Safety for Whom? The Scattered Global Financial Safety Net and the Role of Regional Financial Arrangements

Laurissa Mühlich[1] • **Barbara Fritz**[1]

Abstract The global financial safety net has undergone fundamental changes since the global financial crisis. The IMF introduced new facilities at the global level, new regional financial arrangements (RFAs) were created, and bilateral swap agreements emerged as a new element. In this paper, we ask how these changes influence the use of RFAs. We create a database with all the cases in which a RFA member drew on one of the element**s** of the global safety net. This allows us to analyze which other options the country had at hand and how their respective volume, timeliness, and policy conditionality affected their use. We find today's global financial safety net to be not a global but a geographically and structurally scattered net with unequal access for three different groups of countries. Small countries can draw on their RFA. Only few countries can count on a bilateral swap line. The majority of the countries in out sample do not have several options to choose from. They have the IMF as their only source. We find that volume alone does not explain why countries choose a certain source of emergency liquidity. Even if "the big new" voluminous swap arrangements replaced RFAs in some cases, we find a complex pattern of complementary and substitutive use of the regional and other elements of the global safety net.

Keywords Global financial system • Global financial safety net • Regional financial arrangements • Financial crisis • Liquidity provision

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s11079-018-9495-y) contains supplementary material, which is available to authorized users.

✉ Laurissa Mühlich
laurissa.muehlich@fu-berlin.de

Barbara Fritz
barbara.fritz@fu-berlin.de

[1] Institute for Latin American Studies and the School of Business & Economics of the Freie Universität Berlin, Berlin, Germany

Published online: 21 April 2018

1. Introduction[1]

Financial systems are indispensable to the functioning of modern economies. They link savings with the funding of investment and allow entrepreneurs to realize innovative ideas. However, they also bear the risk of instability and crises, as historical experience shows. The understanding of these instabilities has changed over time. During the so-called period of "Great Moderation", the perception was that financial systems, both at the domestic and the international level, did not require any specific safety net provided that domestic policies were adequate to assure price stability together with flexible exchange rates (Rose 2007). The global financial crisis of 2008/2009 (hereafter "the financial crisis") impressively made clear the danger of this risk when it hit advanced economies and spilled over to emerging markets and developing economies (Lane 2013).

The system of financial institutions and conventions that governs international financial flows and international financial stability is also called the global financial safety net (hereafter GFSN). It is defined as the set of financial resources and institutional arrangements that provide a backstop during a financial or economic crisis. The safety net is a form of insurance against crises that affect a country's external payments. By addressing this risk to domestic economies, the safety net supports the stability of the international monetary system (Hawkins et al. 2014: 2).

As with any insurance, in the best-case scenario, the GFSN is not necessary because countries can handle their problems by themselves. Yet, there may be situations where a country cannot fulfill its external obligations and private financial actors are not able or willing to provide further liquidity. In these situations, the GFSN comes into play with options to prevent a further deepening of a crisis. The financial crisis, together with the subsequent increase in the size and volatility of cross-border financial flows which resulted from financial liberalization in advanced and emerging market economies up to the 1990s, has triggered substantial changes in the nature, size, and use of the GFSN.

1 We thank an anonymous referee, the editor, Tanja Börzel, Stefano Palestini, Thomas Risse, and Ulrich Volz for valuable comments on an earlier version of this article. We conducted part of the research at the Kolleg-Forschergruppe (KFG) "The Transformative Power of Europe", hosted at the Freie Universität Berlin, www.transformeurope.eu. We also thank Jonathan Dürr for assisting with the data collection, and Elia Braunert and Eva Samperi for superb research assistance.

The GFSN has gained additional options and complexity over time. First, the International Monetary Fund (IMF) as one of the founding institutions of the post-WWII global monetary order of Bretton Woods has remained as the global element of the GFSN since its beginning. Second (and partially due to the problems associated with the IMF) since the 1970s, regional financial arrangements (RFAs) have been created in different parts of the world. Third, with the turmoil of the financial crisis, the GFSN underwent substantial changes: besides the emergence of new regional mechanisms, a network of swap lines developed, and the IMF introduced pre-conditional lending facilities. Today, the GFSN consists of three different options – the International Monetary Fund (IMF), bilateral swap lines, and regional financial arrangements (RFAs) – each of them following its own logic (Grabel 2017) instead of constituting a first-best coordinated mechanism of its different elements. Recent attempts to coordinate these options at the global level have failed so far (Helleiner 2014; Volz 2016). Hence, the three elements analyzed here are second-best options.

We find that economic literature mainly concentrates on the analysis of single elements or provides a rough overview of all elements (i.e. Aizenman/Pasricha 2009). Certainly, the IMF is the most analyzed institution in this context (i.e. Grabel 2011; Fritz et al. 2016). Only few scholarly contributions provide a systematic comparative perspective on the overall GFSN (ECB 2016; IMF 2016b; Volz 2016; IMF 2017).

The present paper aims at increasing our knowledge of the use of the GFSN. What drives the choice that countries make when drawing emergency liquidity from one of its elements in times of crisis? We are especially interested in the effects that the recent changes of the GFSN have had on the use of the different elements. We analyze which elements are available to whom. Further, we compare the three elements based on three theoretically deduced criteria relevant for the provision of emergency finance: volume, policy conditionality and timeliness.

Our first hypothesis is that volume is a necessary condition for a country's choice of the financing source. Second, we assume that the appearance of swap lines and the introduction of new pre-conditional IMF lending since the financial crisis has influenced the use of RFAs, since some member countries experienced a widening of their emergency financing options. We suppose that member countries substitute

the use of RFAs for emergency financing when they have new IMF programs or a swap line available. Third, we expect RFAs to remain a relevant option for those economies that are not likely to be offered a swap line by an emerging or advanced economy's central bank and that do not qualify for the new type of pre-conditional IMF lending.

The GFSN includes bilateral agreements and regional arrangements between advanced economies, emerging markets, and developing countries. Out of these, we focus our analysis on emerging markets and developing economies which are members of a RFA.[2] Theoretically, these countries can opt for the IMF and/or the regional mechanism, and in some cases, they additionally have the option of requesting the support of the central bank of another country through a swap line. Our analysis compares all major existing RFAs: the Latin American Reserve Fund (FLAR, Fondo Latinoamericano de Reservas) in South America, the Arab Monetary Fund (AMF) in Northern Africa, the Chiang Mai Initiative Multilateralization (CMIM) in Southeast Asia, and the Eurasian Fund for Stabilization and Development (EFSD, former EURASEC Anti-Crisis Fund, ACF) in Asia and Eastern Europe.

For the members of these four regional bodies, we analyze all cases in which a financing program has been agreed on either with the RFA or the IMF, or in which a swap agreement with a foreign central bank has been concluded. For each case, we ask which other options were available and examine the institutional design regarding timeliness, volume, and the existence of policy conditionality connected to the liquidity provision. Based on annual IMF, World Bank, regional, and country-level data, we construct a dataset with 386 cases of 50 RFA member countries between 1976 and 2015.

We concentrate our analysis on a rational choice framework that departs from theoretical underpinnings of balance-of-payments crises models. We are aware that the decision about where to request emergency funding from is driven by multiple

2 We are aware that such focus excludes parts of the GFSN, especially the European Stability Mechanism (ESM). Nevertheless, we focus on RFAs between emerging market economies and developing countries. In these countries, financial crises usually involve balance-of-payments and external liquidity problems that have to be dealt with by a third-party actor at the international level. In contrast, advanced economies' financial crises in most cases are solved at the domestic level and do not require the involvement of a third-party actor (see section 2). In the case of ESM, the member countries have no choice to opt for a specific element of the GFSN. Rather, the so-called Troika unifies the intervention both of IMF and regional institutions and ties liquidity provision to a common set of policy conditionality.

factors such as power asymmetries, ownership, and case-specific aspects. Our analysis of RFA governance structures includes these factors as far as possible.

