International Banking and Cross-border Supervisory Cooperation: Lessons from Latin America*

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Abstract

This paper examines banking supervisory cooperation in Latin America and the Caribbean, revealing widespread formal agreements between countries. While these agreements generally cover key banking linkages, we identify significant disparities in cooperation coverage between countries. Some countries, despite having numerous agreements, face a limited coverage due to their banking groups' extensive international operations. The study introduces metrics to identify home countries with a high risk exposure due to cooperation gaps with foreign banks' home countries as well as countries most exposed to risk-shifts by domestic banks with operations abroad.

Keywords: Supranational cooperation; financial supervision; cross-border banking; Financial stability; Latin America.

JEL Codes: G1, G2, F34, F42

*The views expressed in this paper are those of the authors and do not necessarily represent those of CEMLA or its Board of Governors. All errors are our own.

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1 Introduction

The worldwide banking landscape is dominated by large cross-border banks. This poses specific risks and challenges. For example, the global nature of a bank's operations allows a group to shift risk more easily across jurisdictions. The presence of different legal systems and bank practices also makes it difficult to deal with joint problems in cross-border banking. To mitigate these problems, banking supervisors frequently cooperate across countries. Such cooperation can take the form of exchanges of information on banks, or exchanges of best practices on bank supervision. It can also take the form of countries making ex-ante agreements on how to resolve troubled banks in crises times. In Europe, there is also the case of the Banking Union, where large banks supervision has been moved from national authorities to the European Central Bank (ECB). This can be viewed as an (extreme) form of cooperation.

The need for cooperation is seemingly obvious in Latin America and the Caribbean (LAC henceforth). The region has a long tradition of cross-border banking activities both within countries in Latin America and also by hosting many subsidiaries of foreign banks domiciled in Europe and the United States. Since the Great Financial Crisis (GFC), cross-border activities have intensified within LAC, in some cases replacing existing banking links between the region and Europe, but also forming new links.

This paper analyzes supervisory cooperation in the LAC region, against the background of actual cross-border banking links. We start by explaining what types of cooperation take place in practice and review prior literature on supervisory cooperation that has taken a world perspective. We then describe current trends in international banking across LAC – with a focus on growing intra-regional linkages – and explore actual cooperation agreements between supervisory authorities. We compare how well these agreements cover the cross-border operations that are present in LAC. Based on this, we identify areas of vulnerability for countries arising, for instance, because a country has strong external banking links that are only partially covered by cooperation agreements.

Our analysis lends support to the notion that enhancing cross-border supervisory

cooperation can support countries in grasping the benefits of banking globalization – in terms of (e.g.) risk sharing, credit access, and banking competition – while mitigating its downside risks (Krimminger, 2008). The average market share of foreign banks in LAC increased from 22% at the begining of the century to above 35% as of 2021. The increasing exposure of to global banks has gone hand in hand with a rapid expansion of intra-regional cross-border banking operations, both through arms' length lending and through the establishment of foreign bank subsidiaries. These changing patterns highlight the need to consider cooperation schemes that facilitate information sharing and that set incentives that can help to prevent unwanted regulatory arbitrage dynamics.

By analyzing hand-collected information on cross-border supervisory cooperation, we find that from 1995 to 2021 LAC countries signed 118 supervisory cooperation agreements, primarily bilateral, with 42 countries participating by 2021. Intra-regional agreements between LAC countries dominate, though external agreements with non-LAC countries are also significant; notably Brazil's 2017 agreement with the EU. Cooperation intensified after the Great Financial Crisis, with key surges in internal agreements in 2011 (Caribbean states) and external agreements in 2017. We also find that cooperation intensity varies, with Brazil leading, followed by Argentina and Mexico, while Chile shows relatively low intensity. However, coverage of actual banking links is uneven, with gaps in agreements exposing countries like Brazil and Chile to risk-shifting. This latter finding highlights vulnerabilities that could undermine financial stability in the region.

In Section 2 we review the concept of cross-border supervisory cooperation and its implications for supervising multinational banks. Section 3 illustrates recent trends in international banking in LAC, with a focus on the expansion of intra-regional cross-border banking. In Section 4 we analyse cross-border supervisory cooperation in LAC and explore the coverage of cooperation agreements in light of countries' exposure to global banks. Section 5 concludes.

2 Background on cooperation

2.1 How does cooperation look like?

Our study focuses on formal cooperation across countries, that is, cases where countries sign official cooperation agreements.[1] Such agreements can be of bilateral nature (between two countries), but can also involve several countries. They can be within a region, but also span different regions and continents.

Cooperation agreements can take many different forms, and countries can freely determine how they cooperate. However, the Basel Committee on Banking Supervision (BCBS) has introduced guidelines considering four different forms of cooperation, which countries often used as a blueprint for creating specific cooperation, often involving several elements of these four types. Those are a Memorandum of Understanding for information sharing and onsite inspection, a College of Supervisors, a Memorandum of Understanding on crisis management and resolution and a supranational supervision. Notably, the BCBS has envisaged these guidelines to be cumulative and to be of increasing intensity (so, for example, a College of Supervisory is intended to also include information sharing).

In the Online Appendix, we provide two examples of agreements. The first one is the recent agreement between the Central Banks of Brazil and The Bahamas, signed in 2020. This is a comprehensive agreement, covering the intent to cooperate in the supervision and resolution of cross-border establishments. It includes aspects such as requesting information about the health of specific financial institutions, informing each other about new licenses granted and the nature of supervision applied to specific financial institutions. The two central banks also intend to cooperate in the field of prompt corrective actions, resolution plans and will tell each other about any concerns they have about jointly supervised banks. Despite being far-reaching in its scope, the agreement does however not create any binding legal obligations. Also, no specific

[1] This is not to say that there is only such cooperation, or that only such cooperation matters. However, informal cooperation is difficult to reliably identify, especially on a multi-country level involving many different jurisdictions.

agreements on how exactly to deal with joint problems are being made.[2]

The second agreement is the 2011 agreement made between 12 Caribbean countries, a large multilateral agreement. This agreement covers largely the exchange of information, but also involves regular consultation talks in order to improve supervision in the involved countries. Similar to the first agreement, it does not stipulate any binding legal obligations of any involved supervisory or regulatory authority.

2.2 How is cooperation expected to affect supervision?

There is a significant theoretical literature that has analyzed how cooperation and coordination among banking supervisors (and/or banking regulators) is expected to affect their behaviour and the overall stability of banking systems. By and large, this literature predicts that following cooperation, supervisors become stricter and, as a result, banks become safer. There are two types of arguments for this. First, coordination is expected to make national supervisors take into account any international spillovers of their actions. In the absence of coordination, national supervisors will (partially) ignore that when they subject their banks to stricter supervision, this action benefits also the financial systems of other countries (by reducing the likelihood of negative spillovers when crises hit). In other words, uncoordinated national supervision decisions are likely to be too lenient. Following supervisory cooperation, stringency is thus expected to increase (e.g., Dell'Ariccia and Marquez, 2006; Colliard, 2020).[3]

Second, prior to cooperation, national stringency levels are likely to differ between countries, in particular when cooperation involves both developed and developing countries. Cooperation is expected to lead to a convergence of supervisory standards towards the most stringent country as only then both countries individually will benefit from cooperation (Dell'Ariccia and Marquez, 2006; Kara, 2016). Besides higher stringency, banking stability can also be improved if cooperation makes supervision more effective.

