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# The IMF and precautionary lending: An empirical evaluation of the selectivity and effectiveness of the Flexible Credit Line

Dennis Essers<sup>\*, a, b</sup> and Stefaan Ide<sup>a, c</sup>

<sup>a</sup>*Economics and Research Department, National Bank of Belgium, Brussels, Belgium*

<sup>b</sup>*Institute of Development Policy (IOB), University of Antwerp, Belgium*

<sup>c</sup>*Money and Capital Markets Department, International Monetary Fund, Washington, DC, United States*

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## Abstract

This paper provides an empirical evaluation of the Flexible Credit Line (FCL), the IMF's prime precautionary lending instrument since 2009 to which so far only Mexico, Colombia and Poland have subscribed. We consider both questions of selectivity and effectiveness: first, which variables explain the three countries' participation in FCL arrangements? And second, to which extent has the FCL delivered on its promise of boosting market confidence in its respective users? Based on a probit analysis, we show that FCL selectivity can be explained by both demand- and supply-side factors. The probability of participation in the FCL was greater in countries that experienced larger prior exchange market pressures, that had lower bond spreads and inflation, that accounted for higher shares in US exports, and that exhibited a higher propensity of making political concessions to the US. Using a synthetic control approach, we find evidence for some, but generally limited beneficial effects on sovereign bond spreads and gross capital inflows into the three FCL countries. Overall, our results suggest that any economic stigma that may prevent eligible countries from entering into an FCL arrangement is unwarranted. Conversely, the apparent link of FCL participation with US interests is not conducive to overcoming political stigma.

**Keywords:** Flexible Credit Line; IMF; emerging markets; synthetic control; bond spreads; capital flows

**JEL codes:** F33; F34; F55

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\*Corresponding author at: National Bank of Belgium, Boulevard de Berlaimontlaan 14, B-1000 Brussels, Belgium. E-mail addresses: [dennis.essers@nbb.be](mailto:dennis.essers@nbb.be) (D. Essers), [stefaan.ide@nbb.be](mailto:stefaan.ide@nbb.be) (S. Ide).

# 1 Introduction

The International Monetary Fund (IMF) is often seen as having a unique position within the the ‘global financial safety net’ (GFSN), i.e., the set of institutions and mechanisms that provide financial support to countries to prevent or dampen financial crises. Through the pooling of funds from its near-universal membership the IMF engages in global risk-sharing, unlike the other layers of the GFSN (international reserves, bilateral central bank swaps, and regional financing arrangements). Moreover, the IMF’s global mandate and long-time experience with surveillance and program conditionality arguably also make it well-placed to rein in moral hazard and encourage sound and multilaterally consistent policies (Fischer, 1999; Denbee et al., 2016; IMF, 2016; Scheubel and Stracca, 2016).

This paper zooms in on one particular IMF instrument, the Flexible Credit Line (FCL), which was introduced in March 2009, in the wake of the global financial crisis. The FCL allocates large amounts of resources to eligible countries with strong macroeconomic fundamentals and solid policy track records on which, in case a need emerges, they can draw at their own discretion and unconditionally, i.e., without having to commit to an adjustment program. This makes the FCL the IMF’s first truly precautionary lending instrument, something the IMF has tried (but failed) to establish at least since the early 1990s (IMF, 2003). The strict pre-set qualification criteria and the assured access to funds under the FCL serve to signal the IMF’s confidence in the participating country’s policies and in its ability to take corrective measures when needed. In turn, this stamp of approval by the IMF is meant to ease investors’ minds. Or as the IMF (2011, p. 9) itself puts it: “A litmus test of the success of the FCL ... is whether [it] had a positive impact on market confidence in qualifying members, ... [its] key objective”.

Subscription to the FCL has been limited however, with only Mexico, Colombia and Poland having entered into FCL arrangements so far, and not a single drawing has been made on these arrangements. That notwithstanding, the FCL has important financial implications for the IMF. As of end October 2017, the FCLs of Mexico, Colombia and Poland together accounted for no less than two-thirds of the total value of agreed IMF lending arrangements.<sup>1</sup> There has been surprisingly little empirical analysis of the reasons behind the limited uptake of this seemingly attractive instrument. In particular, one may wonder: why exactly Mexico, Colombia and Poland, among many more emerging market economies with strong fundamentals and sound policy regimes? Furthermore, convincing tests of the IMF’s claim that “[w]hile none of the three countries have so far drawn down on these lines, the FCL has provided valuable insurance

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<sup>1</sup>Poland exited from its FCL arrangement in November 2017. Yet, end April 2018, the FCLs of Mexico and Colombia still represented 65% of total IMF commitments.

to these countries and helped boost market confidence during the period of heightened risks” are lacking.<sup>2</sup> Given that the FCL is one of the IMF’s flagship lending instruments and represents such a large part of committed resources, we believe a better understanding of the FCL’s *selectivity* and *effectiveness* benefits both the IMF and would-be FCL candidate countries.

The key contribution of the paper is to bring more empirical rigor to discussions about the FCL on exactly these two fronts. First, we address the question of the *selectivity* of the FCL, i.e., we aim to establish which variables best explain the three countries’ participation in FCL arrangements since 2009. Several potential reasons for limited participation in the FCL have been advanced by the IMF itself and a handful of external researchers, but all of the studies we know of are purely narrative or descriptive. On the demand side, even if the FCL abandons all ex post conditionality, potentially eligible countries may have been reluctant to approach the IMF, especially in the absence of acute financing problems. This lingering ‘political stigma’ is a legacy of (often painful) IMF-sponsored structural adjustment programs in the past (Ito, 2012; IEO, 2013). Hence, some countries may have preferred to self-insure against new shocks by means of reserve accumulation. Surveys of country authorities indeed suggest the importance of political stigma and preference for self-insurance as factors inhibiting FCL demand (IMF, 2011, 2014). Countries may have also feared negative market reactions to any request for IMF support, i.e., ‘economic stigma’, since such requests could be interpreted as signaling hidden vulnerabilities (Marino and Volz, 2012; Prasad, 2014).<sup>3</sup> Again according to IMF (2011, 2014) surveys, emerging market country authorities have been somewhat dissatisfied with the unpredictable character of the FCL’s qualification assessment, which involves a good dose of judgment by IMF staff. Alternatively, demand may not have been that weak after all, due to the very high qualification bar for the FCL (Keller et al., 2009), even if simple country rankings based on macroeconomic and institutional indicators suggest that the pool of FCL-eligible countries is (several times) larger than the current three users (Henning, 2015; Birdsall et al., 2017). Or, perhaps, the mere existence of the FCL has provided sufficient insurance to countries seen as likely qualifiers, obviating the need for actual requests. Among those potential qualifiers some already had relatively high external buffers (IMF, 2011, 2014). On the supply side, the IMF may have been cautious in promoting the FCL, because of concerns about adverse selection or a crowding out of resources for crisis resolution. Finally, it could be that the IMF has kept the ‘FCL club’ deliberately small in order to strengthen its (assumed) positive signaling function.

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<sup>2</sup>See FCL factsheet at <http://www.imf.org/external/np/exr/facts/pdf/fcl.pdf>.

<sup>3</sup>Anecdotal evidence for political/economic stigma can be found in the media. For example, a few days before the official announcement of the FCL a senior official in the South Korean Ministry of Finance was quoted in the Wall Street Journal as saying that “South Koreans tremble and financial markets turn sensitive whenever they hear the word ‘IMF’, so it’s not easy for us to participate in the [FCL] program” (Kong and Venkat, 2009). Likewise, when asked about Mexico’s involvement in the FCL, Brazilian president Lula da Silva told journalists: “The thing that I can say with a lot of pride is that Brazil needs no money from the IMF today” (Bugge, 2009). See also The Economist (2009).

Nevertheless, in its reviews of the FCL, IMF staff seems to exhibit a willingness to extend the instrument to a wider set of member countries (Birdsall et al., 2017). Our empirical analysis seeks to shed further light on the importance of these and other demand- and supply-side factors. Compared to previous studies and in line with the broader literature on IMF lending (see further), we take into consideration a much larger set of potential correlates of FCL participation, including not only macroeconomic, financial and institutional indicators but also quantitative measures of countries' economic and political links with the IMF's main shareholders. Using probit models we examine the influence of multiple variables jointly, even though we are restricted to estimating parsimonious specifications because of limited sample size.

The second question we address in the paper is that of the FCL's *effectiveness*, i.e., the extent to which the arrangements have delivered on their promise of boosting market confidence in the participating countries. More specifically, we evaluate the effects of the FCLs of Mexico, Colombia and Poland on two market-based proxies of investor confidence: sovereign bond spreads and gross capital inflows. These indicators have featured as the main outcome variables in previous event studies and panel regressions, again most notably by the IMF itself. Indeed, the event study Figure A1 in Appendix, reproduced from IMF (2011), shows that relative to their global benchmark, bond spreads of Mexico and Colombia (but not Poland) declined markedly in the first few days after these countries' public announcements of interest in the FCL. Likewise, panel regressions in IMF (2014), using dummies for periods when FCL arrangements were active and controlling for global and regional factors, suggest that bond spreads decreased and bond fund flows increased in FCL participants and likely qualifying countries in the months following their first arrangements.<sup>4</sup> Conversely, comparing the evolution of bond spreads of the three FCL countries with those of other emerging market economies exhibiting similar prior spreads, Fernandez Arias and Levy Yeyati (2012) argue that the FCL's benefits, if any, were muted and short-lived. They conclude that the general improvement in bond spreads following the April 2009 London G20 summit should not be attributed to the availability of the FCL (see also John and Knedlik, 2011; Marino and Volz, 2012). These evaluations of FCL effectiveness leave much room for improvement, however. We employ the synthetic control method pioneered by Abadie and Gardeazabal (2003) to test whether, over time, the FCL lowered bond spreads and/or increased capital inflows in Mexico, Colombia and Poland *relative to the counterfactual*, i.e., compared to a hypothetical scenario whereby these countries would not have had FCLs in place. The main value added of this second part of our analysis lies precisely in the construction of more appropriate and

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<sup>4</sup>Also the IMF's country reports regularly refer to the FCL's presumed effects on bond spreads and capital inflows. For example, in its first review under the Polish FCL arrangement, IMF staff claims that "Poland is benefiting from the FCL arrangement. The strengthening of the zloty, reduction in sovereign external spreads, increasing capital inflows, and declining yield on government bonds have in part reflected the stabilizing impact of Poland's FCL agreement" (IMF, 2009c, p. 17).

more transparent counterfactuals than have been used in previous work. In event studies single-country or emerging market average spreads/capital inflows constitute the counterfactual; in standard panel regressions the counterfactual is a weighted combination of individual country spreads/capital inflows, but weights remain hidden and may involve extrapolation outside the support of the data. The synthetic control estimator on the other hand constructs a data-driven counterfactual for post-FCL Mexican, Colombian and Polish spreads/capital inflows by searching for the optimally weighted convex combination of non-FCL countries that best approximates the evolution of actual Mexican, Colombian and Polish spreads/capital inflows and their determinants over an extended pre-FCL period. The synthetic control method is a quantitative comparative case study methodology that objectivizes and makes explicit the selection of comparator countries and that controls for time-varying unobserved heterogeneity. It can be implemented without the need for large cross-sectional samples or a minimum frequency of treatments/interventions and is therefore well suited for our setting. Relative to previous FCL evaluations, we also consider a much longer time horizon, from 2009 up to end 2014. A priori, there is no apparent reason why any immediate beneficial FCL effect on spreads or capital inflows should be assumed to disappear over time. One would rather expect to see the FCL's largest impact on market confidence during periods of heightened global risks (IMF, 2014).

The paper relates to different strands of literature. First, it connects to a large body of work studying the determinants of countries' participation in IMF borrowing more generally (see [Steinwand and Stone, 2008](#); [Moser and Sturm, 2011](#), for more systematic reviews).<sup>5</sup> Whereas early studies focused mainly on the role of the macroeconomic-financial situation of the borrowing country ([Bird and Orme, 1981](#); [Joyce, 1992](#); [Conway, 1994](#); [Knight and Santaella, 1997](#)), the more recent literature has also examined the importance of economic and political links with the IMF's main shareholders, i.e., the US and other G7 countries (e.g., [Thacker, 1999](#); [Bird and Rowlands, 2001](#); [Oatley and Yackee, 2004](#); [Barro and Lee, 2005](#); [Sturm et al., 2005](#); [Barnebeck Andersen et al., 2006](#); [Broz and Hawes, 2006](#); [Eichengreen et al., 2008](#); [Pop-Eleches, 2009](#); [Breen, 2010](#); [Copelovitch, 2010](#); [Dreher and Walter, 2010](#); [Presbitero and Zazzaro, 2012](#); [Bird et al., 2015](#); [Papi et al., 2015](#)). Although the results tend to vary along with country samples, time periods, variable definitions and estimation methodologies, several papers have documented positive associations between countries' share in US/G7 trade, their share in US/G7 banking claims, and/or measures of their alignment with the US/G7 in UN General Assembly (UNGA) voting, on the one hand, and access to IMF loans, on the other. The underlying argument here is that the IMF Executive Board's dominant members exert influence

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<sup>5</sup>Often the determinants of IMF loan participation are studied not as a stand-alone topic but rather to derive instrumental variables to isolate the effects of IMF loans on economic growth or other outcomes. Such an approach differs from what we intend to do in this paper.

on IMF lending decisions to protect their exporters' and banks' interests and to reward foreign policy allies. Investigating whether these findings hold in the specific context of the FCL seems particularly interesting. As [Marino and Volz \(2012, p. 27\)](#) point out, “[i]t is . . . not surprising to hear allegations that only countries whose governments are seen as relatively cozy with the US - namely Mexico, Colombia and Poland - have requested an FCL”. Both conceptually and methodologically, our analysis of FCL selectivity is also related to [Aizenman and Pasricha \(2010\)](#), [Aizenman et al. \(2011\)](#) and [Liao and McDowell \(2015\)](#), which study the selective extension of bilateral central bank swaps by the US Federal Reserve, European Central Bank and People’s Bank of China. These studies too find that trade and financial linkages between countries are positively correlated with the incidence and size of bilateral swaps.

The impact of IMF arrangements on sovereign bond spreads and capital flows, our preferred proxies of market confidence, has been the subject of another large set of empirical papers (e.g., [Edwards, 2006](#); [Eichengreen et al., 2006](#); [Mody and Saravia, 2006](#); [Bird and Rowlands, 2009](#); [van der Veer and de Jong, 2013](#); [Erce and Riera-Crichton, 2015](#)). Interestingly, [Eichengreen et al. \(2006\)](#) and [Mody and Saravia \(2006\)](#) find that IMF programs reduce bond spreads especially when IMF lending arrangements are used in a precautionary manner, i.e., when countries choose not to draw on the available resources but still subject themselves to IMF monitoring and conditionality; presumably because of the commitment to strong policies it shows to market participants ([Marchesi and Thomas, 1999](#)). We believe it is a valuable exercise to study the evolution of bond spreads and capital inflows in the presence of a precautionary IMF arrangement *pur sang* such as the FCL, which carries no ex post conditionality but conditions access ex ante on strong fundamentals and policies. Finally, our choice for the synthetic control methodology mimics [Newiak and Willems \(2017\)](#), which use it to evaluate the impact of Policy Support Instruments (PSIs), non-disbursing IMF instruments whose main purpose is to signal to investors (and donors) the IMF’s endorsement of the participating country’s policies, on growth, inflation and investment in seven African countries. In their study as well as ours, the absence of loan disbursements allows one to isolate the contribution of IMF involvement (through its advice, monitoring and seal of approval) from the effects of direct financial assistance.<sup>6</sup>

To preview our main results, out of nearly 70 variables considered, we find that especially higher exchange market pressures in the run-up to the FCL’s creation; lower pre-FCL bond spreads; lower inflation; a higher share in US exports; and a higher propensity of making political concessions to the US (the IMF’s largest shareholder), are associated with a greater likelihood of participating in an FCL arrangement.

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<sup>6</sup>Unlike a PSI, however, an FCL *does* imply direct access to financial assistance if needed. This may provide an extra assurance to private investors that the FCL participant will be able to repay them.

This suggests that both demand and supply factors matter. Exchange market pressures increase countries' demand for foreign exchange, from the IMF or other sources. The influence of initial bond spreads and inflation corresponds with the official qualification criteria against which IMF staff is supposed to assess the eligibility of FCL applicants. And the US exports share and political concessions variable fit often-made arguments about US influence on IMF lending decisions. That said, the apparent role of political concessions may be demand-related as well. Possibly, countries that are more friendly towards US foreign policy feel less political stigma and are more comfortable in approaching the IMF for an FCL.

Overall, our synthetic control exercises point to some, but generally limited beneficial effects of the FCL in terms of lower bond spreads of and higher capital inflows into the three countries, relative to the relevant counterfactuals. Most of the effects we document do not stand out when compared to 'placebo' effects, and some only become visible with a considerable lag, complicating attribution to the FCL. However, at the minimum, we find no negative market reactions to countries entering into an FCL arrangement.

The remainder of the paper is structured as follows. Section 2 sketches a short history of the IMF's precautionary lending and provides further details on the respective FCL arrangements of Mexico, Colombia and Poland. Section 3 presents our empirical strategies to gauge both FCL selectivity (probit model specification and variable selection) and effectiveness (synthetic control methodology). In Section 4 we discuss our results and robustness tests. Section 5 concludes.

## 2 The IMF's FCL in perspective

### 2.1 Origins and modalities

IMF lending has historically been much more concerned with 'crisis resolution', i.e., the provision of financing to help rectify existing balance of payment problems conditional on an ex post adjustment program, than with 'crisis prevention', i.e., making available upfront sizable resources that can be called upon immediately in case a stress situation would emerge in the future (Boughton, 2000).<sup>7</sup> Whereas the IMF's Stand-By Arrangement (SBA), its main non-concessional financing vehicle, was originally established in 1952 to be used as precautionary lending, in practice member countries applied for an SBA mostly once financing needs had already materialized (Reichmann and de Resende, 2014). Surveillance, including through regular Article IV consultations, has been and remains the IMF's central crisis prevention tool

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<sup>7</sup>According to Reichmann and de Resende (2014, p. 1), the distinction between crisis resolution and prevention was "... already evident in the position of Keynes, who envisaged the IMF as somewhat akin to a lender of last resort with large resources automatically available in cases of need, and that of Harry White, who advocated a smaller Fund that would lend on a discretionary basis subject to policy conditionality".



(Ostry and Zettelmeyer, 2005). This is not to say that there have been no attempts to extend the IMF's lending portfolio with more precautionary arrangements.

In the early 1990s, the IMF contemplated a Short-Term Financing Facility (STFF) on which member countries with a strong policy framework, but nonetheless facing short-term external stress, could draw unconditionally. The STFF was however never adopted, due to concerns in the IMF's Executive Board about assessing eligibility and the risks of committing resources to counter severe financial pressures without a conditionality framework (IMF, 2003). Spurred by the Asian and Russian financial crises, a new Contingent Credit Line (CCL) was launched in April 1999. It was intended to assure pre-screened countries (satisfying ex ante eligibility criteria) of access to IMF resources in the event of exceptional capital account pressures due to external contagion, all the while incentivizing policy and institutional improvements. Since there were no requests for the original CCL, the instrument was revised in November 2000 to water down initial monitoring requirements, simplify activation, and reduce costs (IMF, 2003). Again no formal requests were made and the CCL was allowed to expire in November 2003.<sup>8</sup> The IMF (2003) itself identified a number of reasons for the very limited interest in the CCL, including 'stigma', i.e., concerns that a CCL request would be perceived negatively, by domestic actors and/or external market participants (see Section 1); the increasing popularity of alternative precautionary strategies (such as reserves accumulation or exchange rate flexibility); and global economic recovery. Another key factor that reduced the CCL's attractiveness was its lack of automaticity (Marino and Volz, 2012). Access to a large part of CCL funds remained conditional upon Executive Board approval of an 'activation review', creating uncertainty for prospective borrowers. Subsequent debates centered around an instrument tentatively named the Reserve Augmentation Line (RAL), which would address some of the problems with the CCL. Ultimately, however, it proved difficult to balance the twin goals of designing a sufficiently attractive credit facility for potential users and safeguarding IMF resources (Reichmann and de Resende, 2014). A climate of abundant global liquidity further reduced the urgency to reach an agreement on the RAL.

The 2008 global financial crisis made clear that the IMF's "... ability to mount a preventative and systemic response was hampered by the inadequacy of its precautionary lending instruments and a resource base that had not kept up with the rapid increase in global trade and capital flows" (IMF, 2010, p. 5). The latter was dealt with during the April 2009 London summit of the G20, where it was agreed to triple the IMF's non-concessional lending resources to US\$750 billion. Even before that, in October 2008, the IMF quickly approved a new Short-Term Liquidity Facility (SLF). Once more, the SLF found no users, as its

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<sup>8</sup>Allegedly, only two strong candidate countries expressed a genuine interest in the CCL (IMF, 2003). Interestingly, Mexico was the only country that came close to actually applying for a CCL, but in the end it decided not to, mainly because of exchange rate appreciation pressures.

access limits and repayment periods were judged insufficient and it had to compete with the bilateral swap lines the US Federal Reserve and other advanced economy central banks established around that time.

On 24 March 2009 the IMF announced the introduction of the Flexible Credit Line (FCL), as part of a broader overhaul of its lending toolkit.<sup>9</sup> The FCL incorporates several elements prospective users of precautionary IMF lending had been advocating for a long time. It is designed to provide large, upfront financing to countries with strong fundamentals and proven sustained policy track records. The FCL relinquishes all ex post conditionality, i.e., it does not involve an IMF-negotiated adjustment program. To avoid moral hazard, it instead entails relatively strict ex ante conditionality, embodied in nine core qualification criteria: a sustainable external position; a capital account dominated by private flows; a track record of steady and favorable sovereign access to capital markets; a comfortable reserves position; sound public finances; low and stable inflation in the context of sound monetary and exchange rate policies; a sound financial system; effective financial sector supervision; and data transparency and integrity.<sup>10</sup> Importantly, there are neither strict numerical cut-offs for FCL qualification, nor indications of the weight any given criterion carries in assessing eligibility. Only in December 2017, the IMF Executive Board approved a set of core indicators with thresholds, in an effort to increase evenhandedness and give member countries a clearer sense of whether they would meet (or continue to meet) the qualification criteria. Nevertheless, the bottom-line assessments on each of the nine qualification criteria remains a judgment (IMF, 2017b).<sup>11</sup> In case a country (confidentially) expresses interest in requesting an FCL, and IMF management deems this request may be appropriate, IMF staff should prepare a concise note for an informal Executive Board discussion in which the country is preliminarily assessed against the above criteria. If the country later decides to make a formal FCL request to the Board, its appeal should be accompanied by a more comprehensive staff report, including a detailed qualification assessment and a justification of the proposed access level based on scenario analysis.

Thanks to its exigent qualification standards, the FCL's operational modalities have been kept 'flexible' indeed. One distinctive feature is that access under the FCL is uncapped, although originally an implicit limit of 1000% of a country's IMF quota applied (IMF, 2010). Also, unlike the CCL, for example, the FCL can be requested either on a precautionary basis or to address actual financing needs and can be (fully or partially) drawn upon at the borrower's own discretion, without the need for separate Board approval. Initially, countries could choose between six-month and one-year FCLs without restrictions on

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<sup>9</sup>See the press release at <http://www.imf.org/external/np/sec/pr/2009/pr0985.htm>.

<sup>10</sup>For a detailed description of these qualification criteria and suggested indicators, see IMF (2009b, 2015).