The paper is organized as follows: in the following section, we evaluate the theoretical grounds for liquidity provision in cases of financial crises. Section 3 analyzes the three different options of the GFSN. The fourth section empirically analyzes and compares the options available for drawing on emergency liquidity for our set of countries. Section five concludes.

2. Financial Crisis Models: Theorizing Liquidity Provision of the Global Financial Safety Net

Analyzing the elements of the financial safety net as insurance requires the definition of when and under what conditions this insurance can be drawn. Two risks emerge: first, the potential abuse of the insurance as a substitute for domestic policy reforms in cases of financial crises and second, the risk of losing the credit for the insurer if the borrowing country is not able to repay. Both issues are treated in the economic literature over three generations of models for balance-of-payments crises developed during the 1980s and 1990s.

The starting point is the first generation of balance-of-payments crises models. They explain attacks on a currency with a fixed exchange rate by rational expectations due to inconsistent government policies or flight out of public bonds. In this case, public debt is unsustainable (Krugman 1979).

Translated to the question of financial crises resolution, in this case, external liquidity provision aims at limiting the fallout to the real economy. Yet, since here the cause of the default is an unsustainable fiscal stance, any liquidity provision from outside has to be conditioned to an adjustment program to achieve a rebalancing of public finance and to prevent moral hazard.

The mechanism is different in second-generation models (Obstfeld 1996), which do not necessarily assume such a clear-cut policy failure as the starting point. The second-generation models include the possibility of multiple equilibria for countries with economic policies that are not clearly unsustainable.

This setup leads to the possibility of a self-fulfilling debt or fiscal crisis, as Cole and Kehoe (1996) have shown. The logic here is simple: whether an entity with a

moderate, yet not extremely high, level of debt is able to service its debt depends on the expectations of market participants. A shift in expectations can trigger a crisis in these models even without a change in underlying fundamentals. It is difficult to point out one specific reason that a crisis occurs (Krugman 1999).

The catch in these models is that if a third party can guarantee continued access to loans at sensible interest rates, expectations will permanently stabilize in the "good" equilibrium. A self-fulfilling crisis is no longer possible. The third-party action would help avoid huge costs for the economy in case of successful crisis prevention. The need for an adjustment program, i.e. the prevention of moral hazard, is much less clear under such a self-fulfilling crisis than in the first-generation models: of course, a higher public debt-to-GDP ratio might make a crisis more likely. However, as expectations might have triggered the crisis, fiscal austerity is not a necessary condition for solving it.

Second-generation models show that crisis prevention or effective crisis management necessitates fast reactions by a third-party actor with volumes high enough to change investors' minds. For analyzing the elements of the GFSN, we hence include timeliness and the volume of liquidity provision as key criteria. The shorter the time needed to respond to a borrowing request with the disbursement of an adequate amount of immediately available finance or guarantees, the more successful the financing option in the reduction of financial vulnerabilities. The size of available funds needs to be large enough to provide the country threatened by an imminent balance-of-payments crisis with a suitable credit volume (see McKay et al. 2011).[3]

Third-generation models of financial crises (i.e. Corsetti et al. 1998) have emerged in the context of emerging market financial crises. These frameworks add to second-generation models the aspect of reinforcement of the negative consequences of international debt, domestic financial crises, and the overshooting of the exchange rate (i.e. Tavlas 1997). They signal the relevance of smooth and decisive

3 McKay et al. 2011:3 list several factors that may guide an assessment of suitable fund size, among others, "[…] short term external (foreign currency) debt relative to GDP; […] ability to generate foreign exchange through exports; the amount of liquid international reserves; […] the […] degree of openness […]". We analyze these elements for the RFA member countries in Annex I (see also section 4). The authors conclude that "consideration of these factors provides a rough guide to the amount needed to ensure effective policy responses" (ibid.).

action to stop these crises in terms of timely and sufficient external liquidity provision to prevent spill-over to the real sector and to other countries. If the involvement of the third-party actor has to be bound to conditionality, it is again an empirical question what triggered the capital outflows and the financial crisis: is it domestic policy failures or the changed perception of investors due to external shocks, such as a crisis in a neighboring country?

Third-generation models show that conditionality has to be tailored specifically to the country's conditions. We include conditionality as a third criterion in our comparative analysis of the three elements of the GFSN.

In all types of balance-of-payments crises in emerging markets and developing countries, the third actor has to come from outside the country. Emergency liquidity has to be provided in foreign currency since in these countries, international debt is overwhelmingly denominated in foreign currency.[4]

The second risk of using the GFSN as insurance is the risk of loss of the provided funds. Thus, it is key for the third-party actor to distinguish between problems of liquidity and solvency. Insolvent entities are defined as being unable to serve their obligations in the medium and long term, even if provided with additional short-term liquidity. Providing liquidity for an insolvent entity, therefore, means that the postponement of the insolvency leads to increased costs (cf. Fritz et al. 2016).

We compare IMF, RFAs, and swap arrangements with regards to the timeliness and volume of liquidity provision. Additionally, we compare whether loans provided are bound to conditionality or not.

3. The Three Elements of the Global Financial Safety Net

In parts 3 and 4, we compare cases in which a country choses one of its available elements of the GFSN as the agreed-upon financing program. We include such an agreement as a case even if the latter may not be drawn on by the country since the

4 Given the theoretically deduced necessity of a third-party actor, we concentrate our analysis on a systematic comparison of IMF, RFAs, and swap agreements. Although national reserves accumulation is frequently mentioned as an element of the GFSN, little empirical evidence exists that large stocks of reserves are indeed a striking defense mechanism against a balance-of-payments crisis (Wyplosz 2007). In fact, Aizenman et al. (2011) find that regional and bilateral arrangements dominate national foreign exchange reserve hoarding as a precautionary measure.

signal of the mere agreement on an RFA or IMF program or a swap line may shift market expectations to the "good" equilibrium (see section 2).

3.1 The Global Element: The International Monetary Fund

Especially with the liberalization of capital accounts in emerging market countries, requirements for the IMF as the global element of the GFSN have changed: the speed as well as the volume of liquidity provision has become increasingly important. Besides, reform requirements for countries asking for support became a highly disputed issue. Consequently, the IMF overhauled its financing facilities (IMF 2014). Conditionality in standard IMF programs traditionally is designed *ex-post* by linking the disbursement of credit tranches to the fulfillment of specific obligations. While the standard stand-by arrangements were only slightly revised, the much criticized *ex-post* conditionality was dispensed in a series of newly introduced precautionary credit lines open to countries with "very strong fundamentals, policies, and track records of policy implementation" (IMF 2009). Such *ex-ante* conditionality also implies quicker disbursement, as there is no time required for the negotiation of the terms.

Regarding the timing of liquidity provision, which had been criticized for being too slow, the IMF introduced the Emergency Financing Mechanism as early as the mid-1990s.

Regarding the critique that its credit volume was not sufficient to address major crises, the IMF multiplied its funds after the financial crisis. By the end of 2017, the IMF had about USD 295 billion readily available for new non-concessional lending compared to USD 127.3 billion in 2007 and USD 149.5 billion in 2010 (so-called forward commitment capacity; IMF n.d.b). The Fund's total resources were about USD 986.9 billion by the end of 2017 compared to about USD 500 billion by the end of 2007 (ibid.).

Until 2015,[5] a member country could borrow short-term up to 200 percent of its quota annually and 600 percent cumulatively.