[2] An example where such an agreement is made is the Nordic-Baltic Union where countries ex-ante agree to contribute to a resolution fund for a failing cross-border bank in proportion to asset share of that bank in a country.

[3] However, it is important to point out that the literature has also identified reasons why internalization of externalities may reduce bank stability (see, e.g., Dell'Ariccia and Marquez, 2006; Beck et al., 2013; and Calzolari et al., 2018.

For example, through the exchange of information and best practices, supervisors are expected to become better a detecting risks at banks. This should reduce the likelihood of unnoticed risk buildups, improving banking stability.

2.3 Cooperation works!

Even though cooperation is expected to result in more effective supervision from a theoretical perspective, in practice supervisors may face several constraints. Cooperation agreements – even though well intended – may not result in better banking stability as supervisors face limited legal powers or regulatory capture. Cooperation agreements may also prove to be ineffective because in practice they are actually not used, especially in times of crises. The question of effective cooperation is thus an empirical one.

Beck, Silva-Buston, and Wagner (2023) (BSWa henceforth) investigate the effectiveness of cooperation using a worldwide dataset of cooperation agreements (including LAC as well). They study how cooperation affects the risk of banking groups, finding that when the subsidiaries of a banking group are to a larger extent covered by cooperation agreements, the risk of the entire banking group declines. Specifically, they show that the default risk of the consolidated group (as measured by the Z-score) as well as the systemic risk contribution of the group (as proxied by the Marginal Expected Shortfall, MES) decline.[4] The effects are also economically relevant. BSWa examine what determines the effectiveness of cooperation, and find that it is crucially determined by the supervisory frameworks in the involved countries. Specifically, cooperation is more effective (that is, reduces risk more) when the involved supervisors are more stringent, and if they have access to better information.

[4] A closely related literature has studied the impact of centralization of supervisory powers on bank risk. Haselmann et al. (2022) show that supervisory stringency improved for the significant banks included in the Single Supervisory Mechanism. In a different institutional context, Gong et al. (2023) find that a decentralization of supervisory powers in China improved supervision and banking risk outcomes, which is explained by local supervisors having better access to information.

2.4 Should everyone cooperate?

The effectiveness of cooperation suggests that countries should broadly cooperate. This is at odds with the data on supervisory agreements in BSWa, which show that countries' propensities to cooperate are not very high. This line of thought ignores though that they are also costs to cooperation. Such costs arise in the presence of country heterogeneities. When countries have different preferences, or differ in their legal structures, cooperation is not frictionless and imposes costs. And when such costs exceed the benefits of cooperation (arising from better banking stability), countries should optimally not cooperate (as an extreme example, that would be the case of two very different countries that have very limited banking links). BSWa show that actual cooperation decisions of countries reflect benefits and cost to cooperation. Specifically, countries are more likely to cooperate when bilateral externalities (arising for instance from direct banking links) are high, but when heterogeneities are limited. This suggests that actual cooperation decisions – by and large – reflect economic realities.

2.5 Incomplete coverage and arbitrage

One very important caveat from the findings by BSWa is the effectiveness of cooperation for the case of very large banks (within the set of cross-border banks): for the subsample of those banks, the effect disappears. In other words, cooperation does not work for the group of banks that are probably most important for international financial stability. A potential explanation for this is that these banking groups have subsidiaries in many countries, and hence have plenty of opportunities to shift risks.

Beck, Silva-Buston, and Wagner (2022) (BSWb henceforth) analyze this question in more detail. Using a large sample of cooperation agreements (more than 250, covering banks in 116 host and 47 home countries), they show that the actual coverage of cooperation agreements is very limited. Specifically, the average cooperation agreement covers only about 26% of the global operations of the banking groups headquartered in the cooperating countries. Thus, even though there is widespread cooperation, banking groups have significant possibilities to shift risks into subsidiaries not covered by

cooperation.

Using the sample period from 1995 to 2019, BSWb further confirm this hypothesis empirically. They show that banking groups shift risks into a subsidiary when the rest of the group is (more) covered by cooperation agreements (in terms of parent-subsidiary relationships). The effects are economically meaningful and imply large country-level effects.[5] For instance, the combined effect of cooperation agreements elsewhere is to increase a country's share of foreign loans by 13 percentage points. In other words, an incomplete coverage of banking groups can significantly undermine the global effectiveness of cooperation.

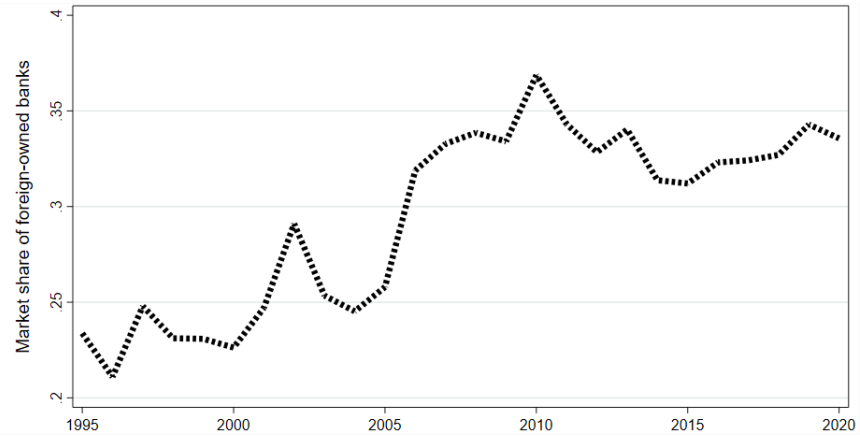
3 Trends in international banking in Latin America

As note above, cross-border supervisory cooperation is key to ensure a timely exchange of information on banks' financial health and risk profiles, particularly when banks operate in multiple jurisdictions. Thus, the rapid increase in banking globalization over the last decades has significantly increased the need for cross-border financial supervisory cooperation, especially in regions like LAC where the increase in the presence of global banks from outside the region has gone hand in hand with the emergence of regional 'global banks'. The emergence of regional banks operating cross-border – particularly in EMEs – has been a matter of ample discussion in both academic and policy circles (see, e.g. Claessens and Van Horen, 2014, Cerutti and Zhou, 2018 or Harrison et al., 2023).

In Latin America, foreign banks' presence has been historically high with subsidiaries of international banks controlling a substantial share of the market. According to the 'Bank Ownership Around the World Data' (Panizza, 2024), the average market share of foreign-owned banks in LAC increased from 24% back in 1995 to over 35% at the onset of the COVID-19 pandemic in 2020. As illustrated in Figure 1 (Panel A), foreign banks' market share increased rapidly in the first decade of the XXI century, reaching

[5]The effects are alleviated when the host country has stricter supervision and better market discipline relative to other countries in which the group has foreign operations.