<sup>11</sup>In its original guidelines to staff, the IMF (2009b, p. 9) explains that "[while] [s]trong performance against all relevant criteria ... is not necessary to secure qualification under the FCL, ... significant shortcomings on one or more of these criteria ... would generally signal that the member is not among the strong performers for whom the FCL is intended".

the number of successor agreements, provided they continue to meet the qualification criteria. The grace and repayment periods of the FCL are relatively long and equal to those of the standard SBA: borrowed amounts are due within three years and three months to five years after disbursement (compared to a nine-month roll-over in the SLF). Upon approval of an FCL, countries pay a commitment fee which rises progressively with the level of access (between 15 and 60 basis points) and is refunded pro rata if drawings are made or the FCL is canceled. The costs of drawing are again equal to those of the SBA and increase with size and time, to discourage excessive borrowing. Concurrent with the introduction of the FCL, the IMF enhanced the SBA and its High-Access Precautionary variant (HAPA) by increasing options to frontload assistance and by widening eligibility. The ex post conditionality of the SBA(-HAPA) and the IMF Board's control over SBA(-HAPA) drawing were not eliminated however (Reichmann and de Resende, 2014).

In August 2010, the FCL was modified to further boost its attractiveness. The implicit cap of 1000% of quota was removed and FCL arrangements could now be approved for either one year (with no interim review of continued qualification) or two years (with a mid-term review). The IMF moreover introduced the Precautionary Credit Line (PCL). This 'light' version of the FCL would provide upfront access of up to 500% of quota on approval, in the absence of actual balance of payments needs, and combined ex ante qualification criteria similar to the FCL's (although somewhat less strict) with targeted ex post conditionality (focused on tackling remaining vulnerabilities). In November 2011, the PCL was relabeled Precautionary and Liquidity Line (PLL) and broadened in scope: a six-month arrangement was added to the menu of options and PLL access could from then on also be granted to countries with present rather than potential financing needs.<sup>12</sup>

## 2.2 FCL arrangements

Since the FCL's creation in March 2009, three countries have entered into FCL arrangements. Mexico was the first country to access the FCL on 17 April 2009, an occasion described by John Lipsky, First Deputy Managing Director of the IMF, as "represent[ing] the consolidation of a major step in the process of reforming the IMF and making its lending framework more relevant to member countries' needs".<sup>13</sup> Mexico's example was followed by Poland on 6 May and by Colombia on 11 May 2009. According to the IMF (2014), additional countries have expressed potential interest in the FCL since its inception, but ultimately, no other formal requests were made.

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<sup>12</sup>An analysis of the PCL/PLL arrangement of Macedonia (agreed in January 2011 and terminated in January 2013) and of the PLL arrangement of Morocco (agreed in August 2012, renewed in July 2014 and July 2016, and ongoing at the moment of writing) falls outside the scope of the current paper.

<sup>13</sup>See the press release at <http://www.imf.org/external/np/sec/pr/2009/pr09130.htm>.

As can be seen from Table 1, as of April 2018, Mexico has had seven consecutive FCL arrangements and Colombia and Poland have had six, with varying levels of access. After gradually reducing its access since January 2015, in November 2017 Poland decided to exit the FCL altogether, as external conditions were deemed to have sufficiently improved.<sup>14</sup> Mexico, on the other hand, chose to renew its FCL arrangement in November 2017, well ahead of the expiry date, in order to de-link the renewal process from the country's general elections (planned for July 2018). All FCL arrangements to date have been treated as strictly precautionary, with not a single drawing since 2009. With SDR31.5 billion (or about US\$47 billion), Mexico's first FCL constituted the largest ever individual commitment of IMF resources in absolute terms. End October 2017, before Poland's exit, the FCLs of the three countries together accounted for about two-thirds of the total value of agreed IMF lending arrangements. End April 2018, the Mexican and Colombian FCLs still represented 65% of IMF commitments (SDR70.6 billion out of SDR108.6 billion). Whereas the multiple FCL renewals can partly be explained by the protracted nature of the global financial crisis and may suggest FCL users attach great value to the instrument (Birdsall et al., 2017), it could also reflect difficulties with exiting the FCL. Reichmann and de Resende (2014, p. 24) rightly point out that "... there is the tension between a facility intended to be of strictly temporary use and a reality in which risks are never absent". Moreover, any positive signaling benefits from satisfying the FCL's strict qualification criteria could be reversed if the market (mis)interprets a country's exit from the FCL as a failure to remain eligible. The IMF is well aware of such 'exit stigma', which may unduly tie up its resources.<sup>15</sup> Operational guidelines therefore emphasize the need to clearly articulate country authorities' exit strategies, contingent on the abatement of external risks, in FCL request or review documents (IMF, 2015). Arguably, this is exactly what Polish authorities have done during their gradual exit from the FCL. Based on daily bond spreads and exchange rate data, the IMF (2017a) finds that market reactions to Poland's cancellation of its FCL, publicly announced a few weeks before taking effect, has been muted.<sup>16</sup> IMF staff has also proposed introducing a time-based element into the FCL commitment fees to incentivize timely exit, but this proposal was ultimately not endorsed by the Executive Board when discussed in December 2017.

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<sup>14</sup>In January 2016, Poland reduced the size of its fifth FCL from SDR15.5 billion to SDR13 billion. This was not considered a new arrangement.

<sup>15</sup>Under current rules, precautionary arrangements such as under the FCL are counted at full value in determining the IMF's Forward Commitment Capacity, i.e., the resources it has available for new (non-concessional) financial commitments over the next 12 months.

<sup>16</sup>Likewise, daily data seem to confirm the absence of sudden changes to bond spreads and exchange rates in the immediate aftermath of Poland's (January 2015, January 2016, January 2017) and Colombia's (May 2010) FCL access reductions (IMF, 2017b).

Table 1: FCL arrangements from March 2009 to April 2018

	FCL-1	FCL-2	FCL-3	FCL-4	FCL-5	FCL-6	FCL-7
<b>Mexico</b>							
<i>Approval date</i>	17 Apr 2009	25 Mar 2010	10 Jan 2011	30 Nov 2012	26 Nov 2014	27 May 2016	29 Nov 2017
<i>Size (SDR billion)</i>	31.5	31.5	47.3	47.3	47.3	62.4	62.4
<i>% of quota</i>	1000%	1000%	1500%	1304%	1304%	700%	700%
<i>Duration</i>	1 year	1 year	2 years	2 years	2 years	2 years	2 years
<b>Poland</b>							
<i>Approval date</i>	6 May 2009	2 Jul 2010	21 Jan 2011	18 Jan 2013	14 Jan 2015	13 Jan 2017	FCL-6 exit on 3 Nov 2017
<i>Size (SDR billion)</i>	13.7	13.7	19.2	22	15.5	6.5	
<i>% of quota</i>	1000%	1000%	1400%	1303%	918%	159%	
<i>Duration</i>	1 year	1 year	2 years	2 years	2 years	2 years	
<b>Colombia</b>							
<i>Approval date</i>	11 May 2009	7 May 2010	6 May 2011	24 Jun 2013	17 Jun 2015	13 Jun 2016	FCL-6 ongoing
<i>Size (SDR billion)</i>	7	2.3	3.9	3.9	3.9	8.2	
<i>% of quota</i>	900%	300%	500%	500%	500%	400%	
<i>Duration</i>	1 year	1 year	2 years	2 years	2 years	2 years	

*Source:* Authors' compilation based on IMF press releases and country reports.

*Notes:* Duration and IMF quota are evaluated at the time the respective FCL arrangements were approved. IMF quota revisions occurred in April 2008 (on an ad hoc basis, effective from 3 March 2011) and in December 2010 (under the 14<sup>th</sup> General Review, effective from 26 January 2016).

### 3 Empirical framework

#### 3.1 FCL selectivity

##### 3.1.1 Probit model specification

To investigate the drivers of participation in an FCL arrangement we estimate cross-sectional probit models of the following form:

$$P(FCL_i = 1|X_i) = \Phi(X_i' \beta) \quad (1)$$

where  $FCL_i$  is a dummy variable that takes a value one for FCL countries Mexico, Colombia and Poland and a value zero for our other sample countries (see further);  $\Phi$  is the standard normal cumulative distribution function;  $X_i$  is a vector of potential correlates of FCL participation;  $\beta$  is a vector of model parameters to be estimated; and subscript  $i$  refers to the  $i^{th}$  country.

Specification (1) is reduced-form and does not explicitly distinguish between demand- and supply-side factors. In practice, like any other IMF arrangement, an FCL is the joint outcome of both a government's wish to seek such an arrangement and the IMF Executive Board's willingness to approve the request. Unfortunately, we only observe the *final* FCL arrangements to which governments and the IMF mutually agreed. We do not have data on unsuccessful FCL applications by countries (or on unreciprocated solicitations of governments by the IMF to accept an FCL), since such information is kept strictly confidential (as prescribed by IMF policy). Some studies looking into participation in IMF arrangements have suggested

estimating bivariate probit models with partial observability, which attempt to disentangle demand and supply effects in a system of two equations (Knight and Santaella, 1997; Przeworski and Vreeland, 2000, 2002; Stone, 2008). Important drawbacks to this kind of models include the need for multiple restrictions to achieve identification (Poirier, 1980) and difficulties with maximum likelihood convergence in small samples (Presbitero and Zazzaro, 2012). Hence, we follow the large majority of the literature and stick to single-equation probit models. We bear in mind the caveat that our estimated parameters should be interpreted as reflecting a mix of demand and supply factors.

### 3.1.2 Sample and variable selection

As our sample of potential FCL candidates we take the group of emerging market economies included in JP Morgan's Emerging Market Bond Index Global (EMBI Global hereafter) as of end March 2009, when the IMF officially introduced the FCL. Inclusion in the EMBI Global is based on World Bank-defined per capita income brackets, countries' debt restructuring history and the issuance of large, longer-term US dollar-denominated debt instruments (with an outstanding face value of at least US\$500 million and minimum 2.5 years until maturity) for which reliable daily prices are available. In short, the EMBI Global group consists of non-advanced countries with recent, sizable access to US dollar debt markets.<sup>17</sup> Excluding Iraq from this group (for reasons of data availability), we end up with a sample of 37, of which three FCL and 34 non-FCL comparator countries (see Appendix Table A1).

We consider an extensive list of potential correlates of the IMF's FCL supply and/or countries' FCL demand, based on the content of the official FCL qualification framework (Section 2.1) and the broader literature on IMF borrowing (Section 1). Below we briefly discuss the sort of variables we take up in our analysis. Appendix Table A2 provides a detailed overview of all 70 individual variables, their definitions and sources.

To begin with, the IMF (2009b) itself proposes an elaborate set of relevant indicators for each of the nine FCL qualification domains, from which we select those that are expressed as quantitative macroeconomic-financial measures and that are available for (most of) our sample countries; including various debt and reserves ratios, bond spreads, and fiscal balance, inflation, exchange rate and financial sector indicators. To evaluate the accountability, transparency, and communication of monetary policy objectives, we take the central bank independence and transparency indices from Dincer and Eichengreen (2014). Better perfor-

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<sup>17</sup>By focusing on EMBI Global constituents we already 'pre-select' countries on their (recent) sovereign access to international capital markets, one of the nine official FCL qualification criteria. Indeed, EMBI bond spreads (and their averages) are among the indicators proposed by the IMF to evaluate the criterion 'track record of steady sovereign access to capital markets at favorable terms' (IMF, 2009b). Our EMBI Global sample is the largest set of countries for which EMBI spreads were available as of March 2009.

mance with respect to these variables should increase countries' chances of gaining approval from the IMF for an FCL arrangement.

Additional supply-side variables we take into consideration include government effectiveness and control of corruption scores from the Worldwide Governance Indicators and measures of democratic strength from the Polity IV Project database and the Database of Political Institutions (DPI). These are deemed to capture the overall quality and credibility of countries' institutional frameworks, on which IMF staff is asked to make a (qualitative) judgment too (IMF, 2015). We also add the Economist Intelligence Unit's (EIU) overall country risk rating, a broad summary indicator of economic, financial and political risks. Excessive risks would discourage the IMF from extending an FCL.

Next, we measure the economic interests of the IMF's main shareholders in prospective FCL countries. In a similar fashion as Thacker (1999), Barro and Lee (2005), Presbitero and Zazzaro (2012) and others, we calculate each country's imports from the US, major European countries (Germany, UK, France and Italy) and the G7 as a share of total (worldwide) US/European/G7 exports; individual countries' FDI liabilities to the US/Europe/G7 as a share of total US/European/G7 FDI assets; and the consolidated claims of US/European/G7 banks on each country divided by total consolidated banking claims of the US/Europe/G7.<sup>18</sup>

To approximate political alignment with the IMF's main shareholders, we follow Presbitero and Zazzaro (2012) and construct different indicators of countries' similarities in UNGA voting patterns, based on data collected by Voeten et al. (2015). A first subset of measures uses the fraction of UNGA votes cast by a country that is aligned with UNGA votes by the US, major European countries or the G7 (Oatley and Yackee, 2004; Barro and Lee, 2005; Copelovitch, 2010; Dreher and Walter, 2010; Papi et al., 2015).<sup>19</sup> Alternatively, we measure countries' alignment with the US on UNGA votes the US State Department identifies as 'important' (Thacker, 1999; Pop-Eleches, 2009)<sup>20</sup>; or take the *difference* between alignment with the US on all UNGA votes and alignment on UNGA votes important to the US (Barnebeck Andersen et al., 2006; Kilby, 2009; Presbitero and Zazzaro, 2012). From a theoretical point of view, this last variable is our preferred measure of political alignment, as it proxies the extent to which a country is prepared to make

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<sup>18</sup>Following Aizenman and Pasricha (2010) and Aizenman et al. (2011), we scale our bilateral trade and investment variables by total trade/investment of the US, Europe or G7, rather than by the total trade/investment or GDP of our sample countries (like, e.g., Barro and Lee, 2005; Sturm et al., 2005). Hence, the variables can be interpreted as measures of the relative exposure of the IMF's main shareholders to each sample country.

<sup>19</sup>In line with the literature, we assign an alignment score of 1 if two countries both vote 'yes' on a UNGA resolution, both vote 'no', both abstain, or both are absent; a score of 0.5 if one country votes and the other abstains or is absent; and a score of 0 if countries oppose each other. To assess alignment with European countries or the G7 we average the pairwise scores.

<sup>20</sup>In its annual *Voting Practices in the United Nations* reports to US Congress the US State Department identifies key votes for each UNGA session. These are votes on issues directly affecting US interests and on which the US lobbied extensively (see Thacker, 1999).

foreign policy *concessions* to the US. Unfortunately, we cannot construct similar proxies for political concessions countries make to other major IMF shareholders, since we have no data on which UNGA votes are deemed particularly important by the latter.

On the demand side, we expect countries that were more exposed to potential external shocks, or that were already experiencing crisis pressures, at the time the FCL was launched to be more inclined to enter into an FCL arrangement. We evaluate the exposure to shocks using indicators of trade openness and of de facto and de jure financial openness, such as the presence of capital controls as codified by [Chinn and Ito \(2006\)](#) and [Fernandez et al. \(2015\)](#). Actual crisis pressures are proxied by changes in real GDP growth relative to the (three) previous year(s); changes in the net barter terms of trade; changes in the value of exports; and exchange market pressure indices (EMPIs). In the spirit of [Kaminsky and Reinhart \(1999\)](#) and [Eichengreen et al. \(1995\)](#) we create EMPIs as the weighted average of, respectively, two or three components: real exchange rate depreciation, the rate of international reserves depletion, and positive changes in short-term interest rates. To prevent any single component from dominating the EMPI, we choose the weights so that the two/three components have equal country-specific sample volatilities.

We also look at countries' past experiences with IMF arrangements, as these may hold information about possible political stigma. We take the time countries have spent under previous IMF arrangements (as a share of total time since their accession to the IMF) and the number of years that have passed since countries' last IMF arrangement as (admittedly very rough) gauges of the domestic political costs of signing a new arrangement. *Ceteris paribus*, we expect political stigma to be inversely related with the first variable, and positively with the second. According to [Vreeland \(2007, p. 59\)](#), "in a country where IMF programs have become business as usual... the costs of 'selling out' are smaller... [I]t is difficult for opposition to claim that the current leadership is selling out by signing an IMF arrangement if many previous leaders have also done so". The duration of (or recidivism in) past IMF borrowing is likely the result of other factors too, not the least structural economic and institutional weaknesses in borrowing countries ([Bird et al., 2004](#)).<sup>21</sup>

Another political cost-related determinant of participation in IMF arrangements we test for in the particular context of the FCL, is recent elections. The intuition is that government officials are more likely to negotiate an agreement with the IMF early on in their electoral term, so as to reduce the possibility

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<sup>21</sup>In addition to the variables mentioned, we have attempted to look deeper into countries' historical record of non-compliance with IMF program conditionality, a proxy for antagonism between the IMF and the borrowing country (government and/or citizens). One can hypothesize that countries which had a contentious relationship with the IMF in the past would be less likely to enter into an FCL arrangement, because of higher political stigma on the demand side and greater reticence on part of the IMF to make available large credits. Unfortunately, the usual non-compliance indicators adopted in the literature ([Killick, 1995](#); [Joyce, 2006](#); [Arpac et al., 2008](#); [Dreher and Walter, 2010](#)) are too noisy to be useful for our purposes (see [Essers and Ide, 2017](#), for further details). Therefore, we exclude them from our list of candidate correlates of FCL participation.



that any stigma effect disadvantages them in the next election ([Przeworski and Vreeland, 2000](#); [Papi et al., 2015](#)). We build variables counting the number of years since countries' last legislative/executive election with data from the DPI.

Lastly, we include GDP and GDP per capita, both measured in purchasing power parity (PPP) terms, as two extra control variables. All of the foregoing variables are evaluated before the IMF's official announcement of the FCL on 24 March 2009, to reduce endogeneity concerns. For the majority of variables, only available at yearly or quarterly frequency, we take end-2008 values; for series with monthly (daily) frequency we use values up to February 2009 (23 March 2009) (see Appendix Table [A2](#) for more details).

In spite of our long list of candidate variables and because of our small cross-sectional sample, we are restricted to estimating very parsimonious probit models. To avoid overfitting the models, we will only include a limited number of explanatory variables at once. Our selection of variables to include together in the probit model will be largely based on univariate t-tests and non-parametric tests on the individual variables. The country coverage of variables, their relation to theory and the existing empirical literature, and the strength of correlation between variables (to avoid problems of collinearity) will be used as additional criteria to narrow down the list.

## 3.2 FCL effectiveness

### 3.2.1 Synthetic control methodology

To evaluate the effects of FCL arrangements on Mexican, Colombian and Polish sovereign bond spreads and capital inflows we employ the synthetic control method developed (and described in detail) by [Abadie and Gardeazabal \(2003\)](#), [Abadie et al. \(2010\)](#) and [Abadie et al. \(2015\)](#).<sup>22</sup> In essence, this method measures the impact of an intervention (the agreement on an FCL arrangement in our case) as the difference between post-intervention outcomes (bond spreads or capital inflows) for the 'treated' country (one of the three FCL countries) and the same outcomes for a 'synthetic control group'. The latter, which serves as a counterfactual, is constructed as a weighted combination of untreated countries out of a larger 'donor pool' whose outcomes are deemed to be governed by the same structural processes as the treated country (other emerging market economies). Country weights are chosen so that the characteristics of the synthetic control (both outcomes and important determinants of those outcomes) match as closely as possible those

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<sup>22</sup>[Abadie and Gardeazabal \(2003\)](#) use their synthetic control method to evaluate the influence of terrorism on economic growth in the Basque Country, whereas [Abadie et al. \(2010\)](#) estimate the effect of a Californian tobacco control program on cigarette sales and [Abadie et al. \(2015\)](#) the growth impact of the reunification of Germany. Other notable studies applying the same methodology to topics in international economics and finance include [Nannicini and Billmeier \(2011\)](#), [Billmeier and Nannicini \(2013\)](#) and [Campos et al. \(2014\)](#) on the consequences of economic liberalization and integration; and [Jinjarak et al. \(2013\)](#) and [Chamon et al. \(2015\)](#) on the effects of capital controls and foreign exchange interventions.

of the treated country over an extended pre-intervention period.

More formally, let  $y_{it}^{FCL}$  be the outcome variable of interest at time  $t$  if country  $i$  was under an FCL arrangement and  $y_{it}^{NFCL}$  the outcome for country  $i$  in the absence of an FCL. The dynamic effect of the FCL,  $\tau_{it}$ , is then given by:

$$\tau_{it} = y_{it}^{FCL} - y_{it}^{NFCL} \quad (2)$$

Further suppose we have a sample of  $N + 1$  countries, where country  $i = 1$  is an FCL country and countries  $i = 2$  to  $i = N + 1$  constitute the donor pool of  $N$  potential comparator (non-FCL) countries. All countries are observed over  $T = T_0 + T_1$  periods, with  $T_0$  and  $T_1$  the number of pre- and post-FCL periods, respectively. The actually observed outcome  $y_{it}$  is therefore:

$$y_{it} = y_{it}^{NFCL} + \tau_{it}D_{it} \quad (3)$$

with

$$D_{it} = \begin{cases} 1 & \text{if } i = 1 \text{ and } t > T_0 \\ 0 & \text{otherwise} \end{cases}$$

under the assumption that the FCL arrangement has neither an effect on outcomes before its signing in period  $T_0 + 1$ , nor on non-FCL countries. Our aim is to estimate, for  $t > T_0$ :

$$\tau_{1t} = y_{1t}^{FCL} - y_{1t}^{NFCL} = y_{1t} - y_{1t}^{NFCL} \quad (4)$$

whereby  $y_{1t}$  is observed but counterfactual  $y_{1t}^{NFCL}$  is not. [Abadie et al. \(2010\)](#) show how to identify the vector  $(\tau_{1T_0+1}, \tau_{1T_0+2}, \dots, \tau_{1T})$  when  $y_{it}^{NFCL}$  can be described by a general factor model of the following form:

$$y_{it}^{NFCL} = \delta_t + \theta_t Z_i + \lambda_t \mu_i + \varepsilon_{it} \quad (5)$$

where  $\delta_t$  is a time-varying factor common across countries;  $Z_i$  is a vector of observed time-varying and/or time-invariant covariates (unaffected by the FCL);  $\theta_t$  is a vector of unknown parameters;  $\mu_i$  is a time-varying country-specific term;  $\lambda_t$  is a vector of unobserved common factors; and error terms  $\varepsilon_{it}$  are zero-mean transitory shocks. Now define a generic  $N \times 1$  vector of weights  $W = (w_2, w_3, \dots, w_{N+1})'$  with  $w_i \geq 0$  for  $i = 2, 3, \dots, N + 1$  and  $\sum_{i=2}^{N+1} w_i = 1$ . Each possible vector  $W$  corresponds to a potential synthetic control,

i.e., a weighted average of control countries for country  $i = 1$ . Also, consider  $\bar{y}_i^k = \sum_{s=1}^{T_0} k_s y_{is}$  to be a generic linear combination of pre-FCL outcomes. [Abadie et al. \(2010\)](#) demonstrate that if one chooses weights  $w_2^*, w_3^*, \dots, w_{N+1}^*$  so that

$$\sum_{i=2}^{N+1} w_i^* \bar{y}_i^k = \bar{y}_1^k \quad (6)$$

and

$$\sum_{i=2}^{N+1} w_i^* Z_i = Z_1 \quad (7)$$

then

$$\hat{\tau}_{1t} = y_{1t} - \sum_{i=2}^{N+1} w_i^* y_{it} \quad (8)$$

is an unbiased estimator of the dynamic effect of the FCL on country  $i = 1$  ( $\tau_{1t}$ ) for  $t = T_0 + 1, T_0 + 2, \dots, T$ . Generally, however, no weights exist such that equations (6) and (7) hold exactly; the goal thus becomes to construct a synthetic control so that they hold approximately. [Abadie et al. \(2010\)](#) propose minimizing, in a non-parametric fashion and with respect to  $W^*$ , the distance between a vector of pre-FCL characteristics of the FCL country and a vector of pre-FCL characteristics of the synthetic control. More specifically, if  $X_1$  is a vector of  $m$  pre-FCL characteristics of the FCL country and  $X_0$  a matrix that collects the vectors of the same  $m$  pre-FCL characteristics of all  $N$  non-FCL countries in the donor pool, the objective is to set  $W^*$  optimally so as to minimize

$$\|X_1 - X_0 W\|_V = \sqrt{(X_1 - X_0 W)' V (X_1 - X_0 W)} \quad (9)$$

where  $V$  is a  $m \times m$  symmetric and positive semidefinite matrix whose diagonal elements reflect the relative importance attached to the pre-FCL variables in  $X_0$  and  $X_1$ . There are different possible ways of choosing  $V$ . The most intuitive (and most commonly employed) approach is to let the data speak and select the  $V$  that minimizes the root mean squared prediction error (RMSPE) of the outcome variable over the pre-FCL periods, defined as:

$$RMSPE = \sqrt{\frac{1}{T_0} \sum_{t=1}^{T_0} \left( y_{1t} - \sum_{i=2}^{N+1} w_i^* y_{it} \right)^2} \quad (10)$$

In other words, we look for the  $V$  that delivers the best fit between the outcome paths for the FCL country and for the synthetic control before the FCL arrangement was agreed upon.<sup>23</sup> To facilitate comparison of the various synthetic control experiments we conduct across countries and outcome variables, we calculate a normalized ‘fit index’, as suggested by [Adhikari and Alm \(2016\)](#) and [Newiak and Willems \(2017\)](#):

$$Fit\ index = \frac{\sqrt{\frac{1}{T_0} \sum_{t=1}^{T_0} \left( y_{1t} - \sum_{i=2}^{N+1} w_i^* y_{it} \right)^2}}{\sqrt{\frac{1}{T_0} \sum_{t=1}^{T_0} (y_{1t})^2}} \quad (11)$$

where the numerator is the standard pre-treatment RMSPE of equation (10) and the denominator is the RMSPE derived from the zero-fit model, basically measuring the time variability of the observed outcome in the FCL country. This fit index has a very intuitive interpretation. In case of a perfect fit, the index would be zero, whereas an index of one or more would indicate a particularly poor fit ([Adhikari and Alm, 2016](#)). Generally, however, the fit index yields a number  $q$  between zero and one, which is equivalent to a fit whereby the difference in the outcome variable between the treated and synthetic control unit is  $q \times 100\%$  in each pre-treatment period.