3.2 The New Bilateral Option: Central Bank Currency Swaps

5 The 14th general quota review in 2016 (IMF 2016a) not only augments the IMF's resources but also responds to criticism of its governance structure: the share of votes of emerging markets and developing countries increases to reflect the current global economic situation.

Bilateral central bank currency swaps are bilateral arrangements for short-term liquidity provision between the central banks of two countries. These arrangements gained momentum in response to the financial crisis for short-term emergency financing. In contrast to the institutionalized forms of short-term liquidity provision of the IMF and the RFAs, bilateral currency swaps are a non-institutionalized and highly discretionary policy instrument. So far, only advanced economies and selected emerging markets offer central bank currency swaps. In particular, in the region of Southeast Asia, swap lines have grown substantially in number. China is the main driver: at the end of 2015, the People's Bank of China had at least 34 active swap lines with a total amount of about USD 485 billion (Destais 2014; Li 2015; Zhu 2015).

Systematically researching swap agreements turns out to be a difficult endeavor. Information and data about the offer and particularly the actual use of swap lines are only partially available to the public. Available information suggests that swap lines are the timeliest short-term financing mechanisms provided in the GFSN. Once a swap line is agreed upon by the two contracting central banks, liquidity can be drawn immediately, denominated in the currencies agreed upon. We could not find any empirical evidence on the average time needed to negotiate an agreement.

Usually, no policy conditionality applies to swap lines: "Central bank swaps do not include surveillance, and conditionality is limited to the use of the proceeds of the swaps […] not the economic policy as in the case of IMF facilities." (Destais 2014: 7) Yet, swaps are not equally available for every country: nation-specific motives of the swap-offering central banks determine who receives a swap line (see section 4).

3.3 Regional Financial Arrangements

A key motive of developing countries and emerging markets for creating RFAs has been the lack of adequate short-term liquidity provision at the global level. In this vein, Eichengreen (2007: 33) argues that "in the absence of a global fund, the insurance in question could be provided by a regional pool of reserves".

An RFA is understood here as an agreement by a group of countries to provide each other with short-term financial support in case of balance-of-payments problems (see e.g. Mühlich 2014). Member countries regionally determine the design of conditionality criteria and enforcement rules. Hence, RFAs differ with regards not

only to their volume and to timeliness of liquidity provision but also regarding conditionality and surveillance mechanisms (Grabel 2017).

The specific motivation to cooperate through the regional sharing of liquidity has changed over time. We observe two different phases[6]: first, the irregularity of capital inflows after the end of the Bretton Woods system drove regional institution building. Given the excess liquidity in the oil-rich member countries due to rising oil prices in the early 1970s, the Arab Monetary Fund (AMF) was created with the aim to redistribute wealth in the region through a shared liquidity reserve that would provide credits to less well-off countries. The Latin American Reserve Fund (FLAR) was founded as a regional self-insurance mechanism in face of the evolving Latin American debt crises in the 1980s. Second, both the series of financial crises in emerging economies at the end of the 1990s and the global financial crisis with its spill-overs to emerging markets led to the perception that independent regional crisis prevention was needed to avoid inadequate conditionality by IMF programs. In this context the Chiang Mai Initiative (CMI) was launched and later multilateralized and strengthened in terms of volume and institutional design to today's Chiang Mai Initiative Multilateralization (CMIM). Similarly, the Eurasian Fund for Stabilization and Development (EFSD) was set up by former Soviet Union members in response to global financial volatility in and after the financial crisis.

Compared to the volume the IMF commands, regional funds obviously provide a comparatively smaller insurance framework yet with striking differences. For the first generation RFAs, at the time of their founding, much smaller borrowing volumes were required. AMF has a size of about USD 3.8 billion and FLAR a size of about USD 3.9 billion subscribed capital. The size of AMF represents only about 0.1 percent of the region's GDP; FLAR's size is about 0.3 percent of regional GDP. In contrast, more recently founded RFAs were equipped with a higher volume. The CMIM stands out with the largest (pledged) volume of USD 240 billion (about 1.3 percent of the region's GDP); EFSD's volume is about USD 8.5 billion capital (almost 0.4 percent of the region's GDP). The accessible financing volumes of the four RFAs in our sample resemble their differences in size. The CMIM and EFSD relative access limits are much larger, too: about three percent (EFSD) and four percent (CMIM) of the member countries' GDP on average and hence respectively

6 See Annex I for case studies of each of the four RFAs.

about six and eight times more than for AMF member countries, whose regional access limit is about 0.5 percent of their GDP on average. In FLAR, member countries can access emergency financing volumes of about 1.5 percent of their GDP on average.

Yet, whether an RFA's volume is sufficient for a member country in times of crisis depends, among other factors, on the relative size of this member country within the RFA. The more economically asymmetric a RFA[7], the larger the benefits in terms of volume since larger economies are able to contribute comparatively higher shares to the fund.

Alongside the absolute volume of a regional fund, the patterns of its use determine whether a fund's volume is sufficient. Asymmetric business cycles of the member countries are beneficial to regional reserve pooling since the participating countries' demand for liquidity differs in time and volume. Whether pooled liquidity is drawn simultaneously or not depends on whether simultaneously hitting shocks and related contagion effects impact member countries symmetrically or asymmetrically (Imbs/Mauro 2007).[8] In the FLAR, member countries benefit from the ease and speed of liquidity provision of small volumes for small economies at different times in reactions to different national or global shocks (Machinea/Titelman 2007). The use of the AMF, too, is characterized by asymmetry: two groups of countries – net oil importers and net oil exporters – that have different liquidity needs at different times. In CMIM and EFSD, a single country or a small group of countries stands out in terms of economic size. A key argument often brought forward as an advantage of regional funds is that compared to the IMF, they can be easier and more rapidly accessed than the Fund's resources. FLAR is known for its timely response to loan requests. Rosero (2014: 82) reports 28 days on average. Similarly quick is the average response from AMF, where a lean decision structure allows rapid response to loan requests. Both FLAR and AMF provide a fast-track credit line to service urgent emergency financing requests of

7 Here, we refer to a static understanding of asymmetry that is relational, not absolute (Womack 2016). Regional asymmetry is a situation in which different economic size and financial or monetary structures of the member countries imply different degrees of vulnerability to external shocks. The larger countries are less exposed to unilateral economic, financial, or monetary policy decisions than the smaller countries.

8 Here, a dynamic understanding of regional asymmetry is referred to: asymmetric development or the presence of heterogeneous macroeconomic policy approaches cause not only differences in business cycles, economic growth, capital in- and outflows, and exchange rate dynamics but also differences in the speed and character of policy reactions to crises (UNCTAD 2011).

small volume. Our evaluation of the available documentation of the hitherto five loan disbursements by the EFSD suggests a considerably lower speed (see Table 1). Internal decision time is quicker the lower the loan amount. In the case of CMIM, an assessment is difficult since the mechanism has not been used so far. However, the fact that borrowing above 40 percent of quota requires the existence of an IMF program can be expected to cause delays in decision-making.

Regional arrangements enable regionally adapted means of policy response rather than "one size fits all" solutions as is the case at the global level. Rules and conditionality involved in financial support can be adapted in the course of cooperation (Ocampo/Titelman 2010; Grabel 2017). Such regionally designed rules not only enhance a regional ownership towards the use of the shared funds; they can also be better adapted to regional needs than, for example, IMF criteria at the global level. The more asymmetric the region, however, the more difficult it is to design conditionality and enforcement mechanisms that would satisfy each member country's needs. *De facto*, FLAR does not impose conditionality at all. In the case of FLAR, there is an understanding in the literature that the sense of ownership is able to replace the need for strong lending rules (Ocampo 2006). So far, FLAR has shown a redemption rate of 100 percent. AMF offers most credit lines conditioned to a reform program. EFSD essentially provides only one line of credit for emergency financing that requires a reform program whose implementation is rigorously accompanied by the fund for disbursement decisions. Furthermore, a borrowing country may not be in arrears either with the EFSD, any of its member countries, or any other international institution. In contrast, CMIM links its liquidity disbursement for withdrawal of funds of above 40 percent of a member country's quota to the existence of an IMF program. In the case of CMIM, high asymmetries in terms of economic size between Japan and China, on the one hand, and small-member countries such as Cambodia or Vietnam, on the other hand, render a decision on regional solutions for mutual surveillance and conditionality difficult (Grimes 2015; Kawai/Park 2015). The region aims at precluding moral hazard issues by linking the regional fund to the global oversight function of the IMF.