Panel A: LAC Region



Panel B: Global Comparison

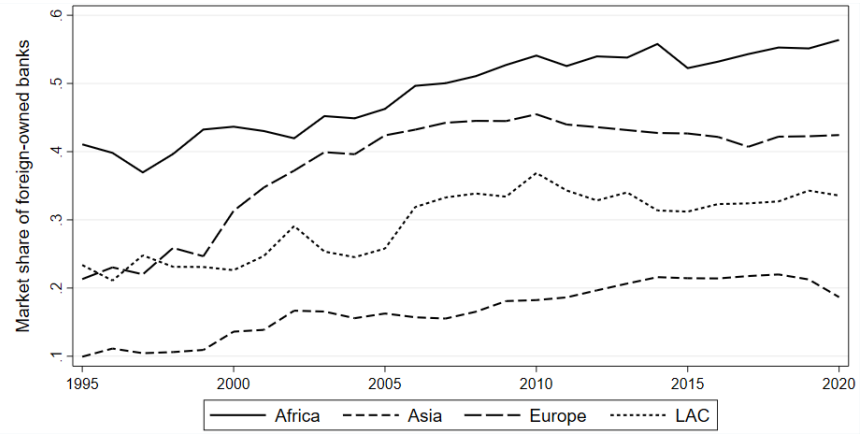


Figure 1: Foreign banks market shares. This figure reports the average market share of foreign-owned banks across emerging and developing economies between 1995 and 2020. Panel A shows foreign banks' market share in Latin America and the Caribbean (LAC), whereas Panel B compares the trend for the LAC region against emerging Europe, Asia, and Africa. Own calculations based on the 'Bank Ownership Around the World Data' by Panizza (2024).

a peak of 40% in 2010. Since then, this figure has fluctuated at around 35% with a slight increase in recent years. This average figure masks strong differences between Latin American vs. Caribbean states. While the former region experienced an increase of foreign banks' market share of 12 p.p. between 1995 and 2020 (from 14% to 26%), the Caribbean saw an increase of only 4 p.p., albeit starting from much higher absolute levels (from 40% to 44%). On a global comparison, the LAC region ranks third behind emerging Europe and Africa but above emerging Asia in terms of foreign banks' market shares (Figure 1, Panel B).

A closer look at the countries of origin of international banks operating in the

LAC region evidences diversified linkages of global banking. According to data from BankFocus and as of 2021, LAC countries hosted a total of 255 foreign bank subsidiaries from 138 different bank conglomerates. These foreign banks originate in 40 different home countries, out of which Panama (35), the U.S. (14), France (14), Colombia (14), Japan (12) and Spain (12) have the largest number of subsidiaries operating across the region. The share of foreign banks is the largest in Caribbean countries categorized as high-income economies by he IMF (i.e., Barbados, Bermudas, Bahamas and Trinidad & Tobago). In these latter countries, the average share of foreign banks was above 50% as of 2020, in contrast to 25% and 34% in upper middle-income and lower middle-income LAC economies, respectively.

The importance of cross-border supervisory cooperation in LAC is further underscored by the large number of regional banks that operate across borders via bank subsidiaries. Panama is the country in the region with the largest share of domestic banks owning foreign subsidiaries (20 out of 41 banks in BankFocus report at least one subsidiary abroad). Other significant cases include Guatemala (3 out of 11 banks), Colombia (6 out of 23 banks) and Chile (3 out of 16 banks). The case of Colombia illustrates the scope of intra-regional cross-border banking in LAC. The 15 Colombian bank subsidiaries active as of 2021 operate in 7 jurisdictions, with Panama hosting most of these subsidiaries (7). This fact reflects the importance of Panama as an international banking center, where banks can access an advanced financial infrastructure that facilitates (e.g.) access to US Dollars and global banking networks.[6]

Among LAC global banks, the cases of Brazil's Itaú Unibanco and Banco do Brasil stand out in terms of their multinational presence. These banks are active in 7 LAC countries and have also presence in other continents, including offices in the U.S., Europe and Asia.[7] Itaú and Banco do Brasil, as the most globally active banks domiciled in LAC, play a crucial role in the region's financial stability. Their extensive international footprint illustrate the need for robust cross-border supervisory cooperation to manage

[6]see Eguren-Martin et al. (2024) for a discussion on how global banks' networks facilitate the access US Dollar funding.

[7]Itaú Unibanco has subsidiaries in Argentina, Chile, Uruguay, Panama, Paraguay, Colombia and Mexico. Banco do Brasil owns subsidiaries in Argentina, Chile, Bolivia and Panama.

potential risks effectively.

The growing importance of intra-regional cross-border banking is also reflected in Figure 2, where we report the share of outstanding cross-border credit in different world regions. In Latin America, the reported positions originate in Brazil, Chile and Mexico, since these three countries are the only regional BIS Reporting Countries in Latin America that report data on bilateral credit outflows. We purposely exclude the figure for Europe given its significantly larger share of intra-regional cross-border credit (above 80% across the sample).[8]

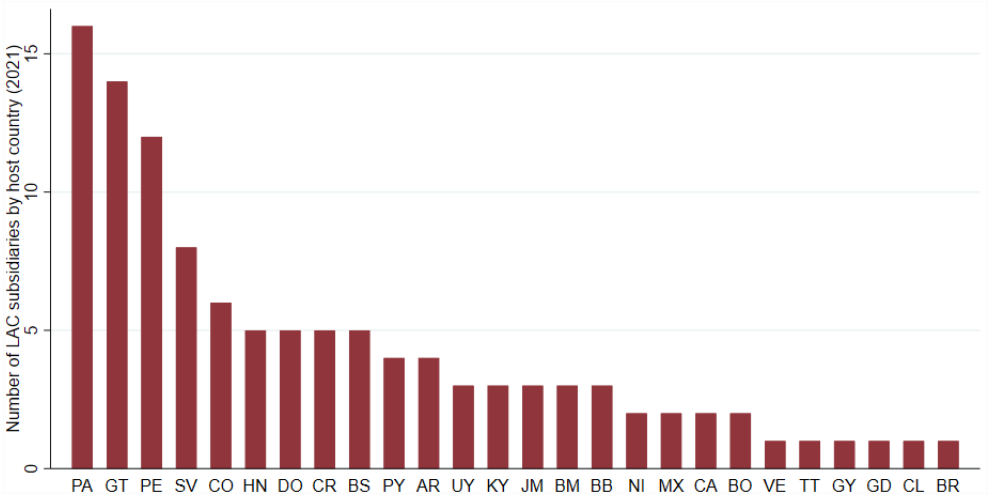
This figure illustrates how the share of intra-regional credit in LAC has been increasing over recent decades, moving from aprox. 2% of the total stock of cross-border credit in the year 2000 to above 15% as of 2023. This figure is larger than comparable intra-regional credit volumes in Oceania and Africa, while the gap with Asia has been consistently reduced. Thus, regional banks have not only become global through foreign subsidiaries but also by conducting increasing volumes of arms' length cross-border credit operations.