An interesting feature of the synthetic control method is that it makes explicit the relative contributions of the different control units to the synthetic counterfactual, as well as the similarities in characteristics between the treated country and the counterfactual (enabling one to judge the degree to which equations (6) and (7) are satisfied). While standard regression estimators also (implicitly) rely on weighting untreated countries with coefficients that sum to one, individual regression weights are unrestricted and can take on negative values or values exceeding one ([Abadie et al., 2015](#)). By restricting country weights to lie between zero and one, the synthetic control estimator avoids extrapolation outside the support of the data. Important for our setting, it can be implemented in a sample with few cross-sections and a single treatment. Furthermore, the synthetic control method extends the traditional difference-in-differences (DID) panel estimator by allowing the effects of confounding, unobserved variables to vary over time.<sup>24</sup>

<sup>23</sup>An alternative approach, referred to by [Abadie et al. \(2015\)](#) as ‘cross-validation’, splits the pre-treatment period into a ‘training’ and ‘validation’ period and then proceeds in two steps. First, using optimal donor unit weights  $W$  based on training period values of the predictor variables, matrix  $V$  is selected to minimize the out-of-sample RMSPE over the validation period. In a second step, the just-selected  $V$  is used as an input to find a new set of optimal country weights  $W'$  that minimizes the differences in predictor variables between the treated unit and its synthetic control over the validation period. In spite of some concerns with this approach ([Klößner et al., 2017](#)), we have also run all our synthetic control experiments using cross-validation. The estimated FCL effects are broadly similar to those presented in Section 4.2. All additional results are available from the authors upon request.

<sup>24</sup>The synthetic control method can be regarded as a generalization of typical DID, which eliminates the effect of time-invariant unobserved confounders on the outcome variable by taking time differences, but is not well-suited to deal with any remaining time-varying unobserved heterogeneity (non-parallel trends in the outcomes of treated and control units), i.e.,  $\lambda_t \mu_i$  in equation

There are, however, also limitations to this methodology ([Abadie, 2011](#)). Proper identification under the synthetic control estimator requires the effect of the intervention to be large relative to the idiosyncratic volatility of the outcome variable. We have no clear priors about the order of magnitude of potential FCL effects vis-à-vis outcome variations due to other factors, but remove excessive volatility by monthly averaging daily bond spreads and by taking four-quarter moving sums of capital inflows (see next section). Restricting the donor pool to countries that resemble the FCL country in the determinants of bond spreads and capital inflows and that were not subject to structural shocks to these outcome variables over the sample period further limits the role of idiosyncratic volatility. Removing (extreme) outliers from the donor pool also helps to mitigate *interpolation* biases, which may be important when the synthetic control matches the FCL country by averaging away large differences between the characteristics of the FCL country and of the non-FCL countries constituting the control. Moreover, the synthetic control estimator assumes that economic agents do not act in anticipation of the intervention under study and that there are no spill-over effects from the intervention to the comparator countries. In our case, anticipation effects by investors are believed to have been limited, since the FCL arrangements of Mexico, Colombia and Poland were signed shortly after the FCL instrument was created by the IMF. Any remaining anticipation effects in the intervening periods should lead us to underestimate the true impact of the FCL. On spill-overs, the [IMF \(2014\)](#) itself argues that the EMBI spreads and bond fund inflows of a select number of countries that market participants perceived as potential FCL qualifiers may also have benefited from the availability of the FCL, although the estimated effects are smaller than for FCL users Mexico, Colombia and Poland and not always significant in panel regressions. It is difficult to neutralize the impact of potential spill-overs in our synthetic controls. One could of course exclude particular countries from the donor pool, but such exclusions may come at a cost. Some of the non-FCL countries that are most likely to experience spill-over effects may be those whose pre-FCL characteristics are closest to the characteristics of the FCL countries. Moreover, it is not straightforward to decide upon suspected non-FCL beneficiaries in the first place.<sup>25</sup> In our analysis we will experiment with different donor pools (see further). We keep in mind that in the presence of positive spill-overs our synthetic controls will again result in lower-bound, conservative estimates of the FCL's effects on Mexico, Colombia and Poland.

Lastly, the significance of the effects estimated with synthetic controls cannot be readily assessed

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(5). The synthetic control estimator overcomes this problem by searching for a weighted combination of untreated units that fits, as closely as possible, the observed pre-treatment characteristics *and* a long set of pre-treatment outcomes. [Abadie et al. \(2010\)](#) formally show that, under relatively mild conditions, such a fit can only be achieved if the synthetic control matches well both the observed covariates and the unobserved time-varying component of the treated unit's outcome variable. See also [Athey and Imbens \(2017\)](#).

<sup>25</sup>The [IMF \(2014\)](#) seems to rely on a note by investment bank Barclays ([Keller et al., 2009](#)) in its selection of potential FCL qualifiers, although further details are missing.

based on standard, large-sample inference techniques. However, as demonstrated by [Abadie et al. \(2010\)](#), falsification or ‘placebo’ tests can be employed to make inferences instead. The idea is to iteratively apply the synthetic control method to each country in the donor pool (as if it were the FCL country of interest) and then compare the estimated placebo treatment effects  $\tau_{it}$  (for  $i = 2, 3, \dots, N + 1$ ) with the treatment effect  $\tau_{1t}$  for the actual FCL country. Confidence that a large  $\tau_{1t}$  reflects the impact of the FCL would shrink if its size falls well inside the distribution of placebo effects  $\tau_{it}$ .

### 3.2.2 Donor pool and variable selection

We gauge the effect of the FCLs of Mexico, Colombia and Poland on two market-based proxies of investor confidence: first, external financing costs as measured by monthly-averaged EMBI stripped spreads (in basis points); and second, four-quarter moving sums of gross capital inflows, expressed as a percentage of GDP.<sup>26</sup>

Our choice of pre-treatment characteristics, which should ideally be strong predictors of post-FCL outcomes, is informed by the literature on the domestic determinants of bond spreads and capital inflows (as well as data availability in our sample). As potential drivers of EMBI spreads we select year-on-year real GDP growth, international reserves to GDP, general government gross debt to GDP, and the current account balance to GDP ([Dailami et al., 2008](#); [Martinez et al., 2013](#); [Csonto, 2014](#); [Kennedy and Palerm, 2014](#)), available from the World Economic Outlook, International Financial Statistics, and Thomson Reuters International Comparable Economics (TRICE) databases. Real GDP growth, the Chinn-Ito index of capital account openness and the EIU overall country risk rating are taken as drivers of capital inflows ([Forbes and Warnock, 2012](#); [Erce and Riera-Crichton, 2015](#)). Similar to most other synthetic control studies and to improve the pre-treatment fit, we augment the lists of predictors with pre-FCL values of the outcome variables. In the optimization of objective function (9) we average the different predictors over all pre-intervention periods.<sup>27</sup>

Balancing data availability with the need to have a sufficient number of pre-intervention periods, we construct series of EMBI spreads and capital inflows starting in January 2005 and 2005Q4, respectively. April 2009 (2009Q2) is taken as the time at which the Mexican FCL arrangement was agreed (i.e., the first post-intervention period or  $T_0 + 1$ ). The agreement on the FCLs of Colombia and Poland is dated May 2009

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<sup>26</sup>Gross capital inflows are defined as in [Forbes and Warnock \(2012\)](#) and [Broner et al. \(2013\)](#), i.e., the net purchases of domestic assets by non-residents (or, the sum of all increases in direct investment, portfolio and other investment liabilities).

<sup>27</sup>Some studies, including [Nannicini and Billmeier \(2011\)](#) and [Billmeier and Nannicini \(2013\)](#), use all pre-treatment values of the outcome variable as *separate* predictor variables in the optimization, to improve the fit (i.e., to minimize the RMSPE). We refrain from this practice as including the entire pre-treatment path of outcomes renders all other covariates irrelevant and may lead to significant bias in the estimator ([Kaul et al., 2016](#)). Instead, we include *averages* of pre-treatment EMBI spreads/capital inflows as one single predictor.

(also 2009Q2). We compare the actual and synthetic outcome variables up to December 2014 (2014Q4) to study possible longer-term effects.

For the construction of our donor pools we start again from the countries included in the EMBI Global as of end March 2009, minus the FCL countries themselves. Countries whose EMBI spreads (capital inflow data) could not be retrieved for the whole January 2005-December 2014 (2005Q4-2014Q4) time span are dropped. We further exclude Argentina, the Dominican Republic, Ecuador, Pakistan, Ukraine and Venezuela from the EMBI spread donor pools, as they registered spreads well in excess of 1000 basis points at some point in the sample period, largely because of idiosyncratic reasons. For each FCL country and each outcome variable, we conduct two synthetic control experiments: one with the full donor pool as just described, and one with the donor pool restricted to regional comparator countries. Appendix Table A4 gives the full composition of donor pools for our 12 synthetic control exercises. As will become clear in the next section, full-sample and region-based synthetic controls for the same FCL country may differ substantially with respect to the quality of matching of actual spreads and capital inflows. Although we always show both sets of results, whenever such differences arise we focus our discussion of the estimated effects and placebo experiments on the synthetic control exercise where the closest matching between actual and synthetic pre-FCL outcome variables was achieved (i.e., with the lowest pre-FCL RMSPEs and fit indices).

## 4 Results and discussion

### 4.1 What explains the selectivity of FCL arrangements?

#### 4.1.1 Univariate tests

Appendix Table A2 reports the results of simple one-tailed t-tests for differences in means between the three FCL and (maximum) 34 comparator countries for all variables discussed in Section 3.1.2. It also presents non-parametric rank-sum tests of the null that the two samples come from populations with the same distribution, which do not require the assumption of normality (Wilcoxon, 1945; Mann and Whitney, 1947). We find that, in terms of macroeconomic-financial and institutional factors, the three FCL countries were, above all, marked by significantly lower EMBI spreads, lower and less volatile inflation, more checks and balances and lower overall risk ratings, in line with the supply-side arguments postulated in Section 3.1.2. The tests further suggest lower external debt, higher private holdings of debt, lower reserves to M2 ratios, greater central bank transparency, higher returns on bank equity, less foreign currency bank

liabilities and non-performing bank loans, greater control of corruption and government effectiveness, and a higher degree of democracy in FCL countries, although significance levels and/or sample sizes are smaller for these variables. Trade, investment and banking links with major IMF shareholders, in particular the US, and measures of political alignment, again especially with the US, were also significantly stronger in FCL countries, supporting arguments advanced in the literature (Section 1). Exchange rate volatility and exchange market pressures were found to be higher in Mexico, Poland and Colombia, which could help to explain their demand for FCL arrangements in 2009. Single-regressor probit estimations lead to very similar conclusions. <sup>28</sup>

#### 4.1.2 Baseline probit results

We select the following variables to be included together in the probit model specified by equation (1): one-year averaged EMBI spreads, three-year averaged inflation, the share in total US exports, political concessions to the US and the two-component EMPI. Their difference-in-means t-statistics and Mann-Whitney-Wilcoxon z-statistics are all statistically significant at 10% (or lower) levels (Appendix Table A2). Moreover, these variables are most clearly grounded in theory and the relevant empirical literature. Taken together, they are available for 31 out of 37 sample countries (Appendix Table A1). Other highly significant variables with wider availability are excluded from our initial selection because of their high pairwise correlation with US export shares (US FDI and bank claim shares) or EMBI spreads (overall country risk ratings). We acknowledge that our approach does not guarantee that we end up with the best possible model. Therefore, we will present a number of variations on the specification of equation (1).

The bar charts of Appendix Figure A2 show the values of the five selected variables for each of the three FCL countries and all non-FCL sample countries. The FCL countries were all three characterized by relatively low EMBI spreads in the year before the FCL was introduced; so were China, Malaysia, Chile, Hungary and a handful of other countries (panel (a)). Poland and Mexico had some of the lowest three-year average inflation in the sample, while Colombia's inflation was just over 5% (panel(b)). Accounting for 11.7% of 2008 US exports, Mexico is clearly an outlier. Colombia and Poland represent the seventh and 18<sup>th</sup> largest US export exposures in the sample, respectively (panel (c)). Both Poland and Mexico were among the top-ranked when it came to political concessions to the US. Colombia too made more political concessions than the median country. Unsurprisingly, Venezuela, Russia and China feature among the sample countries with the lowest scores in this dimension (panel (d)). Poland has the highest EMPI value in

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<sup>28</sup>We refer to [Essers and Ide \(2017\)](#) for the full estimation results of single-regressor probit models and for a much more detailed descriptive analysis.



the sample, whereas Mexico's and Colombia's EMPIs are found in the upper half of the sample distribution (panel (e)).<sup>29</sup>

Table 2 contains the results of our probit estimations. Next to the fitted probit coefficients, we present average marginal effects (AME), as well as standard measures to evaluate model performance, such as the Akaike and Bayesian information criteria (AIC and BIC) and McFadden pseudo  $R^2$ s. We also report the number of FCL and non-FCL countries correctly classified by the model based on two alternative classification rules. Under the first rule, a country is classified as FCL participant (non-participant) if the predicted probability from the model is greater (smaller) than 50%. While intuitively appealing, the 50% cut-off is not necessarily the most appropriate threshold in a unbalanced sample as ours, with many more non-FCL than FCL countries (Greene, 2012). Hence, according to our second classification rule, countries are classified as FCL participants if their predicted probabilities are at least as high as the proportion of FCL countries actually observed in the sample (e.g., three out of 35 or 8.57% in case of the model of column (a)). In addition, Appendix Figure A3 depicts the receiver operating characteristic (ROC) curves for the different models of Table 2. These curves plot the true positive rate (the rate of FCL countries correctly called, as a share of the true number of FCL countries; also known as *sensitivity*) against the false positive rate (the rate of incorrectly classified non-FCL countries, as a share of the true number of non-FCL countries; the complement of *specificity*) for all possible probability thresholds (moving from a cut-off of 100% in the south-west corner of the graph to 0% in the north-east corner). The further the ROC curve lies from the 45 degree line, which represents a classification strategy of random guessing, the better it is able to classify both FCL and non-FCL countries. At the bottom of Table 2, we report the area under the ROC curve (AUROC) for each model, a measure of predictive ability equivalent to the probability that the model in question will assign a higher predicted value to a randomly selected FCL country than to a randomly chosen non-FCL country. Besides its independence from the researcher's choice of classification cut-off, another advantage of the AUROC metric is its robustness to skewness in the class distribution (see Fawcett, 2006, for more details).

In column (a) of Table 2 we start out with a probit model including just EMBI spreads and inflation, which feature among the FCL's official qualification criteria. The estimated coefficients and marginal effects of both variables are significant at the 10% level. That said, the model is not very successful in differentiating FCL from non-FCL countries; when compared to the sample-based cut-off, nine non-FCL countries would be incorrectly classified as FCL participants. Adding the EMPI to the model in column

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<sup>29</sup>A closer look at the two components of the six-month (September 2008 - February 2009) average EMPI reveals that pre-FCL EMPI values are relatively elevated for Poland, Mexico and Colombia mostly due to large exchange rate depreciations. Poland and Mexico also saw substantial international reserve losses during September/October 2008.

(b), we obtain similar, if not stronger coefficients and marginal effects for EMBI spreads and inflation. A higher EMPI increases the probability of FCL participation significantly, presumably through the demand side. The model that includes the EMPI clearly outperforms the one without, in terms of AIC/BIC, pseudo  $R^2$  and predictive ability. If we employ 50% as our threshold, the model succeeds in correctly classifying two out of three FCL (Poland and Mexico) and all non-FCL countries. The misclassification of non-FCL countries under the sample-based threshold is reduced from nine to five countries and the AUROC increases (significantly so, at the 20% level; cf. the ROC curves in Figure A3). In column (c) the specification is further expanded with the country share in US exports, a measure that captures the relative exposure of US exporters to that country and is therefore labeled a supply-side factor. The argument goes that, as the dominant shareholder in the IMF Executive Board, the US administration has considerable room to exert influence on the IMF's lending decisions in order to protect the interests of its exporting companies. We find that the probit coefficient of the country share in US exports is indeed positive and highly significant. There is, however, no further improvement in the AUROC from adding the US export share to the model.

Column (d) shows the results for the probit model that incorporates all five selected variables, including our UNGA voting-based proxy for political concessions to the US. The literature on IMF lending generally describes the latter variable as operating on the supply side; the US may use its influence in the IMF Executive Board to reward its foreign policy allies (even if no formal vote is organized in the Board). However, on the demand side, it is also conceivable that countries that are more friendly towards US foreign policy feel less stigma and are more comfortable in approaching the IMF for an FCL arrangement.<sup>30</sup> Whichever channel dominates, the probit coefficient of the political concessions variable is positive and highly significant. All other variable coefficients have the expected sign and, with the exception of inflation, are significant at the 20% level at the minimum. In line with our univariate tests, countries with lower EMBI spreads, lower inflation, a higher share in US exports, more severe exchange market pressure, and countries that made more political concessions to the US had a greater likelihood of entering into an FCL arrangement. The estimated marginal effects indicate that the influence of the included variables is economically meaningful too: a 1% increase in the US exports share would, on average, increase the probability of FCL entry with 0.8%. A one standard deviation change in the political concessions variable (+0.11) raises the likelihood with an average of 4.4%. According to the pseudo  $R^2$  and AUROC metrics, the five-variable probit of column (d) has higher explanatory and predictive powers than the preceding models. With a sample-based cut-off (of 3/31 or 9.67%), all three FCL countries are classified as such and

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<sup>30</sup>As Bird et al. (2015, p. 223) put it, "... there may be considerable self-selection on the demand side for IMF programs; governments on good terms with the US may quickly turn to the Fund, while less favored governments may not bother to approach the IMF expecting that an agreement will be opposed".

only three non-FCL countries (Brazil, Peru and Bulgaria) are incorrectly labeled FCL participants.<sup>31</sup>

We have subjected the baseline five-variable probit model to two algorithms of step-wise selection. The first algorithm starts with an empty model and iteratively adds the most significant excluded variable, with possible re-exclusion of previously included variables. Conversely, the second algorithm takes the full model and iteratively drops the most insignificant included variable, with possible re-inclusion of previously excluded variables.<sup>32</sup> Depending on the choice of the significance threshold level for inclusion/exclusion (20%, 10% or 5%), these algorithms converge to either a model without inflation or one without EMBI spreads. Column (e) of Table 2 shows that in the model excluding inflation the coefficients and average marginal effects are of the same order of magnitude but statistically more significant than in the five-variable model. The new model has only slightly lower explanatory and predictive power. With a sample-based cut-off, the number of false positives is now four instead of three (the same non-FCL countries as before plus Hungary). The estimated coefficients and marginal effects of a model without EMBI spreads are again qualitatively similar to those of the baseline model (column (f)). Predictive power is slightly improved. There are only two misclassified non-FCL countries (Brazil and Peru) when employing a sample-based cut-off.<sup>33</sup>

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<sup>31</sup>In the model of column (d) of Table 2 the predicted probabilities of FCL participation are 99.8% for Poland, 98.4% for Mexico, and 13.6% for Colombia. This puts the latter behind Brazil (38.1%) and Peru (18.2%) and just before Bulgaria (12.1%). Interestingly, a note by investment bank Barclays dated 30 March 2009 also lists Brazil and Peru among the potential candidates for an FCL (next to Mexico, Poland, Colombia and a few others), based on a subjective scoring of countries on the nine official qualification criteria (Keller et al., 2009).

<sup>32</sup>Note that these algorithms are not without problems and, again, do not necessarily result in the best possible model given the list of variables (Derksen and Keselman, 1992). Forward and backward selection procedures may well result in different final models.

<sup>33</sup>The very small increase in the AUROC is due to the increase in observations from 31 to 33 when excluding EMBI spreads as a regressor.