Table 1: The four RFAs compared

RFA	Year of establish-ment	No. of mem-ber coun-tries	Volume (USD billion)	RFA size / regio nal GDP (%)	Resources	Policy conditionality	Timing
FLAR	1978 as FAR (1991 as FLAR)	8	3.9	0.3	Pooled member resources (capital subscription) & market borrowing	*De facto* no conditionality	28 days on average. Prompt borrowing for up to 100% of quota.
CMIM	2000 as CMI (2010 as CMIM)	13	240	1.3	Network of bilateral USD – local currency swap agreements	For amounts exceeding 40% of quota, IMF program required.	n.a.
AMF	1976	22	3.8	0.1	Pooled member resources (capital subscription) & market borrowing	Conditionality (except in 2 fast-track facilities)	Prompt borrowing for up to 100% of quota; others: 1 to 6 weeks.
EFSD	2009	6	8.5	0.39	Pooled member resources (budget contribution)	Conditionality in 1 of 2 loan categories	Between 4 weeks and more than a year

Sources: Author's compilation based on WDI 2016 ; IMF 2013; Rhee et al. 2013; McKay et al. 2011; FLAR n.d.a, n.d.b; AMF n.d.a; n.d.b; EFSD n.d.a; n.d.b; n.d.c; n.d.d. Note: for further details, see Annex I.

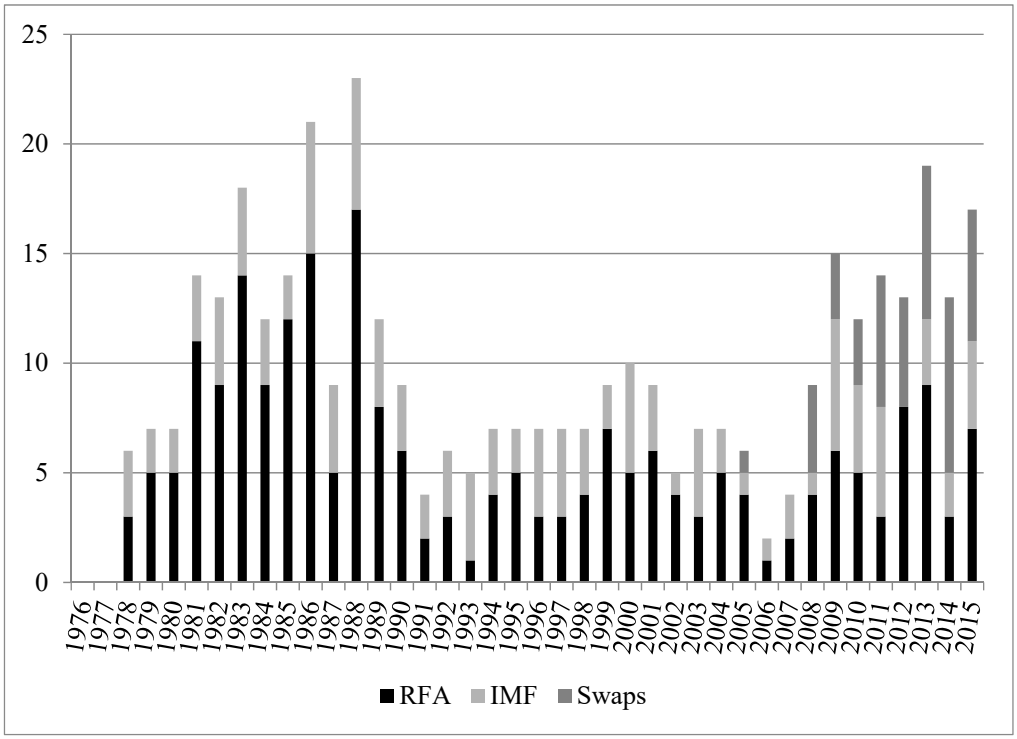
4. The Use of the Global Financial Safety Net – What Role do Regional Financial Arrangements Play?

We analyze the three elements of the GFSN from a comparative perspective, based on the empirical analysis of RFA member countries' choices between the three options in times of financial stress. The analysis is based on a sample of 386 cases in which one of the 50 RFA member countries of FLAR, AMF, CMIM, or EFSD agreed on a short-term financing program with either the IMF or the RFA, or in which a country's central bank agreed on a bilateral swap line with a foreign central bank. The data set includes only short-term financing options. Each RFA member country is included, beginning with the year when its membership started. The data set ranges from 1976 to 2015.[9]

The use of the three different elements of the GFSN underwent substantial changes over time. Figure 1 shows that where a RFA of our sample exists since the end of the Bretton Woods era, it has been used frequently. RFA use reached its peak during the 1980s debt crises in developing countries. Overall, RFAs have been used more often than the IMF, in total 226 times, whereas the IMF has been used 117 times. While the RFAs and the IMF, with some ups and downs, have been in constant demand over the whole period of time of our sample, bilateral swaps became a key element of the GFSN only in the 2000s, primarily after the financial crisis.

9 The AMF member Palestine and the CMIM member Hong Kong are excluded since no IMF-related data are available for these countries. Further, the swap with an unlimited amount between Japan and the US is not included. The following exchange rates (as of 1 April 2016) apply: 1 RMB = 0,15429 USD, 1 KRW =0,00942 USD, 1 YEN = 0,00087 USD. Special Drawing Rights as of April 1, 2016: 1 SDR = 1.4 USD.

Figure 1: Number of Loan Agreements with IMF, RFAs, and Swaps



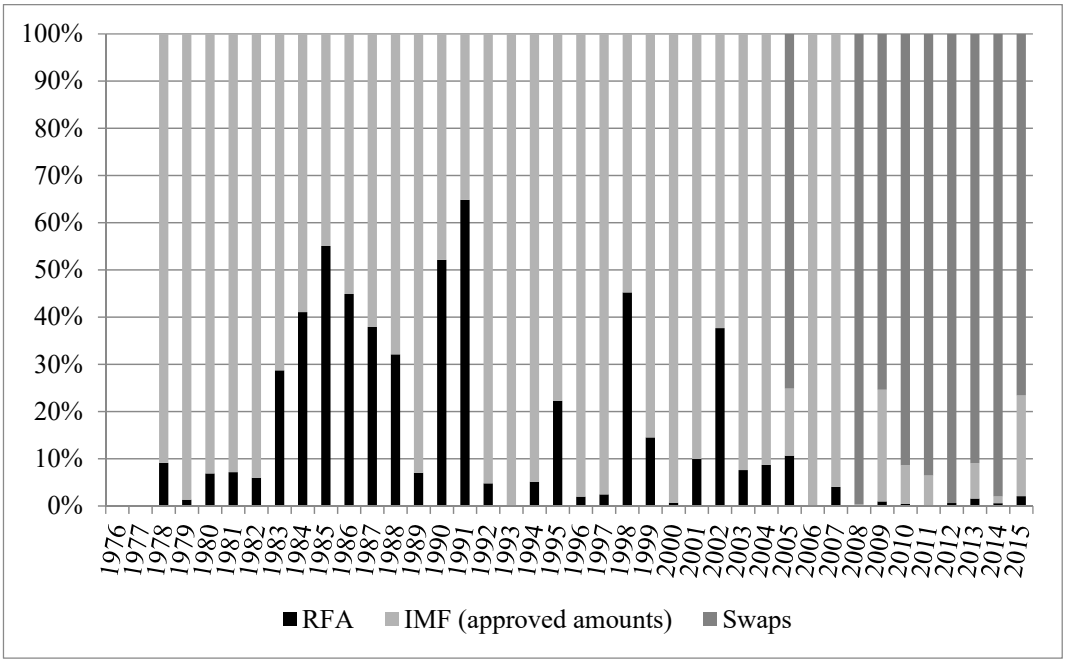
Sources: Authors' compilation based on IMF n.d.a; FLAR, AMF, and EFSD websites and Annual Reports; central bank websites; Garcia-Herrero/Xia 2013; Destais 2014; Eichengreen/Kawai 2014; Hill/Menon 2014; various media reports.