A distinctive feature of Latin American international banks is that some of them have strategically expanded abroad by following the regional expansion of major department stores with a strong financial/credit business. A prominent example is Banco Falabella, which leveraged the international growth of Falabella, one of the largest retail companies in Latin America. Falabella expanded its operations to Peru, Colombia, and Argentina in the early 2000s, and its related bank followed suit, establishing banking subsidiaries and branches in these countries to cater to the financial needs of Falabella's extensive customer base. For instance, Banco Falabella entered the Peruvian market in 2007, offering credit cards, consumer loans, and other financial services through partnerships with Falabella's local stores.

Other examples include Banco Cencosud and Banco Ripley from Chile or Banco

[8]Due to data limitations in the BIS Locational Banking Statistics, the figure for Asia excludes cross-border credit volumes originated in China. Thus, the figure likely under-represents the actual share of intra-regional credit in Asia. Still, the exclusion of China makes the cross-regional comparison more appropriate given that we consider mostly Small Open Economies such as the ones reporting data for LAC.

Panel A: Number of LAC subsidiaries by host country



Panel B: Intra-regional cross-border credit in LAC

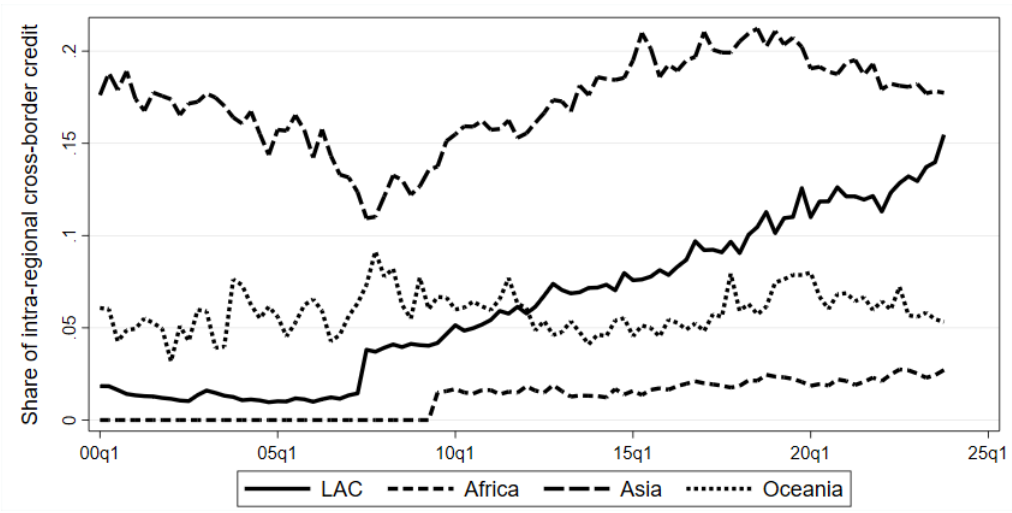


Figure 2: Intra-regional cross-border banking. This figure illustrates the rise of intra-regional cross-border banking in the LAC region. Panel A depicts the number of subsidiaries from banks headquartered in LAC by host country, based on data from BankFocus as of 2021. Panel B shows the share of outstanding cross-border credit reported in different world regions that is originated within the same regions. In the case of Latin America and the Caribbean (LAC), these flows originate in Brazil, Chile, and Mexico. These three countries are the only BIS Reporting Countries in Latin America that report data bilateral credit outflows. For the purposes of visualization, we exclude Europe given its significantly larger share of intra-regional credit (above 80% across the sample period). We note that the figure for Asia excludes flows originated in China, given limitations in the data. Own elaboration based on data from the BIS Locational Banking Statistics.

Azteca from Mexico[9], which have expanded exploiting this symbiotic relationship be-

[9]Banco Azteca, a Mexican bank, has significantly expanded its international presence in tandem with the growth of Grupo Elektra, its parent company and an important retail and financial services company from Mexico. Grupo Elektra operates over 7,000 points of sale in various countries, providing a robust platform for Banco Azteca's services. Banco Azteca first ventured beyond Mexico in 2002, opening branches in Guatemala. This move was closely followed by expansions into Honduras and

tween banks and department stores.

The figures described above illustrate a widespread presence of international banks across LAC, including banks headquartered within the region that have become relevant regional market players. This increasing degree of interconnectedness within banking systems in LAC can be an engine for economic integration, trade, enhanced risk-sharing, and growth. However, this web of financial interconnections also means that systemic risk buildups in one jurisdiction can quickly spread to others, opening the scope for widespread financial contagion (see, e.g., Buch and Goldberg, 2015; Noth and Ossandon Busch, 2021). Against this backdrop, cross-border supervisory cooperation can help countries to grasp the benefits of financial integration while mitigating downside risks. Cooperation can, for instance, lead to improved information sharing and financial stability monitoring, supporting the identification of early warnings of financial stress. In particular, as LAC banks become more global national supervisors alone may not have complete visibility over the entire operations of a bank. Supervisory cooperation can, thus, provide a fuller picture of the bank's health and activities.[10]

The potential benefits of supervisory cooperation also include promoting higher degrees of regulatory consistency – preventing costly regulatory arbitrage incentives – and facilitating banking resolution when crises materialize. In the event of a bank failure, established cooperation mechanisms promote an orderly resolution that minimizes the costs for different jurisdictions in which a failing bank operates (see, e.g., Krimminger, 2008 and Avgouleas et al., 2008). In this context, cooperation may involve agreeing on resolution strategies, harmonizing different legal frameworks, sharing the financial burden, and protecting depositors and creditors in different jurisdictions. In the next section, we explore in more detail how countries in LAC have set up cross-border cooperation agreements to address these challenges.[11]

Panama in 2004, and later into Peru, Brazil, and El Salvador. By 2021, Banco Azteca had established over 3,800 branches outside Mexico, with a presence in seven countries, including the United States.

[10]The importance of considering banks and firms' exposure to foreign credit in financial stability monitoring has been highlighted for the case of Chile by Martínez and Oda, 2021.

[11]A complementary angle of financial globalization where cooperation can play a critical role is the internationalization of non-bank financial institutions (NBFI). While not addressed in this paper, foreign NBFIs have been increasing their participation in LAC bond and equity markets with implications financial stability, particularly in periods of heightened global financial stress (see, e.g., Linardi, 2020,

4 Cooperation in Latin America

To explore supervisory cooperation agreements in LAC, we use data from BSWb. As for external (non-LAC) countries, we consider countries located in Europe, North America, Africa, and Oceania. The data has been collected primarily using information provided by the relevant domestic financial authorities, complemented with direct web searches for cooperation agreements (BSWa and BSWb describe the data in further detail). The data spans the period from 1995 to 2021. There are in total 118 agreements involving at least one country in LAC, of which the majority are bilateral agreements involving two countries (113 out of 118).

Table A.1 in the Appendix lists the agreements per country, both at the beginning of our sample period (1995) and at the end (2021). The data shows that cooperation is widespread in LAC: 42 of the LAC countries have signed cooperation agreements by the end of our sample. Several countries have signed 10 or more agreements (Argentina, Brazil, Ecuador, Mexico, Panama, Peru and Uruguay). The table also separates agreements into internal (agreements involving at least two LAC countries) and external agreements (agreements involving at least one non-LAC country). Note that in case of multilateral agreements, an agreement can be both classified as internal and external. The table shows that the majority of the agreements are internal ones. However, there is also a significant number of external agreements.