Table 2: Baseline probit estimation results

	(a)		(b)		(c)		(d)		(e)		(f)	
	Coefficient	AME	Coefficient	AME	Coefficient	AME	Coefficient	AME	Coefficient	AME	Coefficient	AME
<i>1-y average EMBI spread</i>	-0.0037* (0.0020)	-0.0004* (0.0002)	-0.0035** (0.0018)	-0.0003+ (0.0002)	-0.0026* (0.0014)	-0.0002+ (0.0001)	-0.0032+ (0.0024)	-0.0002 (0.0002)	-0.0051*** (0.0015)	-0.0003+ (0.0002)		
<i>3-y average inflation</i>	-0.2329* (0.1374)	-0.0258* (0.0147)	-0.3165** (0.1605)	-0.0239* (0.0125)	-0.2126*** (0.0785)	-0.0131* (0.0076)	-0.1394 (0.1940)	-0.0071 (0.0118)			-0.2513** (0.1042)	-0.0121 (0.0104)
<i>2-component EMPI</i>			0.3639** (0.1780)	0.0275** (0.0140)	0.2509*** (0.0701)	0.0154** (0.0074)	0.3204** (0.1270)	0.0163 (0.0136)	0.2883*** (0.0689)	0.0151+ (0.0102)	0.3160*** (0.0991)	0.0153+ (0.0115)
<i>Share US exports</i>					0.2108*** (0.0706)	0.0130** (0.0061)	0.1637+ (0.1011)	0.0083*** (0.0025)	0.2109* (0.1135)	0.0110+ (0.0076)	0.1714** (0.0872)	0.0083*** (0.0030)
<i>Political concessions to US</i>							7.8400*** (2.2456)	0.3978+ (0.2819)	8.2064*** (2.2029)	0.4293+ (0.2927)	7.4740*** (1.9738)	0.3612+ (0.2428)
Constant	13.505 (1.2016)		0.0890 (1.0104)		-0.5854 (0.9222)		-1.6789* (1.0146)		-1.7439* (0.9307)		-2.1975*** (0.7724)	
N	35		31		31		31		31		33	
AIC	20.0957		16.7186		17.3435		18.0669		16.1914		16.2555	
BIC	24.7618		22.4545		24.5135		26.6708		23.3614		23.7381	
McFadden pseudo R <sup>2</sup>	0.3116		0.5577		0.6275		0.6922		0.6859		0.6889	
FCL countries correctly classified (50% cut-off)	0/3		2/3: POL, MEX		2/3: POL, MEX		2/3: POL, MEX		2/3: POL, MEX		2/3: POL, MEX	
Non-FCL countries correctly classified (50% cut-off)	32/32		28/28		28/28		28/28		28/28		28/28	
FCL countries correctly classified (sample-based cut-off)	3/3		3/3		2/3: POL, MEX		3/3		3/3		3/3	
Non-FCL countries correctly classified (sample-based cut-off)	23/32: not CHN, MYS, PER, TUN, CHL, BRA, HUN, PAN, PHL		23/28: not BRA, MYS, RUS, PER, TUN		25/28: not BRA, MYS, RUS		25/28: not BRA, PER, BGR		24/28: not BRA, BGR, PER, HUN		26/28: not BRA, PER	
AUROC	0.8750		0.9643		0.9643		0.9762		0.9643		0.9778	

Notes: Sample countries and ISO-3 codes as defined in Appendix Table A1 and variables as defined in Appendix Table A2. Significance of probit coefficients based on Huber-White robust standard errors and significance of average marginal effects (AME) based on delta-method standard errors (reported in parentheses). Number of correctly classified FCL and non-FCL countries based on two alternative classification rules: in the first case a country is classified as FCL participant (non-participant) if predicted probability is greater (smaller) than 50%; in the second case a country is classified as FCL participant (non-participant) if predicted probability is greater (smaller) than proportion of FCL countries actually observed in sample.  
 + $p < 0.2$ ; \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

### 4.1.3 Robustness of probit results

In Appendix Table A3 we report a number of additional variations on the baseline probit model.<sup>34</sup> First, in column (a), we replace EMBI spreads with the EIU overall country risk rating, another supply-side variable we found to differ significantly between FCL and non-FCL countries in our univariate tests and that has a relatively high correlation with EMBI spreads ( $r = 0.67$ ). The risk rating's coefficient has a counterintuitive positive sign but is not significant. All other results are similar to those of the baseline model. Adding institutional variables such as control of corruption, government effectiveness, or checks and balances to the baseline specification, also leaves the main results unchanged. The estimated coefficients for these variables are insignificant. In column (b), US export shares are replaced with (the highly correlated;  $r = 0.95$ ) US bank claim shares, the coefficient of which has the expected sign but is again insignificant. Excluding the US export share variable altogether from the baseline model, Mexico, which is an outlier in this dimension, is still clearly identified as a likely FCL participant.<sup>35</sup> Likewise, even without the EMPI variable, the model continues to classify Poland as an FCL participant.<sup>36</sup>

Next, we check the robustness with respect to the 'political concessions to the US' variable, a measure of the UNGA voting alignment with the US on votes the US classifies as important *relative to* such alignment on all votes. Column (c) of Table A3 substitutes this variable with an *absolute* measure of political alignment with the US that does not differentiate between important and other votes. Unlike the political concessions variable, absolute political alignment with the US is not significantly correlated with the probability of FCL participation conditional on the other four baseline variables. Moreover, absolute political alignment with the US adds virtually nothing to the explanatory and predictive power of the model (compare column (c) of Table A3 with column (c) of Table 2). The same conclusions can be drawn from column (d) of Table A3, where absolute political alignment with the four largest European shareholders of the IMF (Germany, UK, France and Italy) is used instead. Conversely, the absolute alignment on UNGA votes the US finds important has again statistically significant probit coefficients and average marginal effects, as shown in column (e). This last model also outperforms the previous two in terms of AIC, BIC and pseudo  $R^2$ , even though it cannot fully emulate the baseline model with our preferred 'political concessions to the US' variable. Replacing the baseline political concessions measure, which is calculated over 2008 (the year before the FCL was introduced), with its five-year, 10-year or 20-year average gives probit results that are very close to those of the baseline. It thus seems that what matters are not (or not just) concessions on

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<sup>34</sup>For reasons of space, Table A3 does not show all results discussed here. The omitted results are available upon request.

<sup>35</sup>In such a model, the predicted probability of FCL participation of Mexico is 88.3%. Hence the US export share variable does not act as a 'dummy' for Mexico.

<sup>36</sup>Poland's predicted probability of FCL participation becomes 68.7%, i.e., still the second highest probability, behind Mexico's.

some specific issues that happened to be on the UNGA agenda in 2008, but rather longer-term political alliances. Altogether, the evidence suggests that it is especially countries' (absolute or relative) alignment on foreign policy issues that are key in the eyes of a major IMF shareholder, here the US, which correlates with participation in the FCL.<sup>37</sup>

Column (f) excludes from our baseline sample countries that were already involved in (non-precautionary) IMF arrangements when the FCL was launched (see Appendix Table A1). Chances that those countries would qualify for the FCL were slim. The resulting estimates are again very similar. Finally, in columns (g) and (h) we check the sensitivity of our results to the estimation methodology by re-estimating the baseline model using, respectively, logistic regression and OLS. The average marginal effects of the baseline probit and logit are very much alike. Also the marginal effects of the linear probability model (LPM) (equal to the model's coefficients) in column (h) are of the same order as in the probit, with the exception of the US export share effect (which is much larger in the LPM). Whereas the predictive abilities of the probit and logit baseline models are close to each other, the performance of the LPM, which has the disadvantage of not constraining predicted values to the 0-1 interval, deviates. When the probability cut-off is fixed at 50%, the LPM classifies only Mexico as an FCL country; with a sample-based cut-off, Mexico, Poland and Colombia are all three identified as FCL participants, but so are 10 non-FCL countries. Nonetheless, the LPM produces an AUROC that is higher than those of the corresponding probit and logit models, due to its ranking of Colombia as the country with the fourth highest predicted probability of FCL participation in the sample.<sup>38</sup>

A few cautionary remarks concerning our results on FCL selectivity are in order. First, as mentioned above, our approach of building a model with variables that perform well in univariate tests does not necessarily lead us to the best possible specification. Second, there may be other important factors underlying FCL participation that we do not take up in our analysis. For example, the entry of Mexico, Colombia and Poland into their first FCL arrangements might be linked with the personal views and preferences of the top economic policymakers in those countries. Mexico's Secretary of Finance in 2009, Agustin Carstens, held prior positions at the IMF as Deputy Managing Director (2003-2006) and as Executive Director for the Constituency of Mexico, Spain and five other countries (1999-2000). Moreover, at the time the FCL was introduced, he chaired the joint IMF-World Bank Development Committee, an important advisory body. Guillermo Ortiz, who was Governor of the Bank of Mexico in 2009 and co-signed the formal request for an FCL with Carstens, also served as an IMF Executive Director in the past (1984-1988). In the media and

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<sup>37</sup>Remember that we lack data on which UNGA votes are important to IMF shareholders other than the US.

<sup>38</sup>In the LPM, Colombia's predicted probability of 19.8% is surpassed only by those of Mexico (96.6%), Poland (44.2%) and Brazil (34.4%).

elsewhere, there have been speculations about the importance of such personal relationships with the IMF in closing the inaugural FCL deal (e.g., [Oxford Analytica, 2009](#); [Cammack, 2009](#)). It is however very difficult to formally test these assertions in our sample.<sup>39</sup> As evident from Tables 2 and A2, the participation of Colombia in the FCL is less well explained by our models, compared to the much clearer signals for Mexico and Poland. This should perhaps not come as a surprise, given that, with the exception of the US export share variable, Colombia ranks behind Mexico and Poland on all the variables we identify as significant correlates of FCL participation (i.e., it has higher inflation, higher EMBI spreads, a lower EMPI, and a lower score for political concessions to the US than the other two countries; see Appendix Figure A2).<sup>40</sup> A third qualifier is that the correlations we present, should not be read as evidence of causal relations.

## 4.2 How effective have FCL arrangements been?

### 4.2.1 Synthetic control results<sup>41</sup>

#### *Effects of FCL on Mexican EMBI spreads*

Figure 1 and Appendix Table A5 provide the results of the synthetic control methodology applied to Mexican EMBI spreads. Panel (a) of Figure 1 shows the trajectory of EMBI spreads for Mexico and its synthetic counterpart constructed from the full donor pool. The synthetic Mexico, which is a combination of Chile (with weight 0.359), Brazil (0.293), Hungary (0.201), South Africa (0.086) and El Salvador (0.061), mimics the real Mexico very well in terms of pre-FCL spreads. Table A5 demonstrates that there is also a good match with respect to spread predictors, although averaged reserves are somewhat higher in the synthetic Mexico. Our estimate of the FCL's effect on Mexican EMBI spreads is given by the gap between actual Mexican spreads and their synthetic version, as visualized in panel (b) of Figure 1. The Mexican spread first went about 37 basis points below its counterfactual when the FCL was signed in April 2009, but then

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<sup>39</sup>For a rare study of the role of shared economic beliefs, held by key policymakers in borrowing countries and IMF officials, on IMF lending practices, see [Nelson \(2014, 2017\)](#). In 2009 and 2010, Mexico also served as an elected member to the UN Security Council, another factor which has been found to correlate positively with participation in IMF arrangements and negatively with the number of conditions in the associated adjustment programs ([Dreher et al., 2009](#)).

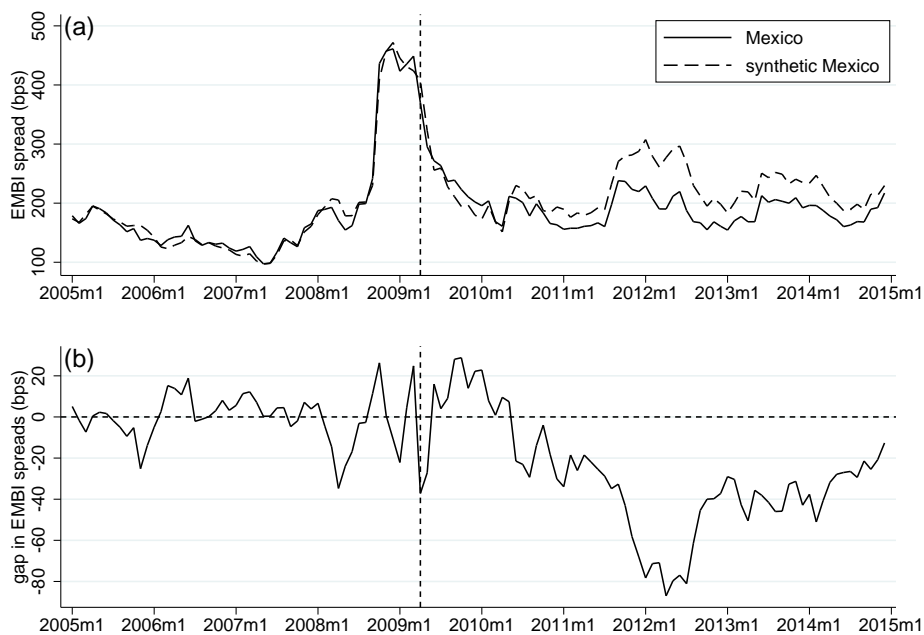
<sup>40</sup>In the 2009 IMF Staff Report assessing Colombia's FCL qualification ([IMF, 2009a](#)) we could not identify any unique aspect of Colombia's economy that may have driven its decision to participate in the FCL; neither could we find special reasons for why the IMF may have been particularly interested in Colombia as an FCL taker. On the supply side, the IMF Staff Report emphasizes Colombia's strong fundamentals and solid policy track record, including Colombia's relatively low sovereign spreads and its efforts in bringing inflation down (variables that are already included in the model). The report also praises Colombia's favourable public and external debt situation and comfortable international reserve coverage. However, these traits can be found with several other countries in our sample too. On the demand side, the report mentions the economic slowdown and fall in exports in 2008. But again, Colombia's negative crisis experience is matched or trumped by many other sample countries.

<sup>41</sup>All results were obtained using Stata's *synth* command, written by Alberto Abadie and his collaborators. We use the *nested* and *allop* options, which deliver the most statistically robust results. *Nested* employs a fully nested optimization procedure that searches among all possible  $V$ s and sets of  $W$  for the best-fitting convex combination of control countries. *Allop* provides an extra robustness check in running the nested optimization for three different starting points of  $V$  (so as to increase chances of finding global rather than local optima) and returns the best result (with the lowest RMSPE) of the three attempts.

exceeded it by a small margin in the months thereafter. From June 2010 onward, however, actual Mexican spreads always remained below the synthetic spreads. The largest gaps, around 70-80 basis points, are observed from end 2011 to mid 2012, which coincides with an intensification of the euro zone crisis.

Figure 2 and the last column of Table A5 contain the synthetic control results for Mexican EMBI spreads when the donor pool is restricted to Latin American countries. Even if there is a reasonably close pre-FCL match in spreads between Mexico and the synthetic control (a combination of Chile, Panama, Brazil and El Salvador), the pre-FCL RMSPE and fit index are substantially (14%) higher and the matching of covariates is less strong than when the donor pool was unrestricted. Especially in the months just before Mexico’s FCL arrangement the region-based synthetic spreads deviate more from actual spreads than the full-sample synthetic spreads. Therefore, we have greater confidence in the full donor pool estimates. We will check their significance when discussing our placebo tests (see Section 4.2.2).

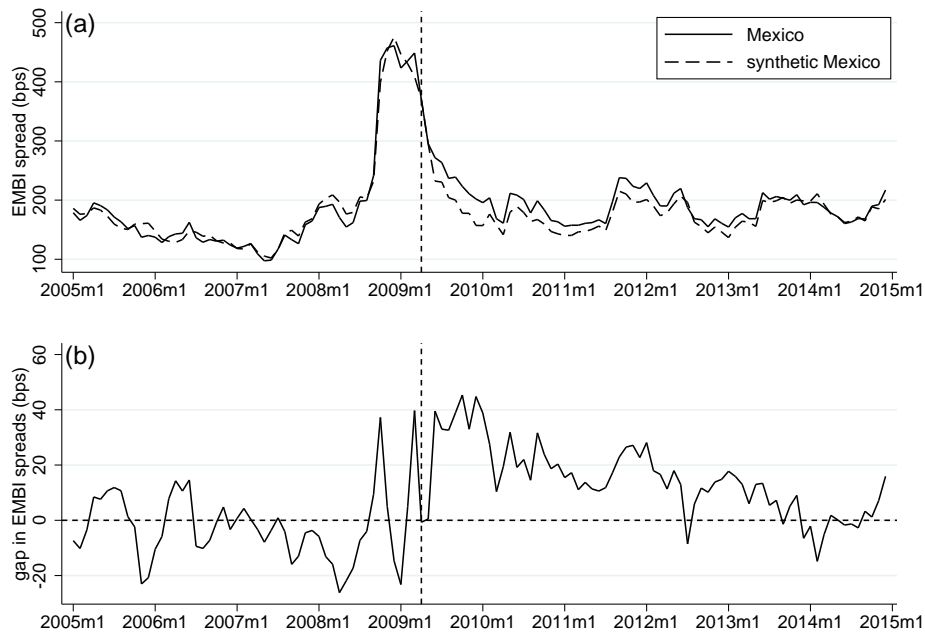
Figure 1: Evolution of and gap between EMBI spreads of Mexico and synthetic control (full donor pool)



Notes: Composition of full donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are Chile (0.359), Brazil (0.293), Hungary (0.201), South Africa (0.086) and El Salvador (0.061). Vertical dashed line indicates month first Mexican FCL arrangement was agreed (April 2009).



Figure 2: Evolution of and gap between EMBI spreads of Mexico and synthetic control (regional donor pool)



Notes: Composition of regional donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are Chile (0.493), Panama (0.378), Brazil (0.067) and El Salvador (0.062). Vertical dashed line indicates month first Mexican FCL arrangement was agreed (April 2009).

### *Effects of FCL on Colombian EMBI spreads*

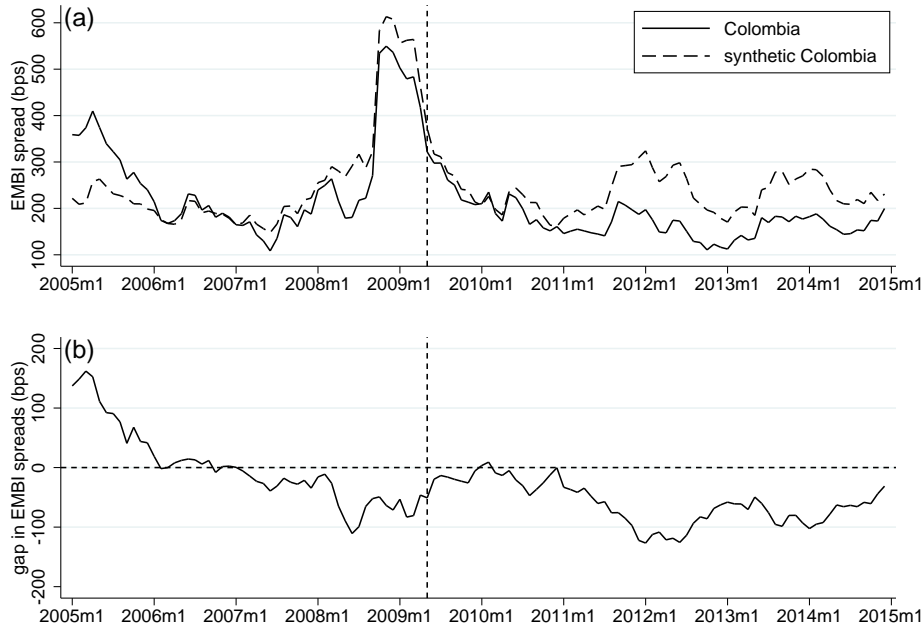
Applied to the full donor pool, the synthetic control algorithm has greater difficulties with approximating Colombia’s pre-FCL EMBI spreads, even though on average, spread covariates are very similar (see Figure 3 and Table A6).<sup>42</sup> Given that synthetic spreads are already lower than actual spreads from mid 2008 onwards, before Colombia’s signing of its FCL arrangement, they do not provide an appropriate counterfactual.

Restricting the donor pool to the Latin American region enables a more successful matching of Colombian EMBI spreads; the fit index is reduced by two-thirds to 7% (see Figure 4 and Table A6).<sup>43</sup> With the exception of public debt, average values of the covariates are very similar between Colombia and its synthetic control composed of Brazil, Panama, El Salvador, Chile and Peru. The results suggest a divergence between actual and synthetic spreads, but only from mid 2010 onward. The estimated effect of the FCL goes up to 80-90 basis points around mid 2012 and early 2014.

<sup>42</sup>The fact that 14 out of 16 countries in the donor pool get assigned positive but (mostly) very small weights, testifies to the difficulty of matching in this case.

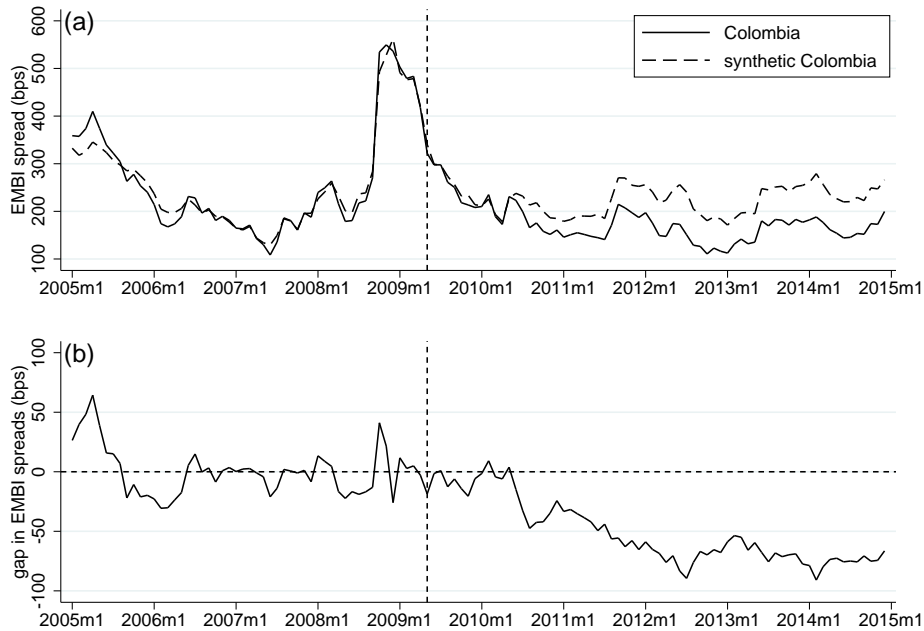
<sup>43</sup>In theory, optimization in the full set of donor pool countries, which encompasses the regional donor pool, should result in a better fit (i.e., a lower RMSPE and fit index). In practice this is not always the case, however (see e.g., Billmeier and Nannicini, 2013, p. 991, Tables 8-9), because of the relatively challenging optimization problem the synthetic control methodology postulates (which involves the optimization of both country and variable weights). As shown by Becker and Klößner (2018), the optimizing algorithms designed by Alberto Abadie and his collaborators cannot guarantee finding the true global optimum. Here the synthetic control results for Colombia’s full donor pool thus likely represent a local optimum.

Figure 3: Evolution of and gap between EMBI spreads of Colombia and synthetic control (full donor pool)



Notes: Composition of full donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are Turkey (0.511), Indonesia (0.216), Chile (0.212), El Salvador (0.047) and ten other countries (with weights of maximum 0.003). Vertical dashed line indicates month first Colombian FCL arrangement was agreed (May 2009).

Figure 4: Evolution of and gap between EMBI spreads of Colombia and synthetic control (regional donor pool)



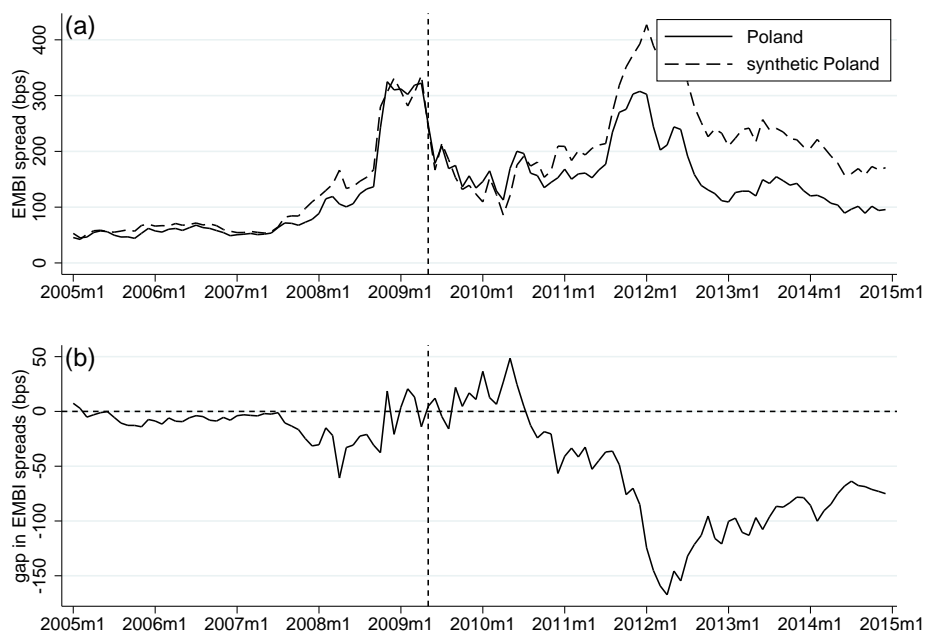
Notes: Composition of regional donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are Brazil (0.491), Panama (0.237), El Salvador (0.168), Chile (0.062) and Peru (0.041). Vertical dashed line indicates month first Colombian FCL arrangement was agreed (May 2009).