When looking at the disbursed volumes in Figure 2, the picture changes considerably. First, while disbursed volumes of RFAs still came close to those of the IMF during the 1980s and 1990s, later on, RFAs turned rather irrelevant from a global perspective. Their total lending volume amounts to $11.7 billion over the period of our sample. At the same time, the IMF successively increased its financing volume for countries in trouble over the period. The total volume of agreed IMF programs amounts to about $94 billion.

Second, as mentioned before, the financial crisis marks a major turning point in the GFSN. In reaction to the financial crisis, swap agreements not only appeared as an additional element of the safety net but also dominate IMF and RFAs in terms of financing volume since then. The total financing volume of existing swap agreements in our sample is about USD 876.7 billion; 98 percent of these were concluded during or after the financial crisis. The agreed swap amount was thus

about 16 times higher than the volume of IMF programs totaling about USD 52.8 billion after the financial crisis. Swap agreements were used 44 times since then, which is about twice the use of the IMF (24 agreements after the financial crisis in our sample). RFAs were requested 41 times after the financial crisis. Their total disbursed volume of USD 6 billion, however, played a minor role in the response to the crisis.

Figure 2: Share of Total Agreed Amounts with IMF, RFAs and Swaps



Sources: Authors' compilation based on IMF n.d.a; FLAR, AMF, and EFSD websites and Annual Reports; central bank websites; Garcia-Herrero/Xia 2013; Destais 2014; Eichengreen/Kawai 2014; Hill/Menon 2014; various media reports.

Before the financial crisis, RFAs were frequently used for emergency financing. Since the financial crisis, swaps have replaced RFAs as the most-used option for short-term financing in the GFSN. The IMF's role decreased, too. What explains this puzzling picture? A closer look into each of the three elements helps us understand the promises and pitfalls of the GFSN better.

4.1 The Role of the IMF – Why Did the Substantial Adjustments in Lending Terms Fail to Re-Establish its Leading Role as a Global Liquidity Provider?

Despite the substantial reforms of the IMF's lending terms, volumes, and conditionality, the newly introduced and reformed pre-conditional facilities have not been frequently used by its member countries. Emerging markets and developing countries continue circumventing an IMF program in case of a balance-of-payments crisis if possible:

> Some EMs [emerging markets]—feeling vulnerable to heightened capital flow volatility but unwilling to request Fund arrangements—are seeking to expand regional financing arrangements (RFAs) and networks of bilateral swap arrangements (BSAs). Other smaller countries unable to participate in regional pooling are building substantial international reserve buffers for self insurance. To a large degree, this reflects the degree of political stigma related to Fund engagement that prevents some members from seeking preemptive Fund financial support (IMF 2014: 5).[10]

The reform of conventional ex-post conditionality appears not to be very successful. New pre-conditional IMF facilities have been agreed upon six times by two countries out of the 50 countries in our sample, namely Columbia and Morocco. Both countries never drew on the agreed credit lines. Morocco once agreed to a pre-conditional IMF program in parallel to an AMF use. Compared to the other elements of the GFSN, policy conditionality – whether applied *ex ante* or *ex post* – prevents many member countries from using the IMF's resources in cases when they have alternatives available (i.e. Grabel 2011). Second, despite having sped up its lending process already in reaction to emerging market crises in the mid-1990s, the IMF is still slower than other sources of emergency financing (Alabi et al. 2011). Third, despite the significant enlargement of its overall financing capacity, IMF volumes showed to be significantly smaller than those of swaps.

4.2 Bilateral Swap Arrangements: a Large but Highly Irregular Network

10 In face of the little use of its instruments related to stigma effects, the IMF (2017) simulated joint emergency financing intervention with RFAs and finds a positive effect on the risk of contagion. Risk of contagion can be reduced by collaboration since the RFA is faster requested by its member countries than the IMF while the IMF provides better risk diversification and a larger source of funds.

Since 2008, swaps have been responsible for about 94 percent of total liquidity provision of the three elements of the GFSN in our sample. A dense network of bilateral swaps covers especially the Southeast Asian region. Out of the 45 swaps, 34 have been concluded by CMIM member countries. Their volumes differ depending on the partner country's economic size, but in most cases, they are considerably larger than the countries' IMF access limits.

Scholars have mixed views on the effects of swap agreements on the global financial and monetary system, mainly due to their selectivity (Destais 2014; see also Aizenman/Pasricha 2009). Their provision is subject to the decision of the economically stronger "offering" country. Here, mainly close financial and trade links are relevant (Aizenman et al. 2011). They make financial stability of the "receiving" country relevant for the former.

Out of all swaps in our sample, 23 swaps have explicitly been agreed upon for liquidity provision in times of crises or for the purpose of crisis prevention, while 22 at least formally had other purposes. When excluding swaps with advanced economies of the CMIM's plus-three partner countries (China, Japan, and South Korea), out of the remaining 37 swaps, 20 have been agreed to prevent or respond to a crisis situation, while 17 have been concluded for other reasons, according to media reports.

As far as the little information available suggests, few swap lines have been actually used, including those related to crisis prevention or resolution. Hence, the sheer existence of an immediately available swap line is expected to have a positive signaling effect which might shift market expectations back to the "good equilibrium" (see section 2).

4.3 Regional Financial Arrangements – Who Benefits?

Our empirical analysis of the use of the GFSN shows that the longer-standing RFAs FLAR and AMF are in use as a regional emergency financing option despite the rise of the new bilateral central bank currency swaps or the new IMF facilities. In contrast, in the more recently founded RFAs, member countries either substitute RFA use with swaps or IMF facilities (in CMIM) or complement RFA funds with swaps and IMF funds (in EFSD).

Which factors determine the use of the RFA in each region? First, the volume of emergency financing is a key criterion for the decision of countries of where to draw emergency financing from. To assess the sufficiency of the accessible RFA's financing volume for each member country, we characterize the countries as "large" or "small", not based on sheer GDP measure but on their relative liquidity need in case of a balance-of-payments crisis. We compare the access limit of each country in its regional fund to its IMF access limit.[11] For the total of our sample, the share of a country's RFA access limit compared to its IMF access limit is 80.5 percent on average. We thus determine a country as small if its regional access limit is higher than or equal to 80 percent of its access limit at the IMF (Annex 1 provides data for each country).

First, RFAs continue providing a potential safety net for around one third of their members. Even if RFAs by far account for the lowest overall volume, we find that a good third (32 percent of the 50 countries in our sample) have a regional access limit that is equal to or more than 80 percent of their IMF access limit of up to the short-term accessible 200 percent of their quota per year. This applies especially to the small FLAR, CMIM, and EFSD members.[12]

Consequently, the other two thirds of the countries in our sample do not find sufficient financing volumes regionally. Out of these, only a handful of countries are partner to a swap agreement. Thus, only few have other sources for emergency financing than an IMF program to choose from. Our findings point in the same direction as an IMF study that covers all IMF member countries. IMF (2016b) finds the larger but less systemically important emerging markets and developing countries to be inadequately supplied with emergency financing options to choose from.