Figure 3 shows the evolution of the number of cooperation agreements over time. Panel A provides this information for agreements by non-LAC countries, labeled as 'Rest of the World' (RoW). We can see a steady increase in the number of agreements over the sample period, with an acceleration after the Great Financial Crisis. Panel B provides this information for agreements involving LAC countries. We see a similar increase in cooperation over time, with a noticeable jump in 2011. The resulting cooperation intensities at the end of the sample period are comparable: They are about 6% for both the countries in LAC and in the RoW group.[12] At a very first glance, cooperation

Romero et al., 2021) or Montañez-Enríquez et al., 2024.

[12]The cooperation share depicted in Figure 3 is defined as the number of other countries a country has an agreement with, relative to the total number of countries in the dataset.

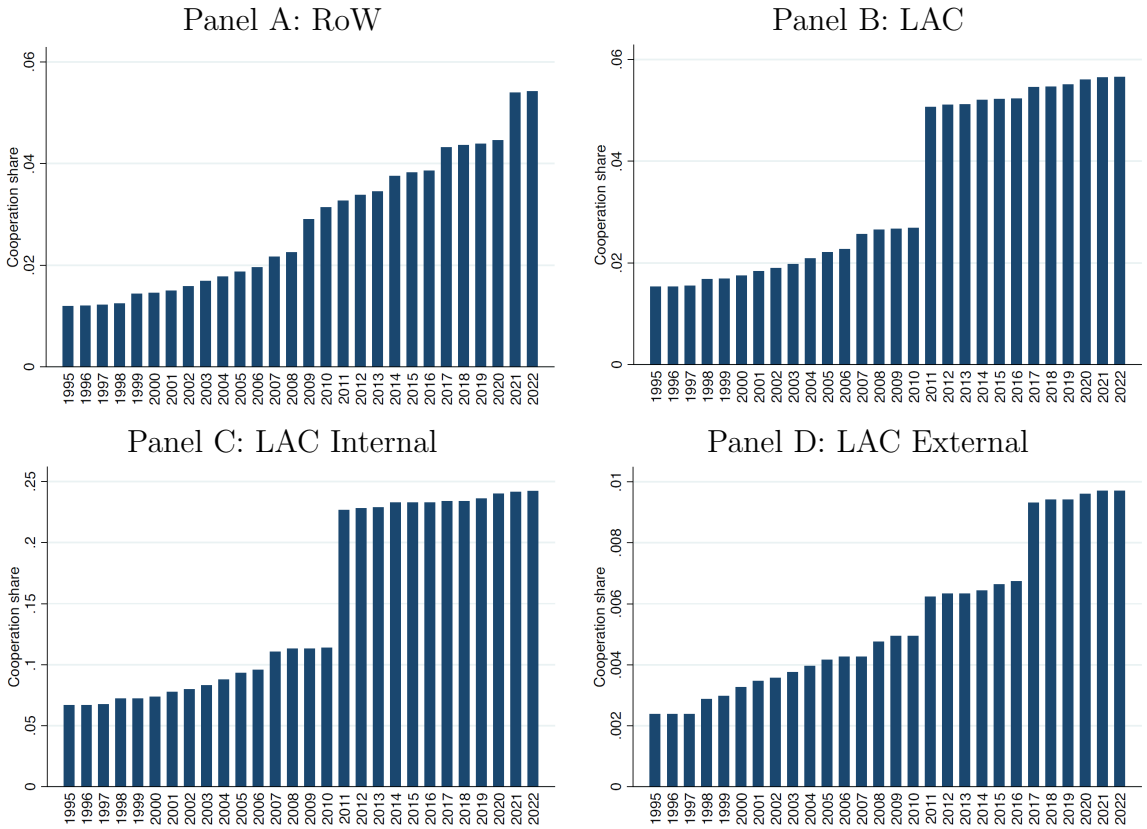


Figure 3: Evolution of cooperation agreements. This figure reports the share of cooperation agreements as a proportion of all possible bilateral agreements in a year (according to the number of countries in the sample). We refer to this ratio as the Cooperation share. Specifically, the ratio is defined as the number of other countries a country has an agreement with, relative to the total number of countries in the dataset. Panel A reports the cooperation share for countries outside LAC ('Rest of the World', RoW). Panel B reports the cooperation share for LAC. Panel C and D report the cooperation share for based on the total possible number of cooperation pairs within and outside LAC, respectively, for each year.

in LAC and the Rest of the World thus seems relatively comparable in terms of its intensity.

Panels C and D in Figure 3 show the evolution of internal (within LAC) and external (with countries outside LAC) agreements involving LAC countries. We find that the jump in 2011 is due mainly to internal agreements being signed in this year. This is to a large extent due to multinational agreements signed between a large number of Caribbean states in 2011 (as discussed in Section 2.1). The evolution of external agreements shows a significant jump in 2017. In that year, Brazil signed a cooperation agreement with the European Union. Comparing internal and external agreements, we can see that internal agreements are about twice as frequent as external ones.

Figure 4 depicts the cooperation intensities of LAC countries. The figure shows a

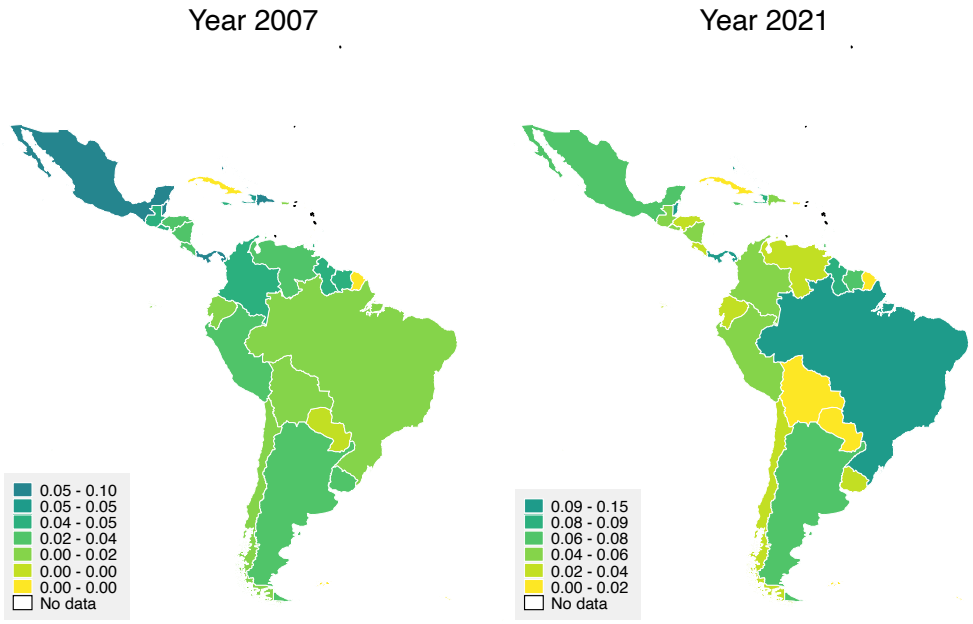


Figure 4: Geographic distribution of cooperation agreements. The figure shows the cooperation intensities of individual countries at the end of 2007 and 2021. Darker green areas represent higher cooperation intensities, measured as the percentage of all other countries in the sample that a given country cooperates with.

large variation in the propensities to cooperate across countries. Brazil has the by far highest cooperation intensity (due to its agreement with EU-countries). Argentina and Mexico have also elevated propensities to cooperate, although lower than Brazil. On the other end of the spectrum, Chile has a fairly low propensity to cooperate. Overall, one can detect a (loose) association between country size and cooperation intensities, perhaps unsurprisingly.

