federal Reserve would be lost if the facility were withdrawn. Any central bank facility is much more than just a documented process on how to do things. Rather, and in line with our notion of the bricoleur, central bank facilities are machines that need to be constantly in use so that everyone involved knows how they work. Sheets specifically pointed this out to the FOMC in 2010: *'Ten years from now, the folks in New York who did all the work may be onto other things or other positions'* (Sheets in FOMC, 2009). Importantly, a small set of swap lines would have operational capacity to *'understand how they work'* (Sheets in FOMC, 2009). In an emergency, it would be easy to scale out from a working set of facilities (FOMC, 2009). This view is supported by one of our interlocutors, who explained that *'given the logistical and other challenges from starting it up from scratch every time, they decided it was permanent'* (Interview 11).

5. Conclusion

Monetary experts have known for years, if not decades, that an international LoLR was needed to backstop offshore financial markets. In the wake of the 2007/08 GFC, such a facility was finally put in place with the C6 swap line network, albeit

on an *ad hoc* basis only. With this paper, we have traced, theorised, interpreted and even predicted the decision-making processes that ultimately led to the perpetuation of the network—that is, the establishment of an international LoLR—in 2013.

Using the concept of bricolage, we have shown that central bankers relied on specific practices in the process of designing the swap line network. More specifically, rather than being purely rational agents who produce novel institutions using cost-benefit analysis (Mehrling, 2021), they are backward-looking, experimental and creative in their redeployment of previously existing tools. Our study draws on two qualitative data sources. On the one hand, we conducted a textual analysis of publicly available FOMC meeting transcripts to shed light on over 13 years of specific considerations, reasoning and arguments regarding the decisions that led to the international LoLR facility. On the other hand, we conducted interviews with a number of key monetary policy experts, scholars and central bankers of the time to gain insight into their thoughts and reflections on the swap line network.

Our analysis suggests that while central bankers continue to use pre-existing instruments on an *ad hoc* basis during crises, they will typically ‘shelve’ them during calmer times. Eventually, however, they develop what we call ‘bureaucratic familiarity’ with these instruments, leading them to decide to make them a permanent part of their monetary policy toolkit. We thus provide an answer to the question in IPE literature as to how the public backstop for the largest financial market—the Eurodollar market—emerged in 2013.

Future research could address aspects of power in the design process outlined in this paper. If monetary technocrats stumble in handling market pressures for too long, issues of geopolitics, inequality or the climate may be addressed late—as with carbon-intensive QE portfolios.

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