---

11 A country's access limit at the IMF is calculated based on its quota. The quota formula determines a country's "relative [economic] position". It includes GDP, openness, economic variability, and international reserves (IMF n.d.c). It hence includes several of the aspects relevant to assess a country's financing need listed by McKay et al. 2011 and discussed in section 2.
As our analysis includes data until 2015 only, we examine the countries' decision for one of the elements of the GFSN based on their IMF quota and access limits before the implementation of the 14th General Quota Review started in 2016.

12 When reducing the threshold of the regional access limit to 55 percent of the IMF access limit, the result changes only slightly, and still a good third finds sufficient funds regionally: 38 percent of 50 countries have access to a financing volume that is equal or higher than their IMF quota. For a higher threshold of 90 percent of the IMF access limit we get the same results; only at a threshold of 100 percent of the IMF access limit do results change: in this case, only 28 percent of the 50 countries and hence less than a third remain with an equal or higher access limit to their IMF access limit.

Beyond these global patterns, the regional mechanisms show striking differences in their use and the relevance of our criteria. In the following, we assess these differences case by case:

The FLAR has been used 47 times since its establishment, with an average drawing volume of about USD 160 million. All member countries use the FLAR except Paraguay and Uruguay. It is especially in this region that the smaller economies make more use of their RFA than of other elements of the GFSN. Relatively large access limits compared to the members' IMF quota together with the *de-facto* no conditionality policy of the regional fund explains the higher activity. The IMF was drawn on 38 times by FLAR members; 50 percent of these agreements were made by larger member countries. Large member countries, such as Colombia, have turned to the IMF in recent years more often, while they rather used the FLAR until the 1980s/1990s. About a quarter of all FLAR drawings happened parallel to an IMF agreement, mainly by the small member countries Bolivia and Ecuador in the 1980s and 1990s. Hence, large member countries substitute the insufficient FLAR funds by IMF financing, while small member countries formerly complemented, and recently rather substituted, IMF lending with regional borrowing.

In our sample, the FLAR region stands out as the only region where no bilateral swap agreement is in place. Instead, after the financial crisis, the overall size of the fund and the average FLAR lending volume increased to about USD 500 million.

The AMF is the most frequently used RFA in our sample, with 174 drawings. The smaller countries, some of which are oil importers such as Djibouti or Mauritania, make frequent use of the AMF whereas the larger and oil-exporting economies, such as Saudi Arabia or the United Arab Emirates, have only drawn a few times or not at all on the AMF so far. The average drawing volume is very small, amounting to USD 10 million. After the financial crisis, the average lending volume doubled to about USD 20 million. In the 1980s, with high oil price volatility, the fund was used much more intensively, also by larger economies, than in more recent years. Compared to the access limits of the IMF, the borrowable amounts in AMF are by far not sufficient, except in the case of the smallest member countries, Somalia and Sudan.

At the same time, we observe the parallel use of AMF and IMF facilities in about a fifth of all AMF uses. In contrast to FLAR, member countries complement RFA

and IMF funds more regularly. Also in contrast to FLAR, both small and large actively borrowing members of the AMF make use of either an IMF program or a combination of RFA and IMF programs. The IMF was requested 66 times. Apart from the fact that the relatively small amounts provided by the AMF may require most member countries to additionally draw on other means of emergency liquidity, the AMF had until recently also presupposed that an IMF program exists for a country that would draw from the ordinary or the extended credit line. Such institutionalized complementarity is reflected in an intense parallel use of AMF and IMF, for example, during and after the Arab Spring in 2011.

Recently, Qatar and the United Arab Emirates, who had used neither the RFA nor the IMF before, have entered swap agreements with the PBOC with more than double the volume of their access limit at the IMF.

The CMIM represents the opposite case of the FLAR. The regional arrangement has not been used during its more than 15 years of existence, despite the fact that the majority of the member countries find very high access limits in CMIM. At the same time, a high number of swap lines characterize the region, particularly since the financial crisis. Three CMIM member countries, namely, Indonesia, Lao, and Vietnam, agreed on IMF programs with a total volume of USD 5.5 billion, all of them before 2008. After the financial crisis, CMIM member countries exclusively turned to bilateral swap agreements 33 times (25 of these intra-regional). CMIM member countries have so far been partners to swap agreements that account for a total volume of about USD 825 billion. The member countries associate the institutionalized IMF link in CMIM with painful stigmatization (Grimes 2015; Kawai/Park 2015). Particularly the case of South Korea in the aftermath of the financial crisis shows that neither the CMIM nor the IMF was considered appropriate to solve the shaky position of the South Korean won. Instead, South Korea agreed on an extra-regional swap agreement with the FED in 2008 (Aizenman 2010). Thus, we observe a de-coordination trend in the region: the dense net of mostly intra-regional but bilateral swaps has so far wiped out the institutional arrangement. The obligatory IMF agreement attached to CMIM played a key role. The negative experiences within the euro area (cf. Dullien et al. 2013) may have slowed down actual development of regional surveillance and enforcement rules to reduce or even replace the IMF's role. The EFSD has been used five times by three of the six member countries, namely Armenia, Belarus, and Tajikistan. Compared

to their IMF access limits, four of the five smaller member countries find sufficient financing volume in the regional fund. Additionally, EFSD member states can reallocate access limits to another member state if needed (EFSD n.d.b).

In the EFSD, in contrast to the other RFAs, member countries use their regional fund and swap agreements in parallel: four of the hitherto five drawings for emergency financing from the regional fund were made in parallel to a swap agreement with China. The IMF was addressed as a complement, too, but not as frequently as swaps. In the case of Belarus, such RFA and swap use was preceded by an IMF program and hence, as the only case in our sample, all three elements of the safety net were used in combination.

We see a motivation for diversification in the EFSD governance structure: with several sources of emergency financing, borrowing member countries expose themselves less to the regional dominance of Russia, which finances almost 90 percent of the regional fund's volume and holds respective voting power. Further, the relatively long time period that the EFSD needs until disbursement of funds fosters the parallel use of swaps. Finally, the case of Belarus, where the disbursement of the sixth credit tranche has been postponed due to the country's failure to fulfill the conditions (EFSD n.d.e), demonstrates that the EFSD has strong enforcement mechanisms.

5. Concluding: The Scattered Global Financial Safety Net

The global financial safety net has undergone substantial changes since the financial crisis. These changes have modified the role of regional financial arrangements but in a more complex way than we assumed.

Our main finding is that today's global safety net is marked by enormous new inequalities in terms of availability and coverage of country risk. Today's GFSN is not a global but a structurally and geographically scattered one, whose full options are far away from being equally offered to all countries. These inequalities have played a major role for the changes in the use of RFAs since the financial crisis. We find three groups of countries with unequal access to adequate volumes of emergency financing: firstly, small countries remain under the umbrella of RFAs that are big enough for them; these account for a good third of the member countries in our sample of all relevant RFAs. Secondly, only a handful of privileged countries have access to voluminous bilateral swaps, and thirdly, more than half of the

countries in our sample depend on traditionally conditioned IMF support, since they are too large for their regional liquidity pool and do not have a swap available in times of crises.

We examine not only the availability and volume of emergency financing but also the effective use of the elements of the GFSN and especially of RFAs. Therefore, we use three theoretically deduced criteria for a country's choice of an emergency financing source for adequate response to financial crises. Beyond volume, we also examine timeliness and conditionality of available options for emergency liquidity provision.