Raw cooperation intensities, as depicted in Figure 4, give only a partial picture. A country may optimally cooperate with only a few other countries, if either it only has banking links with a few countries, or if its links are not very intense. Recall from Section 2.4 that countries are expected only cooperate if the benefits from doing so are high enough relative to costs. To get a better idea of how good countries cooperate, we thus have to condition on countries' actual cross-border links.

To examine this, we first analyze the assets in each Latin American host country that are covered by cooperation agreements with their respective home countries. This

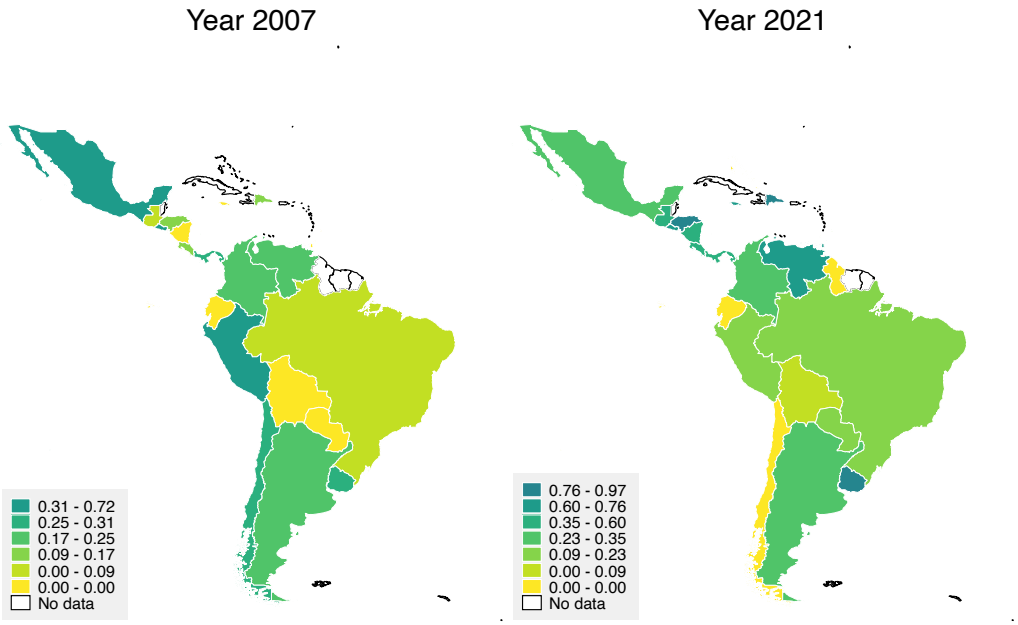


Figure 5: Host country coverage. The figure shows the cooperation coverage of host countries at the end of 2007 and 2021. Darker green areas indicate higher coverage. This variable is defined as the share of assets held by subsidiaries of foreign banks hosted by each country that are covered by cooperation agreements (from the perspective of host countries). Thus, it captures the extent to which cooperation agreements cover the assets of foreign subsidiaries located in each host country.

is illustrated in Figure 5. We display a variable capturing host countries' cooperation coverage, defined as the share of assets held by subsidiaries of foreign banks in each country that are covered by cooperation agreements (from the perspective of host countries). The map highlights significant variation across both countries and time in the extent of participation in these cooperation agreements. Since 2007, some countries, such as Uruguay and Venezuela, have increased the share of assets covered by these agreements, while others, including Chile and Mexico, have experienced a decline in their coverage.

Second, we consider a world-wide sample of banks being either headquartered in a LAC country, or having subsidiaries in the region. Figure 6 illustrates the link between cooperation and banking links for the four most important countries in LAC in terms of the presence of their subsidiaries in other LAC countries. These countries include

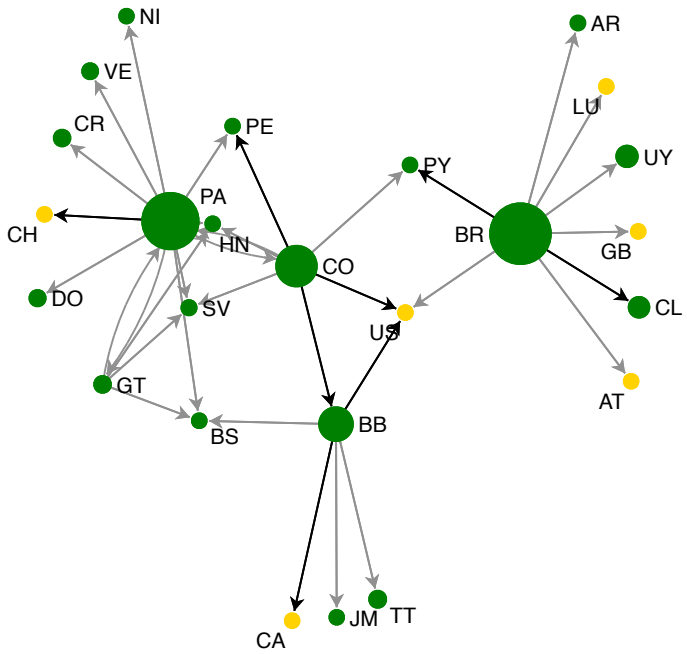


Figure 6: International banks and cooperation network in the LAC region. The figure shows the host countries' network for the 4 Latin American home countries with the most significant presence in the region (in terms of their subsidiaries' assets) at the end of 2021. The size of the node indicates the country's presence in Latin America. Green nodes show Latin American countries and yellow nodes show countries outside the region. The direction of the arrows indicates a home country's presence in a host country. Black arrows indicate that no cooperation agreement has been signed between the two countries, and grey arrows indicate the existence of a cooperation agreement between the two countries.

Panama, Colombia, Brazil and Barbados.[13] Brazil and Panama are the by far most important countries on that metric. For each of the four countries, arrows depict the home-host relationship of the groups headquartered in the countries (with green destination spheres referring to LAC countries and yellow ones to countries outside LAC). Black lines indicate that a cooperation agreement is missing, whereas grey lines define a home-host country relationship that is covered by a cooperation agreement. We can see that only a few of the relevant home-host relationships are not covered by an agreement. For Brazil, these are 2 out of 8, and for Panama only 1 out of 10. This indicates that for the most important countries (in terms of hosting cross-border banking links within the region), cooperation coverage is high. As discussed in Section

[13]The size of the spheres indicates the importance (in terms of the combined asset size) of subsidiaries of groups headquartered in one of these four countries operating in other countries in the region.