### Effects of FCL on Polish EMBI spreads

In a full donor pool, the synthetic control algorithm approximates Polish EMBI spreads with a weighted average of Chinese (0.613) and Hungarian (0.387) spreads. Whereas the matching of pre-FCL spreads appears to be relatively close (with a fit index of 13%), differences in other spread predictors between Poland and its synthetic version are considerable (see Figure 5 and Table A7). Due to the inclusion of China, average growth, reserves and the current account balance of the synthetic Poland are much higher than those of actual Poland, which could complicate the comparison of post-FCL outcomes.<sup>44</sup> Polish spreads dive below their estimated counterfactual mid 2010. The gap reaches its maximum (of more than 150 basis points) early 2012, when the euro zone crisis came to a boiling point.

For the regional donor pool of Poland we are restricted by data availability and consider only Hungary, Turkey (emerging European countries) and Russia (a CIS country) as potential controls. The algorithm selects Hungary as a single comparator.<sup>45</sup> Matching of pre-FCL spreads is very poor, however (especially during the peak of the global financial crisis), so we discard the estimated effects (Figure 6 and Table A7).

Figure 5: Evolution of and gap between EMBI spreads of Poland and synthetic control (full donor pool)

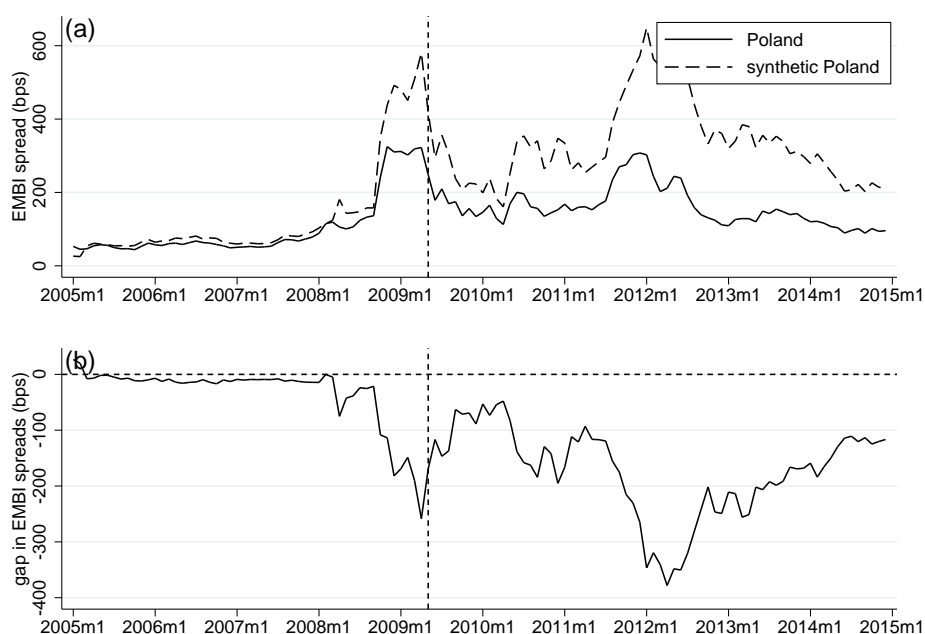


Notes: Composition of full donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are China (0.613) and Hungary (0.387). Vertical dashed line indicates month first Polish FCL arrangement was agreed (May 2009).

<sup>44</sup>The main reason why China gets assigned a large weight in the synthetic control for Poland seems to be that it is the only sample country whose average pre-FCL EMBI spreads were lower than those of Poland (see Appendix Figure A2). To enable the synthetic control estimator to interpolate, both spreads lower and higher than Poland's are needed.

<sup>45</sup>The three countries considered all have average pre-FCL EMBI spreads above Poland's, but Hungarian spreads are closest (see Appendix Figure A2).

Figure 6: Evolution of and gap between EMBI spreads of Poland and synthetic control (regional donor pool)



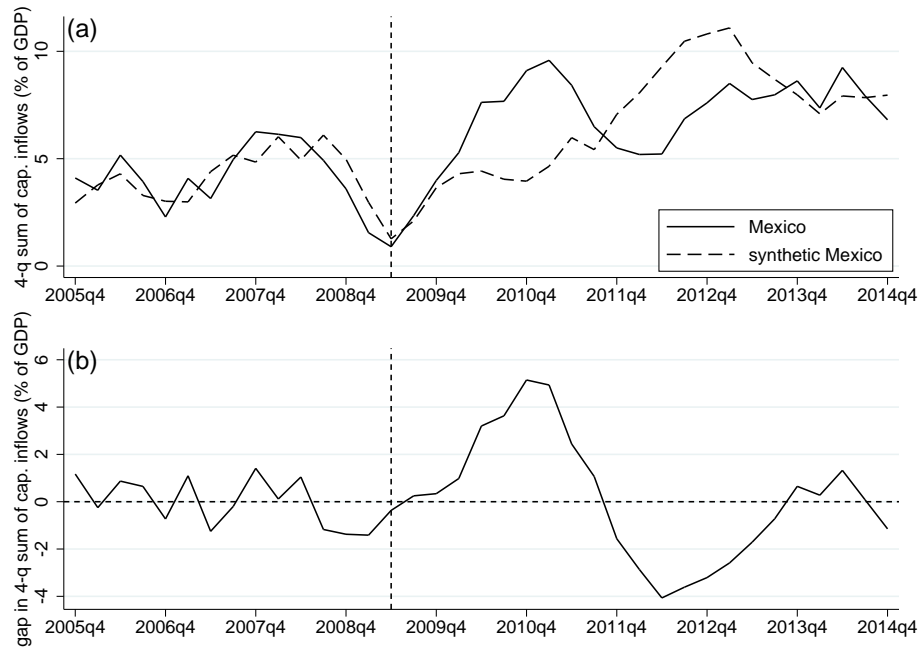
Notes: Composition of regional donor pool as presented in Appendix Table A4. Hungary is the only control country (with a weight of 1). Vertical dashed line indicates month first Polish FCL arrangement was agreed (May 2009).

### *Effects of FCL on gross capital inflows into Mexico*

Figure 7 and Table A8 show the synthetic control outcomes for gross capital inflows into Mexico when considering the full donor pool. Pre-FCL capital inflows into synthetic Mexico, a weighted average of Sri Lanka (0.542), Chile (0.280) and Peru (0.178), fit the observed capital inflows reasonably well (despite the fit index of 23% being significantly higher than the corresponding indices in the EMBI spread synthetic controls). And with the exception of real GDP growth, the average pre-FCL values of capital flow predictors are very similar too between Mexico and its synthetic version. The effects of the FCL on capital inflows are estimated to be positive between end 2009 and end 2011 (up to an extra five percentage points of GDP in 2010Q4) and, surprisingly, negative between end 2011 and end 2013.

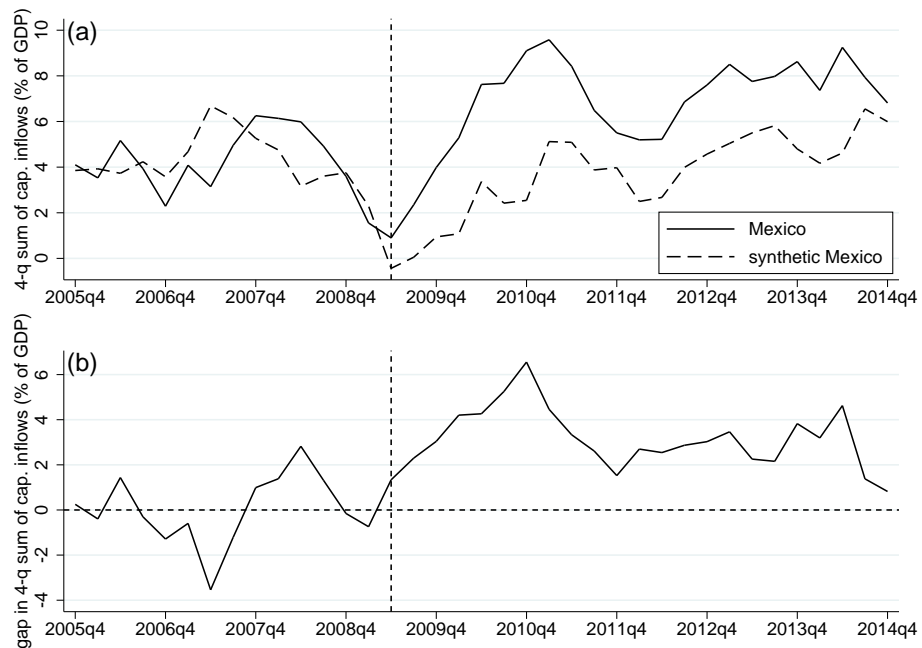
Restricting the donor pool to the Latin American region results in a considerably worse match of pre-FCL capital flows (with an increase in the fit index of almost 50%) (Figure 8 and Table A8), so that we give preference to the results from the full donor pool experiment. The significance of the estimated effects in the full donor pool sample will again be evaluated against placebo effects.

Figure 7: Evolution of and gap between gross capital inflows into Mexico and synthetic control (full donor pool)



Notes: Composition of full donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are Sri Lanka (0.542), Chile (0.280) and Peru (0.178). Vertical dashed line indicates quarter first Mexican FCL arrangement was agreed (2009Q2).

Figure 8: Evolution of and gap between gross capital inflows into Mexico and synthetic control (regional donor pool)



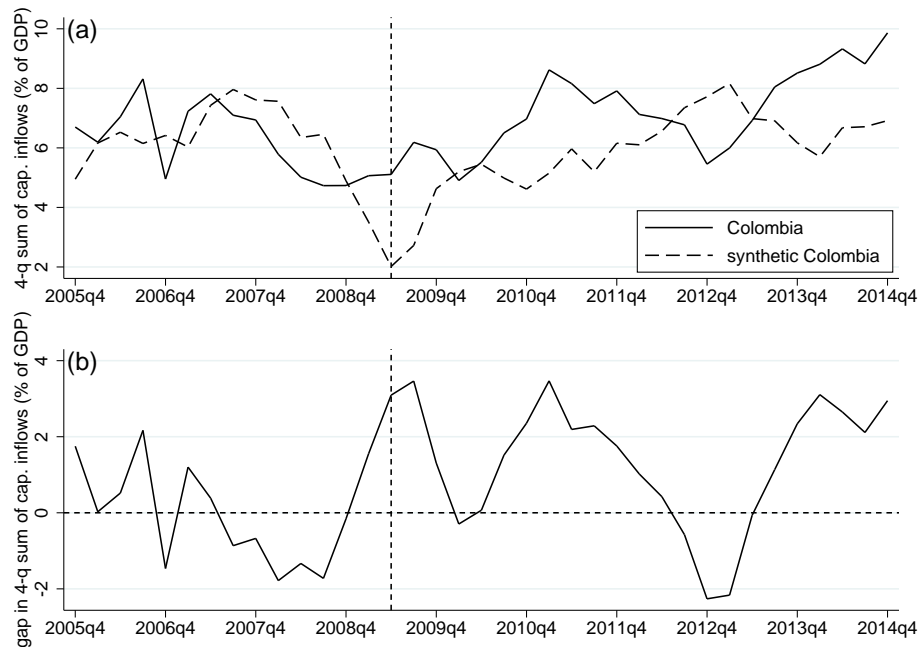
Notes: Composition of regional donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are Ecuador (0.434), El Salvador (0.358) and Brazil (0.208). Vertical dashed line indicates quarter first Mexican FCL arrangement was agreed (2009Q2).

*Effects of FCL on gross capital inflows into Colombia*

Similar as with Colombia’s EMBI spreads, the synthetic control algorithm has some difficulties with finding a good weighted country combination that closely tracks Colombia’s pre-FCL capital inflows, in spite of very similar average values for the covariates and an acceptable (20%) overall fit index (Figure 9 and Table A9).<sup>46</sup> The results indicate that capital inflows into Colombia exceeded their estimated counterfactual for most of the post-FCL quarters, except for 2012Q3-2013Q2, with peaks up to 3.5 percentage points of GDP.

The matching worsens in the regional donor pool (with a 40% higher fit index), where a weighted combination of Argentina and Chile is selected to approximate pre-FCL Colombia (Figure 10 and Table A9). We will therefore stick with the full-sample results.

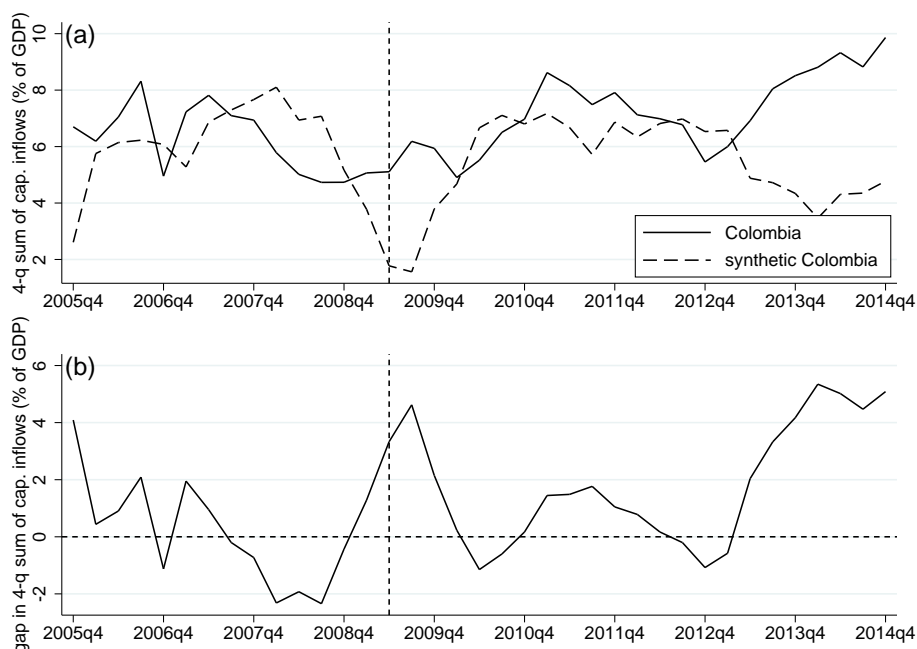
Figure 9: Evolution of and gap between gross capital inflows into Colombia and synthetic control (full donor pool)



Notes: Composition of full donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are Sri Lanka (0.244), Chile (0.197), South Africa (0.185), Pakistan (0.117), Philippines (0.065), China (0.035), Brazil (0.031), Argentina (0.022) and 12 other countries (with weights of maximum 0.017). Vertical dashed line indicates quarter first Colombian FCL arrangement was agreed (2009Q2).

<sup>46</sup>In this case *all* countries in the donor pool get assigned (mostly small) positive weights.

Figure 10: Evolution of and gap between gross capital inflows into Colombia and synthetic control (regional donor pool)



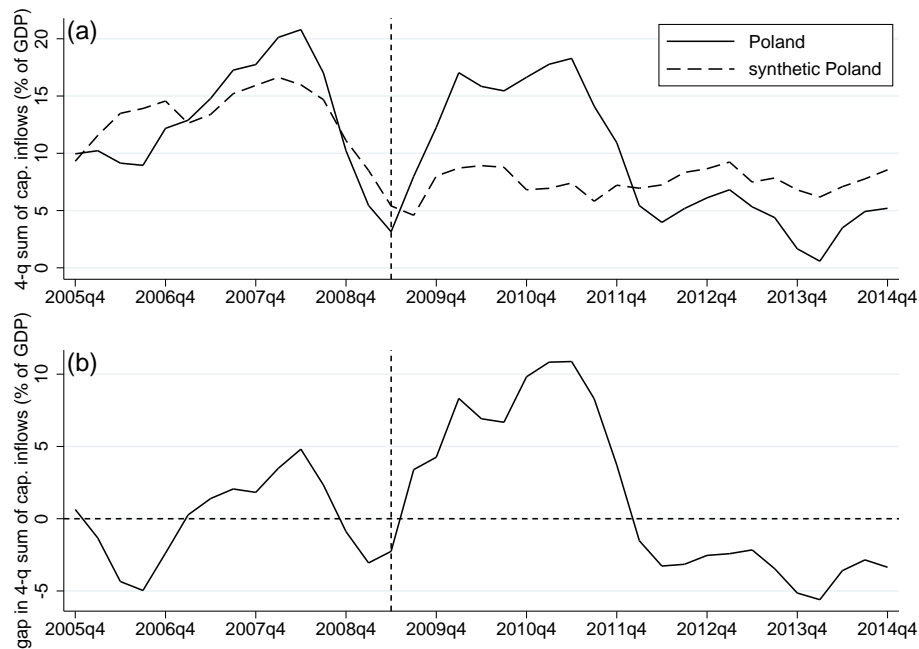
Notes: Composition of regional donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are Argentina (0.686) and Chile (0.314). Vertical dashed line indicates quarter first Colombian FCL arrangement was agreed (2009Q2).

### *Effects of FCL on gross capital inflows into Poland*

Pre-FCL capital inflows into Poland are reasonably well matched by a synthetic control of inflows into South Africa, Chile, Bulgaria and China (and a number of other countries with very small weights), and so are Poland's other pre-FCL characteristics (Figure 11 and Table A10).

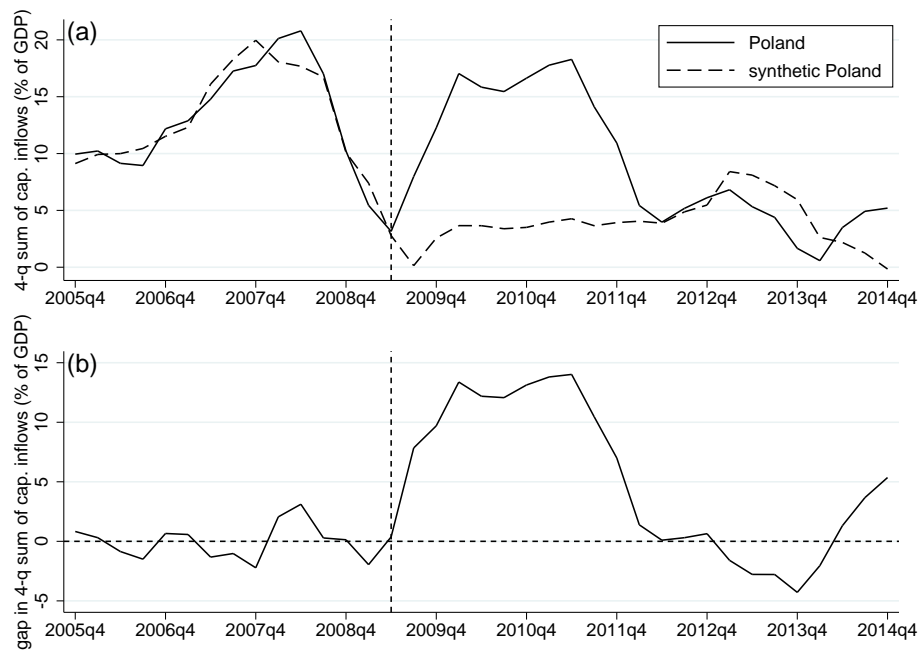
Considering just a regional donor pool, composed of Bulgaria, Hungary (both emerging Europe), Kazakhstan and Russia (both CIS), the synthetic control for Poland is a combination of Russia (0.875) and Bulgaria (0.125). This regional synthetic control delivers a much improved pre-FCL fit (with a fit index that is reduced by half, to 10%) (Figure 12 and Table A10) and is hence preferred over the full donor pool synthetic control. The estimated effect of the FCL on Polish capital inflows is positive and large from 2009Q3 to 2011Q4, up to 14 percentage points of GDP in 2011Q2. Only in 2013 and 2014Q1, after the euro zone crisis, the differences between observed and synthetic Polish capital inflows are estimated as being negative, albeit smaller in absolute value than the earlier positive differences.

Figure 11: Evolution of and gap between gross capital inflows into Poland and synthetic control (full donor pool)



Notes: Composition of full donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are South Africa (0.444), Chile (0.267), Bulgaria (0.172), China (0.104) and eight other countries (with weights of maximum 0.003). Vertical dashed line indicates quarter first Polish FCL arrangement was agreed (2009Q2).

Figure 12: Evolution of and gap between gross capital inflows into Poland and synthetic control (regional donor pool)



Notes: Composition of regional donor pool as presented in Appendix Table A4. Countries included in the synthetic control (and their respective weights) are Russia (0.875) and Bulgaria (0.125). Vertical dashed line indicates quarter first Polish FCL arrangement was agreed (2009Q2).



## 4.2.2 Placebo tests

To evaluate the significance of our estimated effects of the FCL on Mexican, Colombian and Polish EMBI spreads and capital inflows, we run a series of placebo experiments. As described in Section 3.2.1, placebos for the FCL's effects are constructed by iteratively applying the synthetic control method to all non-FCL countries in the donor pool, as if they were FCL participants themselves.<sup>47</sup> If the post-FCL gaps between actual and synthetic EMBI spreads/capital inflows for Mexico, Colombia and Poland, estimated in the previous sections, are large relative to the corresponding gaps for countries that did not enter into FCL arrangements, then this would strengthen our interpretation of the first gaps as evidence of significant FCL 'treatment' effects.