Our second finding confirms the first hypothesis: volume is a necessary but not a sufficient criterion for the selection of a financing option. When deepening the analysis to the regional comparison, we find that the second-generation RFAs that were founded during the last two decades in response to emerging market and the global financial crisis pooled together significantly higher volumes than those of the first generation. In the first-generation RFAs, the majority of the member countries cannot find sufficient liquidity to ban a financial crisis with large financial volumes typically involved nowadays. Nevertheless, they are used by their member countries. Their frequent use even dominates other options, obviously for other reasons than volume. In the second-generation RFAs, the majority of member countries would find sufficient emergency liquidity. Yet, especially the CMIM members do not make use of their RFA, again for other reasons than the provided financing volume. In contrast, EFSD members draw on their RFA but at the same time diversify their emergency financing sources, again, for other reasons than the accessible volume. In fact, the pattern of use of the RFAs of the second generation varies considerably between the two cases. Thus, volume delivers only a partial explanation for the use of RFAs.

As expected, we find conditionality to be not a necessary criterion. It is however not sufficient either to explain the patterns of use of the global safety net's elements. The newly introduced pre-conditional IMF loans did not change the pattern of use of the countries in our sample. We observe a general decline in IMF use despite its reforms. Our findings confirm the IMF's own perception of a stigma attached to its lending. The case of CMIM's non-use confirms that an institutionalized link to IMF conditionality for the use of the regional fund transfers the stigma effect to the

regional body. However, among the other RFAs, links to IMF conditionality do not preclude their use. AMF, for example, is frequently used despite the fact that for some credit lines, over a long time, countries had to agree to an IMF program. Further, we find the EFSD to be in frequent use, too, despite harsh regional conditionality. Only for the case of FLAR we can argue that *de facto* unconditional lending is an explanatory variable for its use. So we cannot conclude that the link to IMF conditionality hinders the use of the regional option, per se. We additionally find that the difference between the regionally and globally set conditions attached to lending matters.

As expected, we find timeliness to be a sufficient criterion to explain the use of the elements of the GFSN. Even if the IMF made substantial efforts to speed up its lending process in order to cope with the speed of new types of financial crises, three of the four RFAs in our sample are able to provide timelier responses to a crisis in their emergency lines at small volumes. They are used more often than the IMF. The reluctance of member countries to use the CMIM is connected to the (likely) delay in the provision of funds.

Our third finding is that in contrast to the second hypothesis, regional funds were not simply replaced by the "big new" dense but irregular network of bilateral swap arrangements or by the reformed IMF credit lines that emerged in the last decade. In fact, we find a much more complex and region-specific relationship between the different elements of the GFSN. Since the financial crisis, a broad variety of complementary and substitutive uses of the three elements coins the RFA member countries' choice of emergency financing options. Some of the RFA member countries, especially in Southeast Asia, indeed favor swap lines, if available, over IMF and RFA funds. At the same time, we also find a complementary use of swap lines, IMF, and RFA funds, especially in the Eurasian region, or even the substitution of the IMF for regionally provided liquidity in Latin America.

We explain this complexity by interdependencies between volume, conditionality, and timeliness and by differences between large and small member countries. In the AMF, it is the very small lending volume for the majority of its members that urges the countries to complement with IMF funds. In the FLAR, we also find complementary use of RFA and IMF, but only in the initial years of FLAR's existence. Today, small FLAR members increasingly substitute IMF funds by using

their regional body instead. Most governments in the region have distanced themselves from global institutions and policies such as the IMF during the last decade. In the CMIM, countries circumvent both the much-criticized IMF and the RFA with its IMF link because not only most large but also small countries had swap lines available to substitute the large regional fund. In contrast, the EFSD shows that RFA substitution is not a necessary consequence of the availability of swap lines. In EFSD, member countries complement RFA and IMF with swap lines. The borrowing member countries seek to diversify their financing sources to minimize their dependency on the asymmetric EFSD governance structures.

Finally, our analysis hence shows that other factors beyond the analyzed lending criteria exist, which we find especially in the governance structure of RFAs. Attenuate power asymmetries such as in the EFSD, where Russia is clearly dominant as a member, may pose a problem to smaller member countries to make use of the regional mechanism. Asymmetry in terms of members' economic size, such as in the CMIM, combined with higher risks due to a large volume of pooled resources make the finding of intraregional lending criteria difficult. A long-lasting cooperation may be able to create a sense of regional ownership, which seems to secure repayment without explicitly imposing lending conditions. Further research is needed on the interplay between regional asymmetry, governance mechanisms, and the use of regional funds.

References

Aizenman J (2010) International Reserves and Swap Lines in Times of Financial Distress: Overview and Interpretations. ADBI Working Paper Series 192. Tokyo: Asian Development Bank Institute

Aizenman J, Jinjarak Y, Park D (2011) International Reserves and Swap Lines: Substitutes or Complements? International Review of Economics Finance 20/1: 5-18

Aizenman J, Pasricha G (2009) Selective Swap Arrangements and the Global Financial Crisis: Analysis and Interpretation. NBER Working Paper 14821. March. Cambridge, MA: National Bureau of Economic Research

Alabi RA, Alemazung JA, Bass H et al (2011) Africa and the Global Financial Crisis – Impact on Economic Reform Processes. In: African Development Perspectives Yearbook 2010/11. Lit Verlag, Münster

Arab Monetary Fund (2015) Annual Report 2014. http://www.amf.org.ae/en/annual_reports. Accessed 15 December 2017

Arab Monetary Fund (n.d.a) Loan Commitments. http://www.amf.org.ae/en/page/loan-commitments. Accessed 15 December 2017

Arab Monetary Fund (n.d.b) Types of Lending http://www.amf.org.ae/en/page/types-lending. Accessed 15 December 2017

Cole HL Kehoe TJ (1996) A Self-fulfilling Model of Mexico's 1994-1995 Debt. Crisis of International Economics 41/3-4: 309-330

Corsetti G, Pesenti P, Roubini N (1998) Paper Tigers? A Model for the Asian Crisis. NBER Working Paper 6783. November. Cambridge, MA: National Bureau of Economic Research

Destais Ch, (2014) Central Bank Currency Swaps and the International Monetary System. Policy Brief 2014-05. Paris. Centre d'Etudes Prospectives et d'Informations Internationales

Dullien S, Fritz B, Mühlich L (2013) Regional Monetary Cooperation in Developing Areas: Lessons to be learnt from the Euro Crisis? World Economic Review 2: 1-23

Eichengreen B (2007) Insurance Underwriter or Financial Development Fund: What Role for Reserve Pooling in Latin America? Open Economies Review 18: 27–52

Eichengreen B, Kawai M (2014) Issues for Renminbi Internationalization: An Overview. ADBI Working Paper Series 454. January. Tokyo: Asian Development Bank Institute

Eurasian Fund for Stabilization and Development (n.d.e) Financial Credit to Belarus for strengthening the Balance of Payments

https://efsd.eabr.org/en/projects/financial-credit-to-belarus-for-strengthening-the-balance-of-payments/. Accessed 15 December 2017

Eurasian Fund for Stabilization and Development (n.d.a) Projects. https://efsd.eabr.org/en/projects . Accessed 15 December 2017

Eurasian Fund for Stabilization and Development (n.d.b) EFSD Country Access Limits. https://efsd.eabr.org/en/about/instruments/limits-of-access. Accessed 15 December 2017

Eurasian Fund for Stabilization and Development (n.d.c) Policies and Procedures. https://efsd.eabr.org/en/about/documents/policies_and_procedures/. Accessed 15 December 2017

Eurasian Fund for Stabilization and Development (n.d.d) Mission and Resources https://efsd.eabr.org/en/about/mission_and_resources/. Accessed 15 December 2017