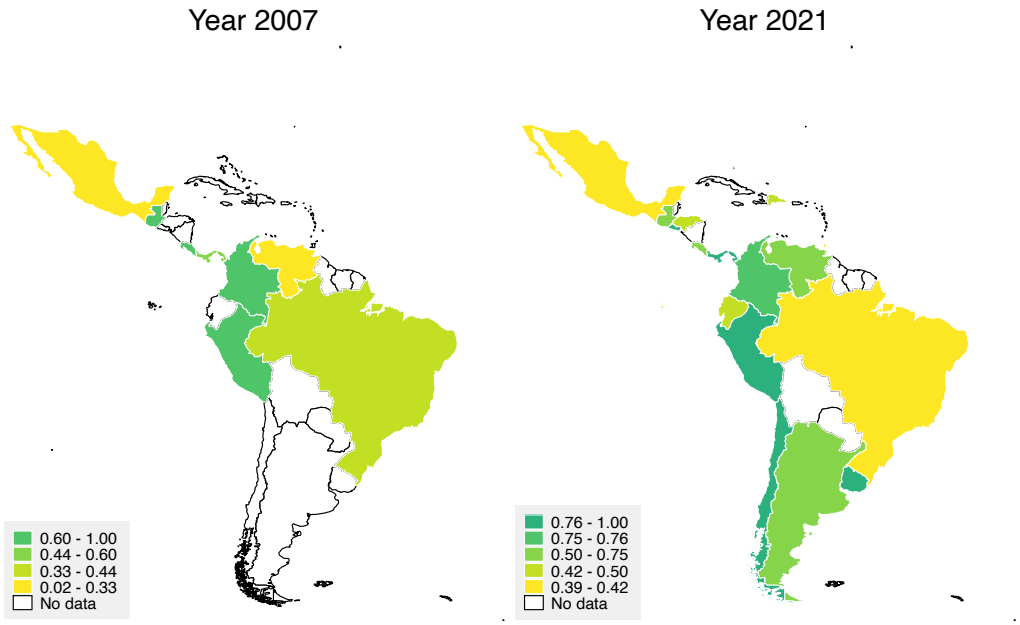


Figure 7: Home country coverage. The figure shows the cooperation coverage of banks headquartered in an individual country at the end of 2007 and 2021. Darker green areas represent higher coverage. This variable is defined as the share of foreign assets held by subsidiaries of banks headquartered in each LAC country that are covered by cooperation agreements (from the home-country perspective). Specifically, for each country in LAC that is home to a bank with foreign affiliates, we calculate the share of foreign assets held by those affiliates covered by an existent cooperation agreement.

2.5, this limits the potential for regulatory arbitrage.

Figure 7 provides additional results that illustrate the extent of cross-border cooperation in LAC and its actual coverage. In this figure, we report the share of foreign assets held by subsidiaries of banks headquartered in each LAC country that are covered by cooperation agreements (from the home-country perspective). Specifically, for each country in LAC that is home to a bank with foreign affiliates, we calculate the share of foreign assets held by those affiliates covered by an existent cooperation agreement.[14] It is striking to see that the coverage is quite different from the cooperation intensities, as presented in Figure 4. For instance, Brazil displays by far the highest cooperation intensity, but in terms of coverage of actual banking links it is below the average. This is because Brazil is home to a large number of relevant banking groups (5) that have

[14]For this exercise, we also include subsidiaries located outside LAC.

operations in a significant number of different other LAC countries (8). In addition, the agreements (in particular the ones vis-à-vis the European countries) are not very effective in covering actual banking links. Hence, banking groups headquartered in Brazil have significant risk-shifting opportunities, which may lead to (hidden) risks that could originate these banking groups, with potential repercussions for financial stability.[15] Chile is another interesting case. Its propensity to cooperate is very low (it cooperates with only 7 other countries) but these agreements cover the Chilean cross-border links well. Banking groups headquartered in Chile have operations in three other LAC countries, with two of them being covered by a cooperation agreement.

Figure 7 focuses on coverage from the perspective of the home-countries. Complementing this analysis, Figure A.1 in the Appendix presents information from the host-country perspective. In this figure, we report the share of countries covered by an agreement in which a hosted foreign bank operates (i.e., countries different than the bank's home country). This variable is computed as an asset-weighted average across all banks hosted by a given country. This variable proxies for how vulnerable a country is to potential risk-shifting from other countries that are home to international banks. Specifically, we calculate for each banking group having a subsidiary in a LAC country the extent to which other subsidiaries of the same banking group across the globe are covered by agreements with the bank's parent country. We then average across all foreign banking groups that have subsidiaries in a given LAC country.[16] As BSWb have shown, banking groups shift risks away from subsidiaries with cooperation agreements. Thus, this measure captures exposures to potential risk-shifting from other countries.

The relative country rankings presented in Figure A.1 are again different from the ones observed in Figures 4 and 7 (note that a darker colour indicates higher exposure, due to higher cooperation elsewhere). Brazil, despite its agreements covering many

[15]Figure 7 is also different from what Figure 4 suggests, where we see Brazil well covered by cooperation agreements. The reason is that Figure 7 weighs observations by the size of subsidiaries' cross-border operations, with Brazil having fewer cooperation agreements with countries with larger subsidiary operations.

[16]Notably, the calculation of the index also takes into account cooperation agreements of the host country itself, the idea being that risk-shifting from third countries will be limited when there is cooperation with the parent country of the banking group.

countries, has elevated vulnerability. It is quite vulnerable because it hosts 32 banking groups from 16 different home countries and has signed agreements with only 10 of them. Chile, despite having a large coverage from the perspective of being a home-country, has a high vulnerability arising from third-country risk-shifting. This risk is largely because it does not have any agreements with the parent countries of banking groups that have subsidiaries in Chile. These examples highlight significant cooperation gaps that can be the target of policy actions. Closing these gaps can render LAC banking systems more resilient to shocks, particularly when originated abroad.

5 Summary and policy conclusions

Supervisory cooperation in Latin America and the Caribbean is widespread, and involves many countries. It has increased substantially over time with many important agreements formed in the aftermath of the Great Financial Crisis. The overall propensity of countries in LAC to cooperate is comparable to other countries in the world, both in terms of its development over time but also in terms of the number of agreements being signed. Overall, focusing on the four most important parent countries in LAC, actual banking links are reasonably well covered by agreements.

However, looking under the hood, there are enormous differences across countries in their propensity to cooperate. A few countries, like Brazil, Argentina and Mexico, have agreements with more than ten other countries. Other countries have only limited cooperation. This, by itself, does not readily signal inefficiencies, since what matters is to what extent the actual banking links a country has is covered by agreements. We find that countries with many agreements are not necessarily well covered, because these countries tend to have banking relationships with many other countries. An example of this is Brazil, which, despite its many agreements, has only very limited coverage on average because its banking groups operate in many other countries. Thus, a very important country in LAC (in terms of cross-border activities) is headquartering banking groups with plenty of possibilities to shift risks around. This may result in risk build-ups that are difficult to notice for supervisors.