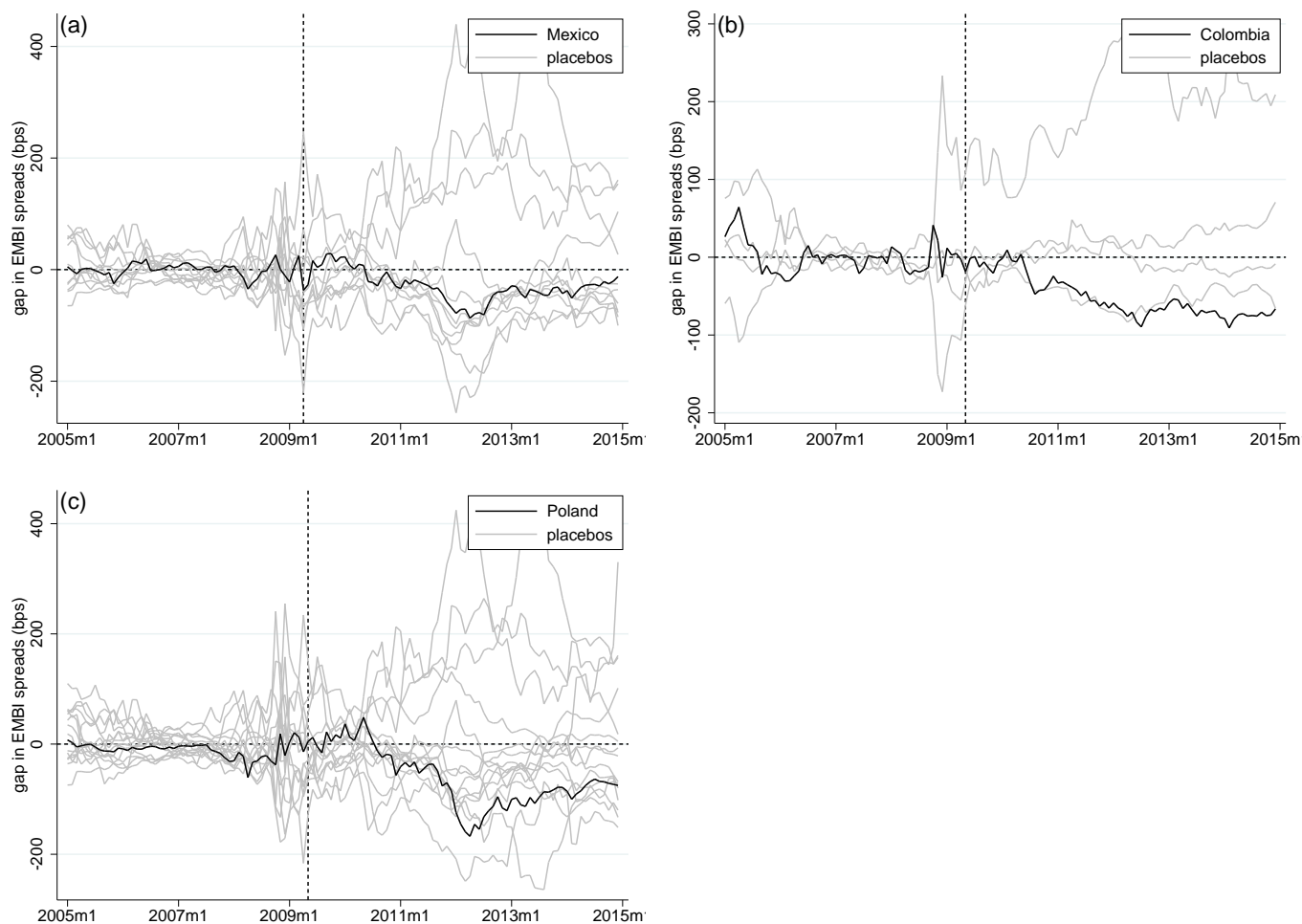
Figures 13 and 14 collect the results of our placebo tests. We conduct such tests for the cases where the closest matching between actual and synthetic pre-FCL outcome variables was achieved (i.e., where we observed the lowest pre-FCL RMSPEs and fit indices): Mexican and Polish EMBI spreads with the full donor pool, as these are our preferred estimates: Colombian spreads with the regional donor pool; Mexican and Colombian capital inflows with the full donor pool; and Polish capital inflows with the regional donor pool. As [Abadie et al. \(2010\)](#) point out, for the purpose of evaluating the relative rarity of large post-intervention gaps, it makes little sense to compare between cases with a good pre-intervention fit and placebos with a very poor fit. Therefore, we exclude from Figures 13 and 14 the placebos that have a pre-FCL RMSPE that is much larger than the pre-FCL RMSPE of the synthetic control for the FCL country in question.<sup>48</sup>

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<sup>47</sup>The donor pools for each of the placebo tests again exclude Mexico, Colombia and Poland, so that the synthetic non-FCL countries are composed of other non-FCL countries only (following [Abadie and Gardeazabal, 2003](#)). Leaving the FCL countries in the placebo donor pools produces similar results.

<sup>48</sup>To balance similarity in the degree of fit with keeping sufficient placebos for comparison, we define 'much larger' here as a pre-FCL RMSPE that is more than four times larger than that of the synthetic control for the FCL country in question. Excluding placebos with high fit indices (say, exceeding 20%) gives qualitatively similar results.

Figure 13: EMBI spread gaps for FCL countries and placebo gaps

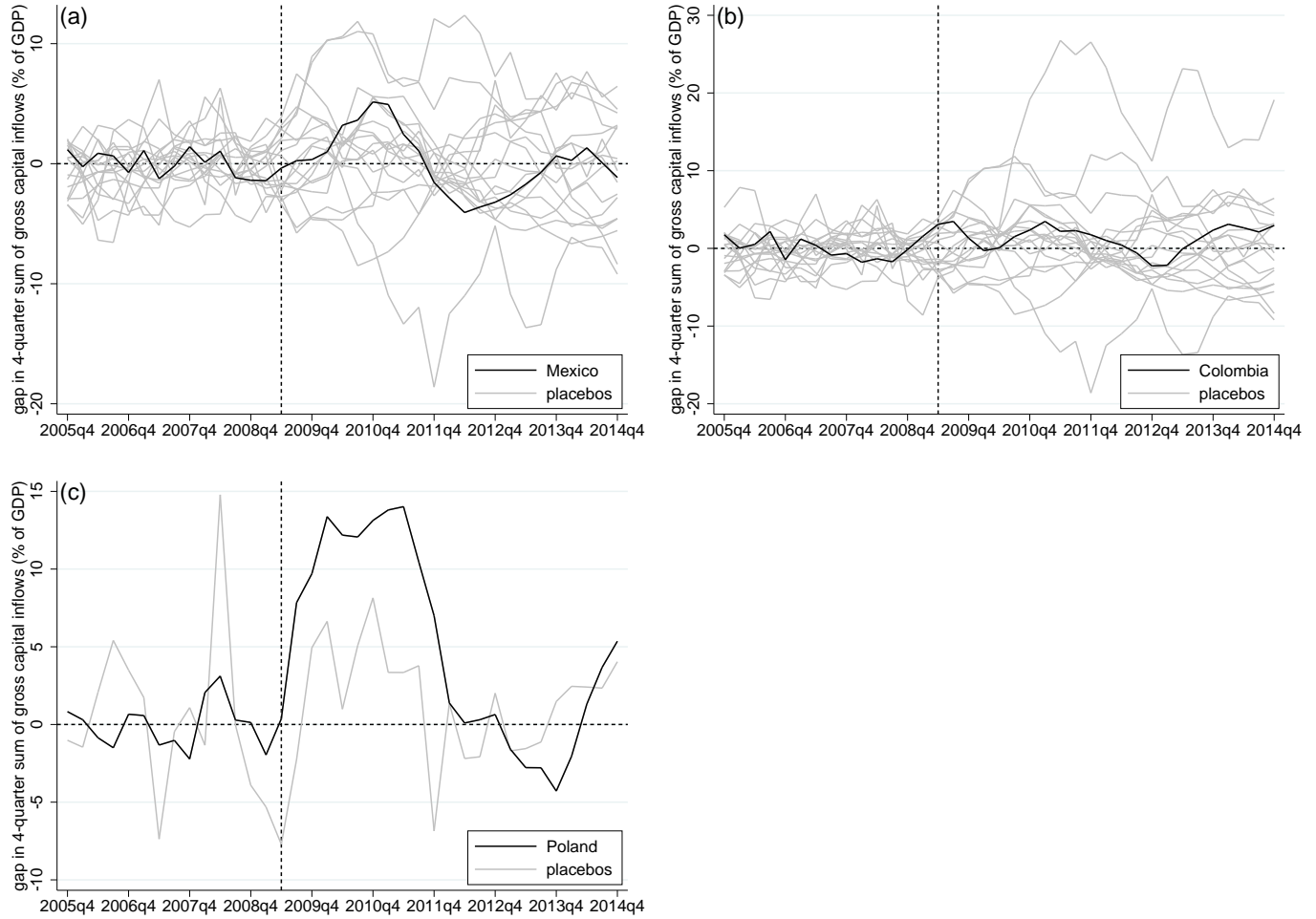


Notes: Panels show the gaps between actual EMBI spreads and EMBI spreads in synthetic controls, for FCL countries (black lines) and their placebos, i.e., non-FCL donor pool countries (gray lines). Panels (a) and (c) use full donor pools and panel (b) the regional donor pool, compositions of which are presented in Appendix Table A4. In each panel, placebos with pre-FCL RMSPEs larger than four times pre-FCL RMSPE of synthetic control for FCL country are excluded.

Panel (a) of Figure 13 suggest that the estimated effects of the FCL on Mexican EMBI spreads are not significant, as we find several placebo effects of similar or even greater magnitude when assigning the FCL intervention to the non-FCL countries in the donor pool. Especially Panama and South Africa exhibit large placebo effects, which are unlikely to be just the result of beneficial spill-overs from the availability of the FCL. Conversely, from panel (b) of Figure 13 it seems that the downward effect of the FCL on Colombian spreads from mid 2010 onward is comparatively large, emulated only by the placebo effect on Panamanian spreads. The small number of regional placebos makes it however difficult to properly evaluate the significance of this result. Panel (c) shows that the estimated effects on Polish spreads are also relatively large, but not before early 2011. Hence, there is a real possibility that other factors, like policy actions taken in the wake of the euro zone crisis, may account for this ‘FCL effect’.<sup>49</sup>

<sup>49</sup>Of course, it could be that the FCL arrangement enabled Polish authorities to implement such policy actions.

Figure 14: Gross capital inflow gaps for FCL countries and placebo gaps



Notes: Panels show the gaps between actual gross capital inflows and gross capital inflows in synthetic controls, for FCL countries (black lines) and their placebos, i.e., non-FCL donor pool countries (gray lines). Panels (a) and (b) use full donor pools and panel (c) the regional donor pool, compositions of which are presented in Appendix Table A4. In each panel, placebos with pre-FCL RMSPEs larger than four times pre-FCL RMSPE of synthetic control for FCL country are excluded.

Panel (a) of Figure 14 demonstrates that the estimated effects of the FCL on gross capital inflows into Mexico do not stand out particularly when compared to the placebo effects for donor pool countries. Even at their peak in 2010Q4-2011Q1 the Mexican effects are easily surpassed by the placebo effects for Chile and Vietnam and close to those for Peru, Venezuela and the Philippines. Similar conclusions can be drawn for Colombia from panel (b), although in 2009Q2, when the first FCL was agreed, the estimated effect on Colombian capital inflows is on a par with the placebo effects for Chile, Uruguay, Indonesia and Pakistan and exceeds all 14 other placebos shown. Finally, panel (c) emphasizes the magnitude of the estimated effects of the FCL on Polish capital inflows. Unfortunately, only one placebo effect with a reasonable pre-FCL fit (that of Bulgaria) could be estimated for the regional donor pool. That said, the timing of the effects on Polish capital inflows, right after the country's entry into an FCL agreement, makes that they can be plausibly attributed to the FCL (more so than the effects estimated for Polish EMBI spreads).

All in all, and keeping in mind the caveats mentioned in Section 3.2.1, the results of our synthetic control approach suggest that the FCL has had some, but generally limited effects on the bond spreads and gross capital inflows of its recipients. The beneficial effects on Colombian and Polish spreads seem to have been significant, but only with a considerable lag. Whereas these lags may be the result of changes in the general external environment that affect the FCL's impact on market confidence, it begs the question whether other, more idiosyncratic post-FCL factors played a role too. Moreover, it could perhaps be argued that the appropriateness of a particular synthetic control as a counterfactual diminishes as one moves further away from the time of the intervention, i.e., the first FCL arrangements. The positive effects on gross capital inflows into Colombia and Poland we uncovered were more immediate, but either disappeared rather quickly over time (Colombia) or could not be tested for significance (Poland). At the minimum, we find no evidence of any negative market reactions (in net terms) to Mexico, Colombia or Poland's entry into FCL arrangements, unlike what some country authorities that were reluctant to apply for an FCL may have feared.

## 5 Concluding remarks

This paper has empirically evaluated the FCL, the IMF's first genuine precautionary lending instrument, introduced in March 2009. Since the FCL provides uncapped access to funds and, unlike conventional IMF instruments, relinquishes all ex post conditionality in favor of strict ex ante conditionality, it is arguably one of the most notable innovations ever made to the IMF's lending framework.

Starting from the observation that to date only Mexico, Colombia and Poland have subscribed to

FCL arrangements, we have first addressed the FCL's *selectivity*, i.e., we have attempted to identify which factors explain these three countries' participation. Our probit analysis has shown that both demand- and supply-side variables mattered, although one should refrain from making strong causal claims. On the side of the prospective applicants, we have found that exchange market pressures in the run-up to the FCL's creation are positively correlated with the probability of entry into an FCL arrangement. *Ceteris paribus*, such pressures increase countries' demand for foreign exchange. Out of many possible supply-side variables, especially lower initial bond spreads, lower inflation, a higher share in US exports, and a higher propensity of making political concessions to the US (the IMF's largest shareholder) are associated with a greater likelihood of obtaining an FCL arrangement. Low bond spreads and inflation dovetail with the official qualification criteria that IMF staff are supposed to employ when assessing applicants' FCL eligibility. The US exports share and political concessions variables fit supply-side arguments touted by a large empirical literature on IMF lending, in particular that the US exerts (explicit or implicit) influence on IMF lending decisions to protect its (exporters') economic interests and to reward its foreign policy allies. However, the political concessions variable could be demand-related as well. Country authorities that are more sympathetic towards US foreign policy may feel less stigma and may be more comfortable in approaching the IMF (widely regarded as a US/G7-dominated institution) for an FCL arrangement.

Second, we have gauged the FCL's *effectiveness*, i.e., the extent to which the Mexican, Colombian and Polish FCL arrangements have delivered on their promise of boosting market confidence. Using the synthetic control method, we have assessed the FCL's impact on the three countries' EMBI spreads and gross capital inflows. The outcomes of our counterfactual exercises have pointed to some, but generally limited beneficial effects, which, in the case of spreads, became visible only a considerable time after the respective FCLs were first approved. These lags may be an indication that the FCL's effectiveness varies depending on the general external environment, and/or reflect the influence of other, idiosyncratic factors (such as post-FCL policy changes) which we do not capture.

One possible avenue for further research would be to use a similar approach to estimate the effects of the FCL on other outcome variables. In particular, one could test whether the FCL is seen as a viable alternative to international reserves and FCL participants have reduced their reserve holdings accordingly.<sup>50</sup> It

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<sup>50</sup>Note that substitutability between the FCL and own reserves is imperfect. Even with its large, upfront access to resources, flexibility regarding drawdowns and lack of ex post conditionality, FCL arrangements need to be renewed periodically, subject to IMF Executive Board approval. Although one view is that FCL arrangements should be intended as a close substitute for own reserves, the IMF (2011, p. 15) stresses that "[a] contrasting, majority view is that the FCL and PCL should mainly play the role of supplementary insurance for periods of heightened risks. ... Under this view FCL and PCL arrangements are supplementary insurance when risks are unusually high (outside 'normal' times). As such they augment the buffers a country with access to an FCL or PCL arrangement has". Estimating a VAR model with quarterly data, IMF staff finds that reserves growth in the three FCL countries has outstripped out-of-sample projections, in spite of generally adequate reserve stocks at the beginning. More research in this area is needed, however. Any assessment should take into account that reserves are held for non-precautionary purposes

would also be interesting to further study the behavior of bond spreads, capital flows and other indicators once Mexico and Colombia follow Poland in exiting their current FCL arrangements.

At this point, we believe there are two main policy implications one can draw from our analysis. First of all, since at the minimum we do not find negative market reactions to countries accessing the FCL, at least not at the level of EMBI spreads or capital inflows, we would argue that economic stigma is unlikely to be an important factor hindering eligible countries from applying for an FCL arrangement, or if it does play a role, this seems unwarranted. The IMF may want to stress the lack of negative market reactions more in its communication about the FCL. Second, however, the apparent link of FCL participation with US economic and political interests does seem to suggest the presence of political stigma. Even if, in reality, Mexico, Colombia and Poland's entry into FCL arrangements had more to do with these 'US-oriented' countries feeling less inhibited in approaching the IMF than with plain US favoritism, it may not be perceived as such by other member countries. If political stigma can be overcome, more countries may be able to take advantage of the FCL. After all, Mexico, Colombia and Poland are far from the only countries that satisfy the FCL's macroeconomic and institutional qualification criteria (Henning, 2015; Birdsall et al., 2017). If the IMF wants to increase its clout in the GFSN by widening the appeal of precautionary lending instruments such as the FCL, it will have to engage in more and better-targeted outreach activities. Perhaps a good place to start would be member countries that are less obviously aligned with the US in terms of economic relations and foreign policy.

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too, including exchange rate management and to ensure intergenerational equity.

## References

- Abadie, A. (2011). Using synthetic controls to evaluate an international strategic positioning program in Uruguay: Feasibility, data requirements, and methodological aspects. *Mimeo*.
- Abadie, A., Diamond, A., and Hainmueller, J. (2010). Synthetic control methods for comparative case studies: Estimating the effect of California's tobacco control program. *Journal of the American Statistical Association*, 105(490):493–505.
- Abadie, A., Diamond, A., and Hainmueller, J. (2015). Comparative politics and the synthetic control method. *American Journal of Political Science*, 59(2):495–510.
- Abadie, A. and Gardeazabal, J. (2003). The economic costs of conflict: A case study of the Basque Country. *American Economic Review*, 93(1):113–132.
- Adhikari, B. and Alm, J. (2016). Evaluating the economic effects of flat tax reforms using synthetic control methods. *Southern Economic Journal*, 83(2):437–463.
- Aizenman, J., Jinjara, Y., and Park, D. (2011). International reserves and swap lines: Substitutes or complements? *International Review of Economics and Finance*, 20(1):5–18.
- Aizenman, J. and Pasricha, S. K. (2010). Selective swap arrangements and the global financial crisis: Analysis and interpretation. *International Review of Economics and Finance*, 19(3):353–365.
- Arpac, O., Bird, G., and Mandilaras, A. (2008). Stop interrupting: An empirical analysis of the implementation of IMF programs. *World Development*, 36(9):1493–1513.
- Arslanalp, S. and Tsuda, T. (2014). Tracking global demand for emerging market sovereign debt. *IMF Working Paper*, No. 14/39.
- Athey, S. and Imbens, G. W. (2017). The state of applied econometrics: Causality and policy evaluation. *Journal of Economic Perspectives*, 31(2):3–32.
- Barnebeck Andersen, T., Harr, T., and Tarp, F. (2006). On US politics and IMF lending. *European Economic Review*, 50(7):1843–1862.
- Barro, R. J. and Lee, J.-W. (2005). IMF programs: Who is chosen and what are the effects? *Journal of Monetary Economics*, 52(7):1245–1269.
- Becker, M. and Klößner, S. (2018). Fast and reliable computation of generalized synthetic controls. *Econometrics and Statistics*, 5(January 2018):1–19.
- Billmeier, A. and Nannicini, T. (2013). Assessing economic liberalization episodes: A synthetic control approach. *Review of Economics and Statistics*, 95(3):983–1001.
- Bird, G., Hussain, M., and Joyce, J. P. (2004). Many happy returns? Recidivism and the IMF. *Journal of International Money and Finance*, 23(2):231–251.
- Bird, G., Mylonas, D., and Rowlands, D. (2015). The political economy of participation in IMF programs: A disaggregated empirical analysis. *Journal of Economic Policy Reform*, 18(3):221–243.
- Bird, G. and Orme, T. (1981). An analysis of drawings on the International Monetary Fund by developing countries. *World Development*, 9(6):563–568.
- Bird, G. and Rowlands, D. (2001). IMF lending: How is it affected by economic, political and institutional factors? *Journal of Policy Reform*, 4(3):243–270.
- Bird, G. and Rowlands, D. (2009). The IMF's role in mobilizing private capital flows: Are there grounds for catalytic conversion? *Applied Economics Letters*, 16(17):1705–1708.
- Birdsall, N., Rojas-Suarez, L., and Diofasi, A. (2017). Expanding global liquidity insurance: Myths and realities of the IMF's precautionary credit lines. *Center for Global Development Working Paper*, No. 449.
- Boughton, J. M. (2000). From Suez to Tequila: The IMF as crisis manager. *Economic Journal*, 110(460):273–291.
- Breen, M. (2010). Domestic interests, international bargaining, and IMF lending. *Dublin City University Centre for International Studies Working Paper*, No. 7/2010.
- Broner, F., Didier, T., Erce, A., and Schmukler, S. L. (2013). Gross capital flows: Dynamics and crises. *Journal of Monetary Economics*, 60(1):113–133.
- Broz, J. L. and Hawes, M. B. (2006). US domestic politics and International Monetary Fund policy. In Hawkins, D., Lake, D. A., Nielson, D., and Tierney, M. J., editors, *Delegation and agency in international*

- organizations, pages 77–106. Cambridge University Press, Cambridge.
- Bugge, A. (2009). Brazil has no plan of seeking funds from IMF - Lula. *Reuters*, 2 April 2009.
- Cammack, P. (2009). All power to global capital! *Manchester Metropolitan University Papers in the Politics of Global Competitiveness*, No. 10.
- Campos, N. F., Coricelli, F., and Moretti, L. (2014). Economic growth and political integration: Estimating the benefits from membership in the European Union using the synthetic counterfactuals method. *IZA Discussion Paper*, No. 8162.
- Chamon, M., Garcia, M., and Souza, L. (2015). FX interventions in Brazil: A synthetic control approach. *PUC Rio Texto para Discussão*, No. 630.
- Chinn, M. D. and Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics*, 81(1):163–192.
- Conway, P. (1994). IMF lending programs: Participation and impact. *Journal of Development Economics*, 45(2):365–391.
- Copelovitch, M. S. (2010). Master or servant? Common agency and the political economy of IMF lending. *International Studies Quarterly*, 54(1):49–77.
- Csonto, B. (2014). Emerging market sovereign bond spreads and shifts in global market sentiment. *Emerging Markets Review*, 20(September 2014):58–74.
- Dailami, M., Masson, P. R., and Padou, J. J. (2008). Global monetary conditions versus country-specific factors in the determination of emerging market debt spreads. *Journal of International Money and Finance*, 27(8):1325–1336.
- Denbee, E., Jung, C., and Paterno, F. (2016). Stitching together the global financial safety net. *Bank of England Financial Stability Paper*, No. 36.
- Derksen, S. and Keselman, H. J. (1992). Backward, forward and stepwise automated subset selection algorithms: Frequency of obtaining authentic and noise variables. *British Journal of Mathematical and Statistical Psychology*, 45(2):265–282.
- Dincer, N. N. and Eichengreen, B. (2014). Central bank transparency and independence: Updates and new measures. *International Journal of Central Banking*, 10(1):189–253.
- Dreher, A., Sturm, J.-E., and Vreeland, J. R. (2009). Global horse trading: IMF loans for votes in the United Nations Security Council. *European Economic Review*, 53(7):742–757.
- Dreher, A. and Walter, S. (2010). Does the IMF help or hurt? The effect of IMF programs on the likelihood and outcome of currency crises. *World Development*, 38(1):1–18.
- Edwards, M. S. (2006). Signalling credibility? the IMF and catalytic finance. *Journal of International Relations and Development*, 9(1):27–52.
- Eichengreen, B., Gupta, P., and Mody, A. (2008). Sudden stops and IMF-supported programs. In Edwards, S. and Garcia, M. G. P., editors, *Financial markets volatility and performance in emerging markets*, pages 219–266. NBER/University of Chicago Press, Cambridge, MA.
- Eichengreen, B., Kletzer, K., and Mody, A. (2006). The IMF in a world of private capital markets. *Journal of Banking & Finance*, 30(5):1335–1357.
- Eichengreen, B., Rose, A. K., and Wyplosz, C. (1995). Exchange market mayhem: The antecedents and aftermath of speculative attacks. *Economic Policy*, 10(21):249–312.
- Erce, A. and Riera-Crichton, D. (2015). Catalytic IMF? A gross flows approach. *European Stability Mechanism Working Paper*, No. 9.
- Essers, D. and Ide, S. (2017). The IMF and precautionary lending: An empirical evaluation of the selectivity and effectiveness of the Flexible Credit Line. *National Bank of Belgium Working Paper*, No. 323.
- Fawcett, T. (2006). An introduction to ROC analysis. *Pattern Recognition Letters*, 27(8):861–874.
- Fernandez, A., Klein, M. W., Rebucci, A., Schindler, M., and Uribe, M. (2015). Capital control measures: A new dataset. *NBER Working Paper*, No. 20970.
- Fernandez Arias, E. and Levy Yeyati, E. (2012). Global financial safety nets: Where do we go from here? *International Finance*, 15(1):37–68.
- Fischer, S. (1999). On the need for an international lender of last resort. *Journal of Economic Perspectives*, 13(4):85–104.