Fondo Latinoamericano de Reservas (n.d.a) Lines of Credit. http://www.flar.net/we_make/lineas_de_credito. Accessed 15 December 2017

Fondo Latinoamericano de Reservas (n.d.b) Member Countries. http://www.flar.net/member_countries. Accessed 15 December 2017

Fritz B, Dullien S, Mühlich L (2016) The IMF to the Rescue: Did the Euro Area benefit from the Fund's Experience in Crisis fighting? Discussion Paper Economics 2016/20. Berlin: School of Business and Economics FU Berlin

Garcia-Herrero A, Xia L (2013) China's RMB Bilateral Swap Agreements: What Explains the Choice of Countries? Discussion Papers 12 BOFIT -Institute for Economies in Transition. Helsinki: Bank of Finland

Grabel I (2011) Not Your Grandfather's IMF: Global Crisis, 'Productive Incoherence' and Developmental Policy Space. Cambridge Journal of Economics 35/5: 805-830

Grabel I (2017) Productive Incoherence in the Evolving Financial Governance Architecture: A Hirschmanian Perspective. Paper prepared for the workshop on

‘Rethinking Development Finance for the 21st Century’, Boston University, 15 September 2017

Grimes WW (2015) East Asian Financial Regionalism: Why Economic Enhancements Undermine Political Sustainability. Contemporary Politics 21/2: 145-160

Hawkins A, Rahman J, Williamson T (2014) Is the Global Financial Safety Net at a Tipping Point to Fragmentation? Economic Roundup 1: 1-20

Helleiner E (2014) The Status Quo Crisis: Global Financial Governance After the 2008 Meltdown. University Press, Oxford

Hill H, Menon J (2014) Financial Safety Nets in Asia: Genesis, Evolution, Adequacy and Way forward. In: Masahiro K, Morgan PJ, Rana PB (ed) The Global Economic Architecture: The Asian Perspective. Edward Elgar Publishing, Cheltenham, pp 83-111

Imbs J, Mauro P (2007) Pooling Risk among Countries. IMF Working Paper 07/132. Washington, DC: International Monetary Fund

IMF (2009) IMF Implements Major Lending Policy Improvements. https://www.imf.org/external/np/pdr/fac/2009/032409.htm. Accessed 15 December 2017

IMF (2013) Stocktaking of the Fund’s Engagement with Regional Financial Arrangements. https://www.imf.org/external/np/pp/eng/2013/041113b.pdf. Accessed 15 December 2017

IMF (2014) Review of Flexible Credit Line, the Precautionary and Liquidity Line, and the Rapid Financing Instrument. http://www.imf.org/external/np/pp/eng/2014/012714.pdf. Accessed 15 December 2017

IMF (2016a) Historic Quota and Governance Reforms Become Effective Press Release No 16/25 https://www.imf.org/en/News/Articles/2015/09/14/01/49/pr1625a. Accessed 15 December 2017

IMF (2016b) Adequacy of the Global Safety Net. Paper prepared for an Informal Session to Engage March 2016

IMF (2017) Collaboration between Regional Financing Arrangements and the IMF. Policy Paper July 2017

IMF (n.d.a) IMF Members' Financial Data by Country. http://www.imf.org/external/np/fin/tad/exfin1.aspx. Accessed 15 December 2017

IMF (n.d.b) Financial Activities List. http://www.imf.org/external/createX/CreateX.aspx?series=fa. Accessed 15 December 2017

IMF (n.d.c) IMF Quota. http://www.imf.org/en/About/Factsheets/Sheets/2016/07/14/12/21/IMF-Quotas. Accessed 15 December 2017

Kawai M, Lombardi D (2012) Financial Regionalism. Finance & Development 49/3: 23-25

Kawai M, Park YC (2015) Financial and Monetary Cooperation in East Asia. In Kawai M, Park YC, Wyplosz C (ed) Monetary & Financial Cooperation in East Asia – The State of Affairs after the Global and European Crisis. Oxford University Press, Oxford, pp 11-51

Krugman P (1979) Model of Balance of Payments Crises. Journal of Money, Credit and Banking 11/1: 311-325

Krugman, P (1999) Currency Crises. In: Feldstein M (ed) International Capital Flows. University of Chicago Press, Chicago, pp 421-440

Lane PR (2013) Financial Globalisation and the Crisis. Open Economies Review 24:555–580

Li C. (23 Oct 2015) Banking on China through Currency Swap Agreements. Pacific Exchange Blog, Federal Reserve Bank of San Francisco. http://www.frbsf.org/banking/asia-program/pacific-exchange-blog/banking-on-china-renminbi-currency-swap-agreements/. Accessed 15 December 2017

Machinea JL, Titelman D (2007) Less Volatile Growth? The Role of Regional Financial Institutions. CEPAL Review 91: 7-27

McKay J, Volz U, Wölfinger R (2011) Regional Financing Arrangements and the Stability of the International Monetary System. Journal of Globalization and Development 2/1 Article 5

Mühlich L (2014) Advancing Regional Monetary Cooperation - The Case of Fragile Financial Markets. In: Tomann H, Hölscher J (ed) Studies in Economic Transitio Houndmills. Palgrave Macmillan, Basingstoke

Obstfeld M (1996) Models of Currency Crises with Self-fulfilling Features. European Economic Review 40/1: 1037–1047

Ocampo JA, Titelman D (2010) Subregional Financial Cooperation: The South American Experience. Journal of Post Keynesian Economics 32/4: 249-268

Ocampo JA (2006) Regional Financial Cooperation: Experiences and Challenges. In: Ocampo JA (ed) Regional Financial Cooperation. DC: Brookings Institution Press, Washington, pp 1-39

Reuters (2009) UPDATE 2-China Sets 20 Bln Yuan Currency Swap with Belarus. http://in.reuters.com/article/china-belarus-idINPEK1922920090311. Accessed 15 December 2017

Rhee C, Sumulong L, Vallée S (2013) Global and Regional Financial Safety Nets: Lessons from Europe and Asia. Bruegel Working Paper 2013/06. Brussels: Bruegel

Rose AK (2007) A Stable International Monetary System Emerges: Inflation Targeting is Bretton Woods, Reversed. Journal of International Money and Finance 26/5: 663-681

Rosero LD (2014) Regional Pooling of International Reserves: The Latin American Reserve Fund in Perspective. Latin American Policy 5/1: 62–86

Scheubel B Stracca L (2016) What do we know about the global financial safety net? Rationale, data and possible evolution. ECB Occasional Paper Series No.117

Tavlas GS (1996) Currency Crises: Introduction. Open Economies Review 7: 431-436

UNCTAD (2011) Regional Monetary Cooperation and Growth-Enhancing Policies: The New Challenges for Latin America and the Caribbean. Study prepared by the secretariat of the United Nations Conference on Trade and Development. United Nations, Geneva.

Volz U (2016) Toward the Development of a Global Financial Safety Net or a Segmentation of the Global Financial Architecture? Emerging Markets Finance Trade Volume 52/10: 2221-2237

Womack B (2016) Asymmetry and International Relationships. Cambridge University Press, Cambridge

Wyplosz C (2007) The Foreign Exchange Reserves Buildup: Business as Usual. Paper prepared for the Workshop on Debt, Finance and Emerging Issues in Financial Integration, Commonwealth Secretariat, London, 6-7 March 2007 http://www.un.org/esa/ffd/events/2007debtworkshop/Wyploz.pdf. Accessed 15 December 2017

Zhu Y (22 May 2015) Swap Agreements & China's RMB Currency Network. http://cogitasia.com/swap-agreements-chinas-rmb-currency-network/. Accessed 15 December 2017