- Forbes, K. J. and Warnock, F. E. (2012). Capital flow waves: Surges, stops, flight, and retrenchment. *Journal of International Economics*, 88(2):235–251.
- Greene, W. H. (2012). *Econometric analysis*. Pearson Education, Essex.
- Henning, R. C. (2015). The global liquidity safety net: Institutional cooperation on precautionary facilities and central bank swaps. *CIGI New Thinking and the New G20 Paper Series*, No. 5.
- IEO (2013). *The role of the IMF as trusted advisor*. Independent Evaluation Office, Washington, DC.
- IMF (2003). *Review of Contingent Credit Lines*. IMF, Washington, DC.
- IMF (2009a). Colombia: Arrangement under the Flexible Credit Line - Staff report; Staff supplement; Press release on the Executive Board discussion; and Statement by the Executive Director for Colombia. *IMF Country Report*, No. 9/153.
- IMF (2009b). *The Flexible Credit Line: Guidance on operational issues*. IMF, Washington, DC.
- IMF (2009c). Republic of Poland: Review under the Flexible Credit Line arrangement - Staff report; Press release on the Executive Board discussion; and Statement by the Executive Director for the Republic of Poland. *IMF Country Report*, No. 9/314.
- IMF (2010). *The Fund's mandate - Future financing role*. IMF, Washington, DC.
- IMF (2011). *Review of the Flexible Credit Line and Precautionary Credit Line*. IMF, Washington, DC.
- IMF (2014). *Review of Flexible Credit Line, the Precautionary and Liquidity Line, and the Rapid Financing Instrument*. IMF, Washington, DC.
- IMF (2015). *Flexible Credit Line: Operational guidance note*. IMF, Washington, DC.
- IMF (2016). *Adequacy of the global financial safety net*. IMF, Washington, DC.
- IMF (2017a). *Adequacy of the global financial safety net: Review of the Flexible Credit Line and Precautionary and Liquidity Line, and proposals for toolkit reform*. IMF, Washington, DC.
- IMF (2017b). *Adequacy of the global financial safety net: Review of the Flexible Credit Line and Precautionary and Liquidity Line, and proposals for toolkit reform - Revised proposals*. IMF, Washington, DC.
- Ito, T. (2012). Can Asia overcome the IMF stigma? *American Economic Review: Papers & Proceedings*, 102(3):198–202.
- Jinjarak, Y., Noy, I., and Zheng, H. H. (2013). Capital controls in Brazil: Stemming a tide with a signal? *Journal of Banking & Finance*, 37(8):2938–2952.
- John, J. and Knedlik, T. (2011). New IMF lending facilities and financial stability in emerging markets. *Economic Analysis and Policy*, 41(2):225–238.
- Joyce, J. P. (1992). The economic characteristics of IMF program countries. *Economics Letters*, 38(2):237–242.
- Joyce, J. P. (2006). Promises made, promises broken: A model of IMF program implementation. *Economics & Politics*, 18(3):339–365.
- Kaminsky, G. L. and Reinhart, C. M. (1999). The twin crises: The causes of banking and balance-of-payments problems. *American Economic Review*, 89(3):473–500.
- Kaul, A., Klößner, S., Pfeifer, G., and Schieler, M. (2016). Synthetic control methods: Never use all pre-intervention outcomes as economic predictors. *Unpublished working paper*, January 2016.
- Keller, C., Levy Yeyati, E., Vela, O., and Vogel, M. (2009). New and redesigned IMF facilities: Implications for EM. *Barclays Capital Emerging Markets Research*, 30 March 2009.
- Kennedy, M. and Palerm, A. (2014). Emerging market bond spreads: The role of global and domestic factors from 2002 to 2011. *Journal of International Money and Finance*, 43(May 2014):70–87.
- Kilby, C. (2009). The political economy of conditionality: An empirical analysis of World Bank loan disbursements. *Journal of Development Economics*, 89(1):51–61.
- Killick, T. (1995). *IMF programmes in developing countries: Design and impact*. Routledge, London.
- Klößner, S., Kaul, A., Pfeifer, G., and Schieler, M. (2017). Comparative politics and the synthetic control method revisited: A note on Abadie et al. (2015). *Unpublished working paper*, January 2017.
- Knight, M. and Santaella, J. A. (1997). Economic determinants of IMF financial arrangements. *Journal of Development Economics*, 54(2):405–436.
- Kong, K. and Venkat, P. R. (2009). South Korea and Singapore tell IMF ‘no, thanks’ on new lending plan. *Wall Street Journal, Asia Business News*, 21 March 2009.

- Lane, P. R. and Milesi-Ferretti, G. M. (2007). The External Wealth of Nations Mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004. *Journal of International Economics*, 73(2):223–250.
- Liao, S. and McDowell, D. (2015). Redback rising: China's bilateral swap agreements and renminbi internationalization. *International Studies Quarterly*, 59(3):401–422.
- Mann, H. B. and Whitney, D. R. (1947). On a test of whether one of two random variables is stochastically larger than the other. *Annals of Mathematical Statistics*, 18(1):50–60.
- Marchesi, S. and Thomas, J. P. (1999). IMF conditionality as a screening device. *Economic Journal*, 109(454):111–125.
- Marino, R. and Volz, U. (2012). A critical review of the IMF's tools for crisis prevention. *Deutsches Institut für Entwicklungspolitik Discussion Paper*, No. 4/2012.
- Martinez, L. B., Terceno, A., and Teruel, M. (2013). Sovereign bond spreads determinants in Latin American countries: Before and during the XXI financial crisis. *Emerging Markets Review*, 17(December 2013):60–75.
- Mody, A. and Saravia, D. (2006). Catalysing private capital flows: Do IMF programmes work as commitment devices? *Economic Journal*, 116(513):843–867.
- Moser, C. and Sturm, J.-E. (2011). Explaining IMF lending decisions after the Cold War. *Review of International Organizations*, 6(3):307–340.
- Nannicini, T. and Billmeier, A. (2011). Economies in transition: How important is trade openness for growth? *Oxford Bulletin of Economics and Statistics*, 73(3):287–314.
- Nelson, S. C. (2014). Playing favorites: How shared beliefs shape the IMF's lending decisions. *International Organization*, 68(2):297–328.
- Nelson, S. C. (2017). *The currency of confidence: How economic beliefs shape the IMF's relationship with its borrowers*. Cornell University Press, Ithaca, NY.
- Newiak, M. and Willems, T. (2017). Evaluating the impact of non-financial IMF programs using the synthetic control method. *IMF Working Paper*, No. 17/109.
- Oatley, T. and Yackee, J. (2004). American interests and IMF lending. *International Politics*, 41(3):415–429.
- Ostry, J. D. and Zettelmeyer, J. (2005). Strengthening IMF crisis prevention. *IMF Working Paper*, No. 05/206.
- Oxford Analytica (2009). IMF aid boosts Mexico's credibility. *Forbes.com*, 3 April 2009.
- Papi, L., Presbitero, A. F., and Zazzaro, A. (2015). IMF lending and banking crises. *IMF Economic Review*, 63(3):644–691.
- Poirier, D. J. (1980). Partial observability in bivariate probit models. *Journal of Econometrics*, 12(2):209–217.
- Pop-Eleches, G. (2009). Public goods or political pandering: Evidence from IMF programs in Latin America and Eastern Europe. *International Studies Quarterly*, 53(3):787–816.
- Prasad, E. S. (2014). *The dollar trap: How the U.S. dollar tightened its grip on global finance*. Princeton University Press, Princeton, NJ.
- Presbitero, A. F. and Zazzaro, A. (2012). IMF lending in times of crisis: Political influences and crisis prevention. *World Development*, 40(10):1944–1969.
- Przeworski, A. and Vreeland, J. R. (2000). The effect of IMF programs on economic growth. *Journal of Development Economics*, 62(2):385–421.
- Przeworski, A. and Vreeland, J. R. (2002). A statistical model of bilateral cooperation. *Political Analysis*, 10(2):101–112.
- Reichmann, T. and de Resende, C. (2014). The IMF's lending toolkit and the global financial crisis. *IEO Background Paper*, No. 14/11.
- Scheubel, B. and Stracca, L. (2016). What do we know about the global financial safety net? Rationale, data and possible evolution. *ECB Occasional Paper*, No. 177.
- Steinwand, M. C. and Stone, R. W. (2008). The International Monetary Fund: A review of the recent evidence. *Review of International Organizations*, 3(2):123–149.
- Stone, R. W. (2008). The scope of IMF conditionality. *International Organization*, 62(4):589–620.
- Sturm, J.-E., Berger, H., and de Haan, J. (2005). Which variables explain decisions on IMF credit? An extreme bounds analysis. *Economics & Politics*, 17(2):177–213.

- Thacker, S. C. (1999). The high politics of IMF lending. *World Politics*, 52(1):38–75.
- The Economist (2009). The IMF. Mission: Possible. 8 April 2009.
- van der Veer, K. J. M. and de Jong, E. (2013). IMF-supported programmes: Stimulating capital to non-defaulting countries. *The World Economy*, 36(4):375–395.
- Voeten, E., Strezhnev, A., and Bailey, M. (2015). United Nations General Assembly voting data. Harvard Dataverse. Available from: <http://hdl.handle.net/1902.1/12379>.
- Vreeland, J. R. (2007). *The International Monetary Fund: Politics of conditional lending*. Routledge, New York, NY.
- Wilcoxon, F. (1945). Individual comparisons by ranking methods. *Biometrics Bulletin*, 1(6):80–83.

## Appendix

Table A1: EMBI Global sample countries for FCL selectivity analysis

Country	ISO-3 code	Baseline probits	Ongoing IMF arrangement (other than FCL) as of 23 March 2009?
<i>FCL</i>			
Mexico	MEX	X	No
Poland	POL	X	No
Colombia	COL	X	No
<i>Non-FCL</i>			
Argentina	ARG		No
Belize	BLZ		No
Brazil	BRA	X	No
Bulgaria	BGR	X	No
Chile	CHL	X	No
China	CHN		No
Dominican Republic	DOM	X	No
Ecuador	ECU		No
Egypt	EGY	X	No
El Salvador	SLV	X	Yes, SBA approved on 15 January 2009
Gabon	GAB	X	Yes, SBA approved on 7 May 2007
Georgia	GEO		Yes, SBA approved on 15 September 2008
Ghana	GHA	X	No
Hungary	HUN	X	Yes, SBA approved on 6 November 2008
Indonesia	IDN	X	No
Jamaica	JAM	X	No
Kazakhstan	KAZ	X	No
Lebanon	LBN	X	No
Malaysia	MYS	X	No
Pakistan	PAK	X	Yes, SBA approved on 24 November 2008
Panama	PAN	X	No
Peru	PER	X	No
Philippines	PHL	X	No
Russia	RUS	X	No
Serbia	SRB	X	Yes, SBA approved on 16 January 2009
South Africa	ZAF	X	No
Sri Lanka	LKA	X	No
Trinidad and Tobago	TTO		No
Tunisia	TUN	X	No
Turkey	TUR	X	No
Ukraine	UKR	X	Yes, SBA approved on 5 November 2008
Uruguay	URY	X	No
Venezuela	VEN	X	No
Vietnam	VNM	X	No

Notes: Listed countries are those included in JP Morgan EMBI Global as of end March 2009, excluding Iraq. Third column indicates which countries are included in baseline probits of Table 2, columns (b) to (e). SBA is Stand-By Arrangement.

Table A2: Potential correlates of FCL participation: Definitions, sources and descriptives

Variable	Definition	Source	N [FCL]	N [non-FCL]	Mean [FCL]	Mean [non-FCL]	t-statistic	MWW z-statistic
<i>External debt</i>	Gross external debt (% of GDP) at end 2008	IDS	3	33	26.008	44.306	-1.071+	-1.288+
<i>Current account balance</i>	Current account balance (% of GDP) at end 2008	WEO	3	34	-3.689	-3.277	-0.060	0.334
<i>Short-term external debt</i>	Short-term gross external debt (% of GDP) at end 2008Q4	IDS	3	33	5.582	6.858	-0.332	-0.429
<i>Public share external debt</i>	General government gross external debt (% of total external debt) at end 2008Q4	QEDS	3	18	36.542	35.261	0.083	0.402
<i>Bank share external debt</i>	Deposit bank gross external debt (% of total external debt) at end 2008Q4	QEDS	3	18	12.478	19.760	-0.965+	-0.905
<i>Non-bank share external debt</i>	Non-bank gross external debt (% of total external debt) at end 2008Q4	QEDS	3	17	50.981	43.581	0.733	0.688
<i>FDI and portfolio investment</i>	Gross FDI and portfolio investment inflows (% of total capital inflows) over 2008	IFS	3	30	63.026	92.35	-0.334	0.063
<i>Private holdings external public debt</i>	Private holdings of general government gross external debt (% of total government external debt) at end 2008Q4	Arslanalp and Tsuda (2014)	3	16	75.881	53.548	1.736*	1.789*
<i>Private holdings longer-term external debt</i>	Private holdings of longer-term external debt (% of total longer-term external debt) at end 2008	IDS	3	33	69.542	54.421	1.154+	1.231
<i>Foreign holdings local currency debt</i>	Foreign holdings of central government local currency debt securities (% of total government local currency debt securities) at end 2008Q4	Arslanalp and Tsuda (2014)	2	14	12.496	9.516	0.484	0.953
<i>30-d average EMBI spread</i>	30-day average of JP Morgan EMBI Global country stripped spreads (bps) at 23 March 2009	Datastream	3	32	415.967	1010.278	-1.259+	-1.650*
<i>1-y average EMBI spread</i>	One-year average of JP Morgan EMBI Global country stripped spreads (bps) at 23 March 2009	Datastream	3	32	290.945	666.195	-1.498*	-1.945*
<i>Reserves to short-term external debt</i>	International reserves (% of short-term external debt) at end 2008	IDS	3	32	302.003	439.027	-0.482	-0.354
<i>Reserves to short-term external debt and current account deficit</i>	International reserves (% of short-term external debt plus current account deficit) at end 2008	IDS; WEO	3	33	156.654	264.125	-0.510	-0.143
<i>Reserves to M2</i>	International reserves, excluding gold (% of M2) at end February 2009	IFS	3	28	29.169	58.638	-0.996+	-0.735
<i>Reserves import cover</i>	Import cover by international reserves, excluding gold (in months) at end February 2009	IFS	3	32	6.508	10.080	-0.800	-0.412
<i>Public debt</i>	General government gross debt (% of GDP) at end 2008	WEO	3	34	40.670	43.598	-0.151	0.556
<i>Fiscal balance</i>	General government net lending/borrowing (% of GDP) at end 2008	WEO; FM	3	34	-1.544	-1.233	-0.118	-0.389
<i>3-y average fiscal balance</i>	Three-year average of past general government net lending/borrowing (% of GDP) at end 2008	WEO; FM	3	34	-1.637	-0.793	-0.329	-0.501
<i>Primary balance</i>	General government primary net lending/borrowing (% of GDP) at end 2008	WEO; FM	3	34	0.707	1.397	-0.319	-0.056
<i>Structural balance</i>	General government structural balance (% of potential GDP) at end 2008	WEO; FM	3	25	-2.282	-2.483	0.076	-0.557
<i>Inflation</i>	Year-on-year inflation of yearly averaged consumer prices (%) at end 2008	WEO	3	34	5.448	11.669	-1.669*	-2.337**
<i>3-y average inflation</i>	Three-year average of year-on-year inflation of yearly averaged consumer prices (%) at end 2008	WEO	3	34	4.145	8.418	-1.698**	-1.836*
<i>Inflation volatility</i>	12-month standard deviation of year-on-year inflation of monthly consumer prices over February 2008 - February 2009	IFS	3	28	0.672	2.097	-1.817**	-1.938*
<i>Central bank independence</i>	Central bank independence index (weighted) in 2008	Dincer and Eichengreen (2014)	3	20	0.413	0.505	-0.791	-0.594
<i>Central bank transparency</i>	Central bank transparency index (normalized 0-1) in 2008	Dincer and Eichengreen (2014)	3	28	0.511	0.388	1.178+	1.510+
<i>Real exchange rate volatility</i>	12-month standard deviation of month-on-month percentage changes in real exchange rate over February 2008 - February 2009	IFS	3	29	6.083	3.895	1.474*	1.455+
<i>Capital adequacy</i>	Regulatory capital to risk-weighted assets (%) of deposit takers at end February 2009 (where available) or end 2008Q4	FSI	3	14	14.427	14.984	-0.447	-0.126
<i>Return on bank equity</i>	Return on equity (%) of deposit takers at end February 2009 (where available) or end 2008Q4	FSI	3	13	21.010	12.232	1.391*	1.547+
<i>Bank liquidity</i>	Liquid assets to short-term liabilities (%) of deposit takers at end February 2009 (where available) or end 2008Q4	FSI	3	13	41.330	55.632	-0.610	-0.067
<i>Deposits to bank loans</i>	Customer deposits to non-interbank loans (%) of deposit takers at end February 2009 (where available) or end 2008Q4	FSI	3	12	90.137	81.232	0.479	0.433
<i>Foreign currency share bank liabilities</i>	Foreign currency liabilities to total liabilities (%) of deposit takers at end February 2009 (where available) or end 2008Q4	FSI	3	10	19.450	44.623	-1.397*	-1.521+
<i>Non-performing share bank loans</i>	Non-performing loans (% of gross loans) of deposit takers at end February 2009 (where available) or end 2008Q4	FSI	3	14	3.463	4.611	-0.975+	-0.882
<i>Private sector credit</i>	Private sector credit by domestic financial sector (% of GDP) at end 2008	IFS; WDI	3	34	35.383	49.160	-0.754	-0.556
<i>Control of corruption</i>	Control of corruption score (normalized 0-1) at end 2008	WGI	3	32	0.493	0.435	0.873+	1.267
<i>Government effectiveness</i>	Government effectiveness score (normalized 0-1) at end 2008	WGI	3	32	0.542	0.486	0.873+	1.179
<i>Democracy</i>	Revised Polity2 score, combining institutionalized democracy and autocracy scores (normalized 0-1) at end 2008	Polity IV	3	33	0.917	0.764	0.988+	1.011
<i>Checks and balances</i>	Checks and balances score, counting the number of effective veto points in political system at start of 2009	DPI	3	32	4.333	2.844	2.070**	2.011**
<i>Overall country risk rating</i>	12-month average of overall country risk rating, which considers economic, financial and political risks, at end February 2009	EIU CRS	3	32	39.194	49.086	-1.750**	-1.827*

Table A2: *Continued*

Variable	Definition	Source	N [FCL]	N [non-FCL]	Mean [FCL]	Mean [non-FCL]	t-statistic	MWW z-statistic
<i>Share US exports</i>	Imports from US (% of total US exports) over 2008	DOTS	3	34	4.285	0.542	3.434***	1.725*
<i>Share European exports</i>	Imports from Germany, UK, France and Italy (% of total German, UK, French and Italian exports) over 2008	DOTS	3	34	1.210	0.386	1.852**	1.391+
<i>Share G7 exports</i>	Imports from G7 (% of total G7 exports) over 2008	DOTS	3	34	1.771	0.470	2.249**	1.892*
<i>Share US FDI</i>	FDI liabilities to US (% of total US FDI assets) at end 2009 (2008 data is not available)	CDIS	3	34	0.968	0.217	2.690***	1.948*
<i>Share European FDI</i>	FDI liabilities to Germany, UK, France and Italy (% of total German, UK, French and Italian FDI assets) at end 2009 (2008 data is not available)	CDIS	3	34	0.550	0.161	2.085**	2.059**
<i>Share G7 FDI</i>	FDI liabilities to G7 countries (% of total G7 FDI assets) at end 2009 (2008 data is not available)	CDIS	3	34	0.654	0.210	1.945**	1.781*
<i>Share US bank claims</i>	Consolidated liabilities to US-headquartered banks (% of total consolidated foreign claims by US banks) at end 2008Q4	CBS	3	33	2.163	0.293	3.928***	2.089**
<i>Share European bank claims</i>	Consolidated liabilities to banks headquartered in Germany, UK, France or Italy (% of total consolidated foreign claims by German, UK, French and Italian banks) at end 2008Q4	CBS	3	34	0.350	0.154	1.450*	1.113
<i>Share G7 bank claims</i>	Consolidated liabilities to banks headquartered in G7 countries (% of total consolidated foreign claims by G7 banks) at end 2008Q4	CBS	3	34	0.486	0.164	2.262**	1.781*
<i>Alignment with US</i>	One-year average score for UNGA voting alignment with US over 2008	Voeten et al. (2015)	3	34	0.274	0.230	0.807	0.724
<i>Alignment with Europe</i>	One-year average score for UNGA voting alignment with Germany, UK, France and Italy over 2008	Voeten et al. (2015)	3	34	0.796	0.734	1.120+	1.253
<i>Alignment with G7</i>	One-year average score for UNGA voting alignment with G7 over 2008	Voeten et al. (2015)	3	34	0.716	0.660	1.082+	1.224
<i>Alignment on important US issues</i>	One-year average score for UNGA voting alignment with US on 'important' votes over 2008	Voeten et al. (2015)	3	34	0.431	0.255	1.710**	1.676*
<i>Political concessions to US</i>	Difference in one-year average scores for UNGA voting alignment with US on 'important' votes and on all votes over 2008	Voeten et al. (2015)	3	34	0.156	0.025	2.064**	2.115**
<i>Exports</i>	Exports of goods and services (% of GDP) over 2008	WDI	3	33	28.12	41.267	-1.043+	-1.002
<i>Capital account openness</i>	KAOPEN index of de jure capital account openness (normalized 0-1) at end 2008	Chinn and Ito (2006)	3	33	0.615	0.588	0.131	0.117
<i>Capital controls</i>	Overall index of controls on capital inflows and outflows at end 2008	Fernandez et al. (2015)	3	30	0.600	0.466	0.666	0.721
<i>Total financial liabilities</i>	Total financial (FDI/portfolio investment/debt) liabilities (% of GDP) at end 2008	Lane and Milesi-Ferretti (2007)	3	34	60.061	90.117	-0.840	-0.890
<i>Change in growth</i>	Change in real GDP growth (percentage points) between 2007 and 2008	WEO	3	34	-2.668	-1.711	-0.597	-0.946
<i>Change in growth from 3-y average</i>	Change in real GDP growth (percentage points) between 2005-2007 average and 2008	WEO	3	34	-2.112	-1.441	-0.408	-0.556
<i>Change in terms of trade</i>	Change in net barter terms of trade (%) between 2007 and 2008	WDI	3	34	3.135	2.343	0.124	0.278
<i>Change in exports</i>	Change in exports of goods (%) between February 2008 and February 2009	IFS	3	31	-29.321	-34.429	0.329	0.455
<i>2-component EMPI</i>	Six-month average of two-component, inverse standard deviation-weighted exchange market pressure index at end February 2009	IFS	3	30	8.062	2.984	2.600***	2.067**
<i>3-component EMPI</i>	Six-month average of three-component, inverse standard deviation-weighted exchange market pressure index at end February 2009	IFS	3	23	5.990	3.103	1.206+	1.405+
<i>Time under IMF arrangements</i>	Days under IMF arrangements since 1952 or accession (% of total days since 1952 or accession) at 23 March 2009	FD	3	34	31.437	33.321	-0.167	-0.501
<i>Years since last IMF arrangement</i>	Number of years since expiry of last IMF arrangement at 23 March 2009	FD	3	32	7.667	6.531	0.254	0.714
<i>Years since legislative election</i>	Number of years since last legislative election at start of 2009	DPI	3	32	1.667	1.938	-0.337	-0.212
<i>Years since executive election</i>	Number of years since last executive election at start of 2009	DPI	3	24	2.333	2.667	-0.335	-0.635
<i>GDP</i>	GDP, PPP-based (international US\$ billion) at end 2008	WEO	3	34	979.386	752.165	0.217	1.669*
<i>GDP per capita</i>	GDP per capita, PPP-based (international US\$) at end 2008	WEO	3	34	15075.347	12176.832	0.793	1.057

Notes: IDS = World Bank International Debt Statistics; WEO = IMF World Economic Outlook; QEDS = World Bank/IMF Quarterly External Debt Statistics; IFS = IMF International Financial Statistics; Datastream = Thomson Reuters Datastream; FM = IMF Fiscal Monitor; FSI = IMF Financial Soundness Indicators; WDI = World Bank World Development Indicators; WGI = World Bank Worldwide Governance Indicators; Polity IV = Center for Systemic Peace Polity IV Project; DPI = World Bank/Inter-American Development Bank Database of Political Institutions; EIU CRS = Economist Intelligence Unit Country Risk Service; DOTS = IMF Direction of Trade Statistics; CDIS = IMF Coordinated Direct Investment Survey; CBS = BIS Consolidated Banking Statistics; FD = IMF Financial Data. t-statistics are for one-tailed test of null that mean values of variable are equal in FCL and non-FCL countries; z-statistics are for Mann-Whitney-Wilcoxon rank-sum test of null that FCL and non-FCL samples come from populations where variable has same distribution.

+p < 0.2; \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

Table A3: Additional probit estimation results

	(a)		(b)		(c)		(d)		(e)		(f)		(g)		(h)
	Coefficient	AME	Coefficient	AME	Coefficient	AME	Coefficient	AME	Coefficient	AME	Coefficient	AME	Coeff. (logit)	AME	Coefficient (OLS)
<i>1-y average EMBI spread</i>			-0.0018 (0.0018)	-0.0001 (0.0001)	-0.0027* (0.0015)	-0.0002 (0.0001)	-0.0027* (0.0016)	-0.0002 (0.0001)	-0.0023** (0.0012)	-0.0001 (0.0001)	-0.0013 (0.0041)	-0.0001 (0.0002)	-0.0067* (0.0040)	-0.0002 (0.0002)	-0.0000 (0.0001)
<i>3-y average inflation</i>	-0.2774*** (0.0797)	-0.0139+ (0.0102)	-0.2358 (0.2800)	-0.0131 (0.0193)	-0.2146** (0.0843)	-0.0132+ (0.0081)	-0.2127*** (0.0796)	-0.0131* (0.0076)	-0.2074** (0.0833)	-0.0120+ (0.0090)	-0.1390 (0.2289)	-0.0084 (0.0155)	-0.2196 (0.3134)	-0.0061 (0.0111)	-0.0098 (0.0092)
<i>2-component EMPI</i>	0.3076*** (0.1029)	0.0154+ (0.0119)	0.4804* (0.2763)	0.0267 (0.0255)	0.2630*** (0.0815)	0.0162+ (0.0102)	0.2563*** (0.0688)	0.0158* (0.0091)	0.2414*** (0.0708)	0.0140+ (0.0092)	0.3048*** (0.1112)	0.0183+ (0.0135)	0.5960*** (0.2193)	0.0165 (0.0156)	0.0267+ (0.0179)
<i>Share US exports</i>	0.1852* (0.0947)	0.0093** (0.0037)			0.2018** (0.0880)	0.0124*** (0.0041)	0.2078*** (0.0796)	0.0128** (0.0053)	0.2198*** (0.0703)	0.0127** (0.0061)	0.1534+ (0.0966)	0.0092*** (0.0030)	0.2624 (0.2057)	0.0073** (0.0029)	0.0625*** (0.0137)
<i>Political concessions to US</i>	7.6371*** (1.9086)	0.3814+ (0.2477)	10.6192*** (3.7991)	0.5893+ (0.4279)							8.4077*** (2.6270)	0.5061+ (0.3367)	15.4308*** (4.3665)	0.4277+ (0.3210)	0.4929+ (0.3059)
<i>Overall country risk rating</i>	0.0158 (0.0378)	0.0008 (0.0018)													
<i>Share US bank claims</i>			0.0428 (0.3989)	0.0024 (0.0211)											
<i>Political alignment with US</i>					-0.9197 (3.9756)	-0.0566 (0.2699)									
<i>Political alignment with Europe</i>								-0.5108 (3.2380)	-0.0315 (0.2137)						
<i>Political alignment on important US issues</i>										2.0560* (1.1557)	0.1192+ (0.0751)				
<i>Constant</i>	-2.7822+ (1.8726)		-2.4802*** (0.9583)		-0.4162 (1.4882)		-0.2088 (3.0884)			-12.919 (1.0774)		-2.2337*** (0.8451)		-3.0550+ (2.0548)	0.0159 (0.0812)
N	32		30		31		31		31		25		31		31
AIC	18.2368		18.2290		19.3279		19.3381		18.9743		17.7387		18.2600		
BIC	27.0312		26.6362		27.9318		27.9420		27.5783		25.0519		26.8639		
McFadden pseudo R <sup>2</sup>	0.6868		0.6806		0.6283		0.6277		0.6462		0.6872		0.6824		0.4856
<i>FCL countries correctly classified (50% cut-off)</i>	2/3: POL, MEX		2/3: POL, MEX		2/3: MEX, POL		2/3: MEX, POL		2/3: POL, MEX		2/3: POL, MEX		2/3: POL, MEX		1/3: MEX
<i>Non-FCL countries correctly classified (50% cut-off)</i>	29/29		27/27		28/28		28/28		28/28		22/22		28/28		28/28
<i>FCL countries correctly classified (sample-based cut-off)</i>	3/3		3/3		3/3		3/3		2/3: POL, MEX		3/3		3/3		3/3
<i>Non-FCL countries correctly classified (sample-based cut-off)</i>	27/29: not BRA, PER,		24/27: not BRA, PER,		25/28: not BRA, MYS,		25/28: not BRA, MYS,		25/28: not BRA, PER,		19/22: not BRA, PER,		25/28: not BRA, PER,		18/28: not BRA, UKR,
	BGR		BGR		RUS		RUS		MYS		BGR		BGR		SRB, RUS, PER, BGR,
															MYS, HUN, TUR, IDN
AUROC	0.9770		0.9630		0.9643		0.9643		0.9643		0.9545		0.9643		0.9881

Notes: Sample countries and ISO-3 codes as defined in Appendix Table A1 and variables as defined in Appendix Table A2. The model in column (c) excludes countries that had ongoing IMF arrangements as of 23 March 2009. Significance of probit/logit/OLS coefficients based on Huber-White robust standard errors and significance of probit/logit average marginal effects (AME) based on delta-method standard errors (reported in parentheses). In column (e) the R<sup>2</sup> is the standard fraction of explained variance, not the McFadden pseudo R<sup>2</sup>. Number of correctly classified FCL and non-FCL countries based on two alternative classification rules: in the first case a country is classified as FCL participant (non-participant) if predicted probability is greater (smaller) than 50%; in the second case a country is classified as FCL participant (non-participant) if predicted probability is greater (smaller) than proportion of FCL countries actually observed in sample.

+p < 0.2; \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

Table A4: Donor pool composition for synthetic controls

Non-FCL comparators	EMBI spread synthetic controls						Capital inflow synthetic controls					
	Mexico		Colombia		Poland		Mexico		Colombia		Poland	
	Full	Regional	Full	Regional	Full	Regional	Full	Regional	Full	Regional	Full	Regional
Argentina							X	X	X	X	X	
Brazil	X	X	X	X	X		X	X	X	X	X	
Bulgaria							X		X		X	X
Chile	X	X	X	X	X		X	X	X	X	X	
China	X		X		X		X		X		X	
Ecuador							X	X	X	X	X	
Egypt	X		X		X							
El Salvador	X	X	X	X	X		X	X	X	X	X	
Hungary	X		X		X	X			X		X	X
Indonesia	X		X		X		X		X		X	
Kazakhstan							X		X		X	X
Lebanon	X		X		X							
Malaysia	X		X		X							
Pakistan							X		X		X	
Panama	X	X	X	X	X		X	X	X	X	X	
Peru	X	X	X	X	X		X	X	X	X	X	
Philippines	X		X		X		X		X		X	
Russia	X		X		X	X			X		X	X
South Africa	X		X		X		X		X		X	
Sri Lanka							X		X		X	
Turkey	X		X		X	X						
Uruguay	X	X	X	X	X		X	X	X	X	X	
Venezuela							X	X	X	X	X	
Vietnam							X		X		X	

Notes: Sample constructed from countries included in JP Morgan EMBI Global as of end March 2009, excluding countries with incomplete EMBI spread (capital inflow) data over January 2005-December 2014 (2005Q4-2014Q4) and FCL countries. Composition of full and regional donor pools for synthetic controls shown separately for each FCL country and by outcome variable (EMBI spreads or capital inflows).



Table A5: Pre-FCL match of EMBI spreads and covariates between Mexico and synthetic controls (full and regional donor pools)

	Mexico	Synthetic Mexico (full donor pool)	Synthetic Mexico (regional donor pool)
<i>EMBI spread (bps)</i>	186.67	186.68	188.91
<i>Real GDP growth (%)</i>	3.31	4.45	6.41
<i>Reserves (% of GDP)</i>	8.29	12.05	10.25
<i>Public debt (% of GDP)</i>	39.29	39.28	31.55
<i>Current account balance (% of GDP)</i>	-1.27	-1.43	-1.99
RMSPE		11.70	13.34
Fit index		0.06	0.06

Notes: Composition of full and regional donor pools as presented in Appendix Table A4. Countries included in the synthetic controls (and their respective weights) same as in Figures 1 and 2. Variables as defined in Section 3.2.2. Values shown for EMBI spreads and covariates are averages over January 2005 - March 2009. RMSPE and fit index as defined in Section 3.2.1.

Table A6: Pre-FCL match of EMBI spreads and covariates between Colombia and synthetic controls (full and regional donor pools)

	Colombia	Synthetic Colombia (full donor pool)	Synthetic Colombia (regional donor pool)
<i>EMBI spread (bps)</i>	263.03	263.11	262.80
<i>Real GDP growth (%)</i>	5.40	5.41	5.40
<i>Reserves (% of GDP)</i>	10.03	11.19	10.02
<i>Public debt (% of GDP)</i>	35.48	35.47	54.26
<i>Current account balance (% of GDP)</i>	-2.14	-2.12	-2.14
RMSPE		64.43	20.41
Fit index		0.22	0.07

Notes: Composition of full and regional donor pools as presented in Appendix Table A4. Countries included in the synthetic controls (and their respective weights) same as in Figures 3 and 4. Variables as defined in Section 3.2.2. Values shown for EMBI spreads and covariates are averages over January 2005 - April 2009. RMSPE and fit index as defined in Section 3.2.1.

Table A7: Pre-FCL match of EMBI spreads and covariates between Poland and synthetic controls (full and regional donor pools)

	Poland	Synthetic Poland (full donor pool)	Synthetic Poland (regional donor pool)
<i>EMBI spread (bps)</i>	100.43	111.01	133.42
<i>Real GDP growth (%)</i>	5.09	7.84	2.56
<i>Reserves (% of GDP)</i>	18.32	31.39	17.85
<i>Public debt (% of GDP)</i>	46.47	45.69	65.04
<i>Current account balance (% of GDP)</i>	-4.23	2.42	-6.84
RMSPE		17.55	66.09
Fit index		0.13	0.50

Notes: Composition of full and regional donor pools as presented in Appendix Table A4. Countries included in the synthetic controls (and their respective weights) same as in Figures 5 and 6. Variables as defined in Section 3.2.2. Values shown for EMBI spreads and covariates are averages over January 2005 - April 2009. RMSPE and fit index as defined in Section 3.2.1.

Table A8: Pre-FCL match of gross capital inflows and covariates between Mexico and synthetic controls (full and regional donor pools)

	Mexico	Synthetic Mexico (full donor pool)	Synthetic Mexico (regional donor pool)
<i>4-quarter gross capital inflows (% of GDP)</i>	4.26	4.26	4.26
<i>Real GDP growth (%)</i>	2.47	6.01	3.77
<i>Capital account openness index</i>	0.70	0.70	0.91
<i>Overall country risk rating</i>	35.31	41.5	50.84
RMSPE		1.01	1.50
Fit index		0.23	0.34

*Notes:* Composition of full and regional donor pools as presented in Appendix Table A4. Countries included in the synthetic controls (and their respective weights) same as in Figures 7 and 8. Variables as defined in Section 3.2.2. Values shown for capital inflows and covariates are averages over 2005Q4 - 2009Q1. RMSPE and fit index as defined in Section 3.2.1.

Table A9: Pre-FCL match of gross capital inflows and covariates between Colombia and synthetic controls (full and regional donor pools)

	Colombia	Synthetic Colombia (full donor pool)	Synthetic Colombia (regional donor pool)
<i>4-quarter gross capital inflows (% of GDP)</i>	6.26	6.29	6.07
<i>Real GDP growth (%)</i>	5.07	5.09	5.32
<i>Capital account openness index</i>	0.48	0.48	0.50
<i>Overall country risk rating</i>	43.60	43.79	44.33
RMSPE		1.29	1.79
Fit index		0.20	0.28

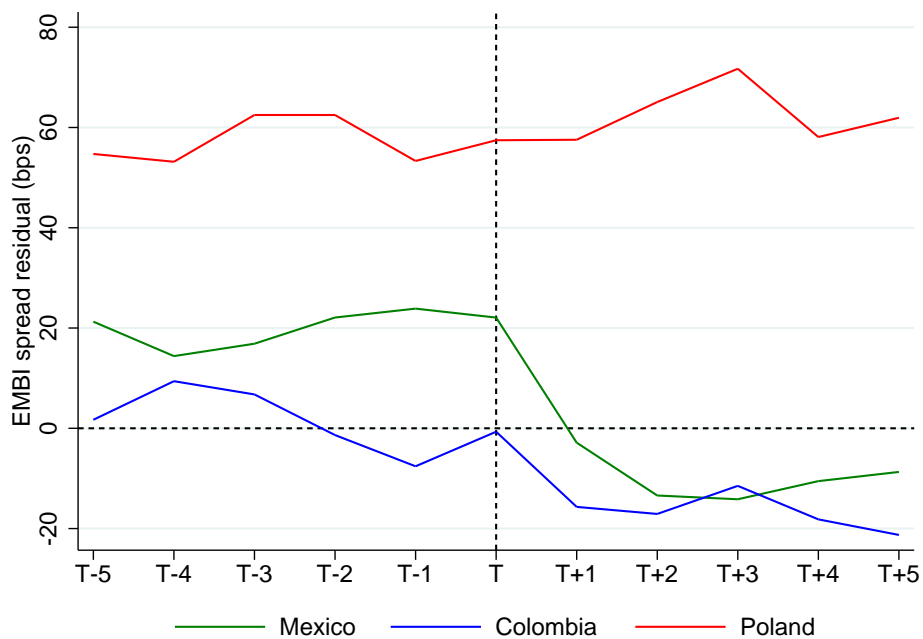
*Notes:* Composition of full and regional donor pools as presented in Appendix Table A4. Countries included in the synthetic controls (and their respective weights) same as in Figures 9 and 10. Variables as defined in Section 3.2.2. Values shown for capital inflows and covariates are averages over 2005Q4 - 2009Q1. RMSPE and fit index as defined in Section 3.2.1.

Table A10: Pre-FCL match of gross capital inflows and covariates between Poland and synthetic controls (full and regional donor pools)

	Poland	Synthetic Poland (full donor pool)	Synthetic Poland (regional donor pool)
<i>4-quarter gross capital inflows (% of GDP)</i>	13.34	13.35	13.40
<i>Real GDP growth (%)</i>	5.23	5.22	5.43
<i>Capital account openness index</i>	0.45	0.51	0.47
<i>Overall country risk rating</i>	36.31	36.24	43.12
RMSPE		2.83	1.47
Fit index		0.20	0.10

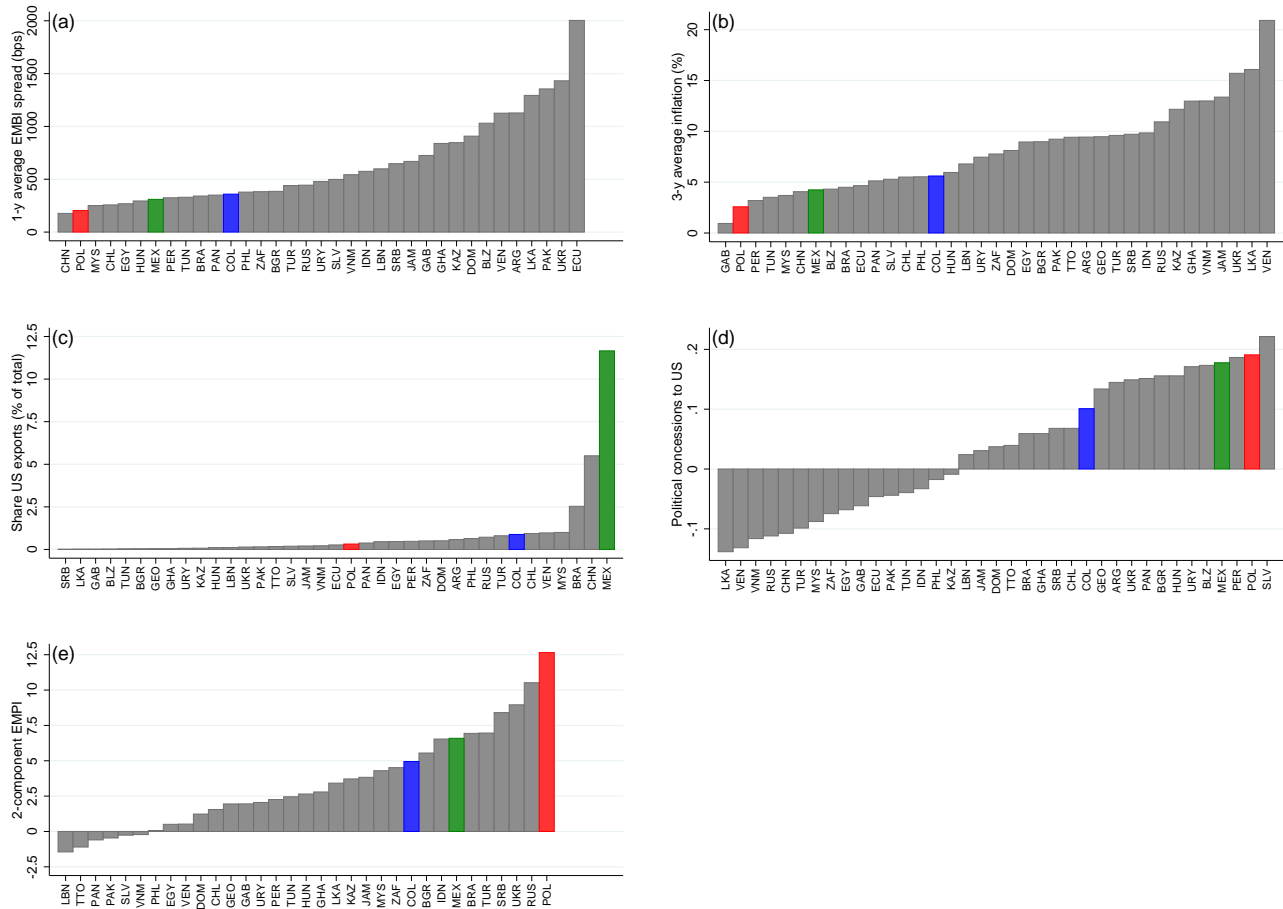
*Notes:* Composition of full and regional donor pools as presented in Appendix Table A4. Countries included in the synthetic controls (and their respective weights) same as in Figures 11 and 12. Variables as defined in Section 3.2.2. Values shown for capital inflows and covariates are averages over 2005Q4 - 2009Q1. RMSPE and fit index as defined in Section 3.2.1.

Figure A1: Event study of FCL countries' EMBI spreads



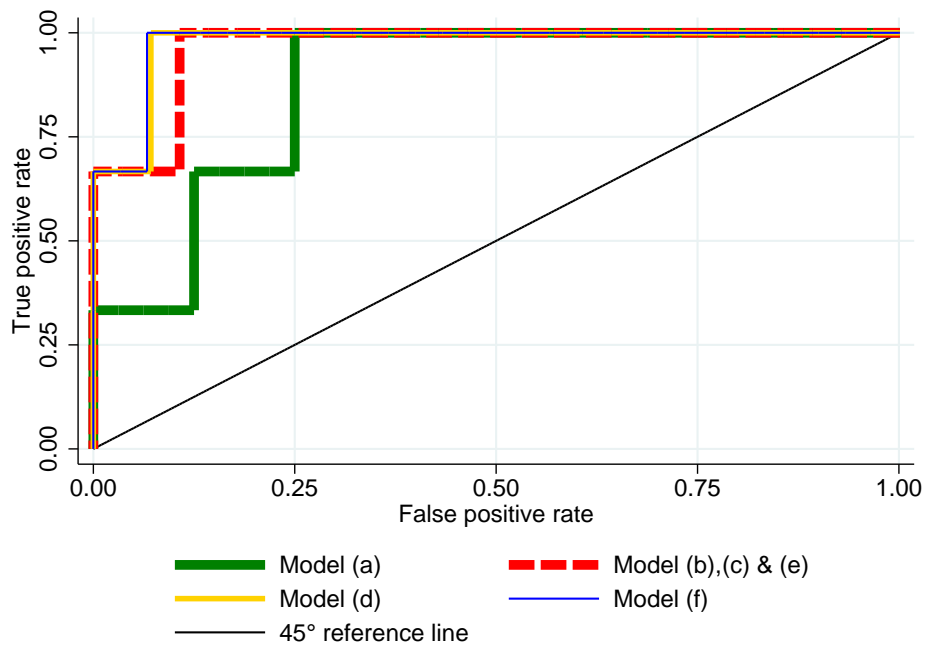
Notes: Based on two-stage approach described in IMF (2011): first, EMBI spreads of Mexico, Colombia and Poland are separately regressed on EMBI Global composite spreads and constant term; second, residuals from regressions are plotted for respective dates T of public announcement of interest in FCL (vertical dashed line indicates 1 April 2009 for Mexico, 14 April 2009 for Poland, and 20 April 2009 for Colombia) and for five trading days before and after these dates. Small differences with graph in IMF (2011) may result from different estimation periods; whereas estimation period is not specified in IMF (2011), underlying regressions are here performed over 1 January 2008 to 31 December 2010.

Figure A2: Bar charts for main correlates of FCL participation



Notes: Sample countries and ISO-3 codes as defined in Appendix Table A1. Variables correspond to probit models in Table 2 and are defined in Appendix Table A2

Figure A3: ROC curves for different probit models of FCL selectivity



Note: ROC curves correspond to probit models in Table 2, columns (a) to (f).