In terms of exposure to risk-shifting from third countries, many countries in LAC are well covered. However, again, several important countries are exposed to third-country risk-shifting. Brazil posits a potential problem, for similar reasons as before. It has many agreements, but it also hosts subsidiaries of many groups that have operations in a very large number of other countries. As these countries have formed cooperation agreements with each other (but not necessarily with Brazil), banking groups may relocate activities and shift risks into Brazil.

While this paper focuses on broad supervisory cooperation, it is important to acknowledge the special scope of coordination required to address the challenge of cross-border bank resolution. Effective resolution of cross-border banking entities often involves not just supervisory authorities but also deposit insurers, central banks, and finance ministries. Cooperation among these entities is critical to ensuring the protection of depositors and the stability of financial systems. For instance, the European Union's Single Resolution Mechanism provides a structured framework for cross-border resolution within a banking union, emphasizing the integration of resolution authorities and national deposit guarantee schemes. In other jurisdictions, the collaboration between national authorities under the Financial Stability Board's Key Attributes framework has laid the groundwork for enhanced resolution planning.

Crisis management groups (CMGs) are a key initiative to coordinate cross-border banking resolution. Several jurisdictions have also implemented bilateral arrangements with other countries being host of their systemically important institutions. Surveys have shown that host authorities that are not part of such arrangements, are less likely to support resolution plans and implementation (Baudino et al., 2020). Examples of such arrangements include, for instance, those coordinated by the Canada Deposit Insurance Corporation (CDIC), which has pursued a strategy of coordinating bilateral arrangements with host authorities of Canadian globally-systemic important banks.[17] Exploring how bank resolution cooperation affects cross-border banking represents a promising avenue for future research, given the substantial policy relevance of coordi-

[17]See, for instance, the following agreement between the CDIC and the FDIC on cross-border bank resolution: https://archive.fdic.gov.

nated bank resolution efforts in mitigating systemic risk.

Conceptually, cooperation agreements can act as conduits for regulatory convergence, where countries with higher standards may influence and elevate the regulatory frameworks of their counterparts. This dynamic aligns with theories of regulatory harmonization, which posit that disparities in standards create incentives for weaker regulators to align with stronger counterparts, potentially enhancing systemic resilience (Carletti et al., 2021). Moreover, heterogeneity in regulatory standards can impact both the likelihood of cooperation and its effectiveness. Countries with stronger standards may seek cooperation to mitigate risks posed by regulatory arbitrage, while weaker-regulation countries might pursue agreements to enhance credibility and attract foreign investment. In a companion article, Beck et al. (2025) use the same data to further explore this issue. They find that indeed supervisory cooperation can materially change regulatory standards, particularly in emerging countries with weaker regulatory environments, ex-ante.

Our findings highlight the importance of cross-border supervisory cooperation in contexts of rapidly growing global banks' activities. In LAC, the intra-regional expansion of cross-border banking poses further challenges by potentially exposing countries to a weaker coverage of supervisory information flows. Moreover, cooperation agreements are key to facilitate an orderly resolution of multinational banking institutions when crisis materialize. The importance of cooperation also relates to emerging challenges to financial stability, such as the one represented by the rapid advancement of financial technology (FinTech) and digital banking and payment platforms in LAC. The varying levels of cybersecurity infrastructure and regulatory standards in the region can create weak links in the financial system, making it harder to ensure overall security and resilience. Addressing these challenges requires coordinated efforts among LAC countries to harmonize regulations, enhance financial stability frameworks, and strengthen cybersecurity measures. Future research could shed light on the implications of weak cooperation coverage on the spread of these emerging risks.

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A Appendix

Country	Year	# agreements		
		Total	Internal	External
Antigua and Barbuda	1995	1	1	0
	2021	2	2	1
Argentina	1995	2	2	0
	2021	17	9	8
Aruba	1995	1	1	1
	2021	2	2	1
Bahamas	1995	1	1	1
	2021	6	5	1
Barbados	1995	1	1	1
	2021	2	2	1
Belize	1995	1	1	1
	2021	3	3	1
Bolivia	1995	1	1	0
	2021	4	4	0
Brazil	1995	4	3	1
	2021	10	4	6
Cayman Islands	1995	1	1	1
	2021	6	4	2
Chile	1995	1	1	0
	2021	7	4	3

Table A.1: Number of agreements per country. This table presents the number of agreements per country. Internal agreements correspond to agreements signed by two Latin American countries. External agreements correspond to agreements signed by a Latin American country and a country outside the Latin American region. Multilateral agreements involving both Latin American and foreign countries outside the region are counted as separate agreements when splitting the total number of agreements between internal and external.

Country	Year	# agreements		
		Total	Internal	External
Colombia	1995	1	1	0
	2021	8	7	1
Costa Rica	1995	1	1	0
	2021	2	2	0
Curaçao	1995	0	0	0
	2021	2	2	1
Dominica	1995	0	0	0
	2021	1	1	1
Dominican Republic	1995	1	0	1
	2021	8	6	2
Ecuador	1995	1	1	0
	2021	10	10	0
El Salvador	1995	0	0	0
	2021	5	2	3
Grenada	1995	0	0	0
	2021	1	1	1
Guatemala	1995	1	1	0
	2021	5	5	0
Guyana	1995	1	1	1
	2021	2	2	1
Haiti	1995	1	1	1
	2021	2	2	1
Honduras	1995	1	1	0
	2021	2	2	0

Table A.1: Number of agreements per country (continued). This table presents the number of agreements per country. Internal agreements correspond to agreements signed by two Latin American countries. External agreements correspond to agreements signed by a Latin American country and a country outside the Latin American region. Multilateral agreements involving both Latin American and foreign countries outside the region are counted as separate agreements when splitting the total number of agreements between internal and external.

Country	Year	# agreements		
		Total	Internal	External
Jamaica	1995	1	1	1
	2021	2	2	1
Mexico	1995	9	4	5
	2021	18	10	8
Montserrat	1995	0	0	0
	2021	1	1	1
Nicaragua	1995	0	0	0
	2021	3	2	1
Panama	1995	13	10	3
	2021	23	16	7
Paraguay	1995	1	1	0
	2021	4	4	0
Peru	1995	2	2	0
	2021	12	10	2
Saint Kitts and Nevis	1995	0	0	0
	2021	1	1	1
Saint Vincent and the Grenadines	1995	0	0	0
	2021	2	2	1
Anguilla	1995	0	0	0
Suriname	1995	1	1	1
	2021	2	2	1
Trinidad and Tobago	1995	1	1	1
	2021	2	2	1
Turks and Caicos Islands	1995	1	1	1
	2021	2	2	1
Uruguay	1995	4	3	1
	2021	10	8	2
Venezuela	1995	3	3	0
	2021	7	6	1
Virgin Islands (British)	1995	1	1	1
	2021	2	2	1

Table A.1: Number of agreements per country (continued). This table presents the number of agreements per country. Internal agreements correspond to agreements signed by two Latin American countries. External agreements correspond to agreements signed by a Latin American country and a country outside the Latin American region. Multilateral agreements involving both Latin American and foreign countries outside the region are counted as separate agreements when splitting the total number of agreements between internal and external.

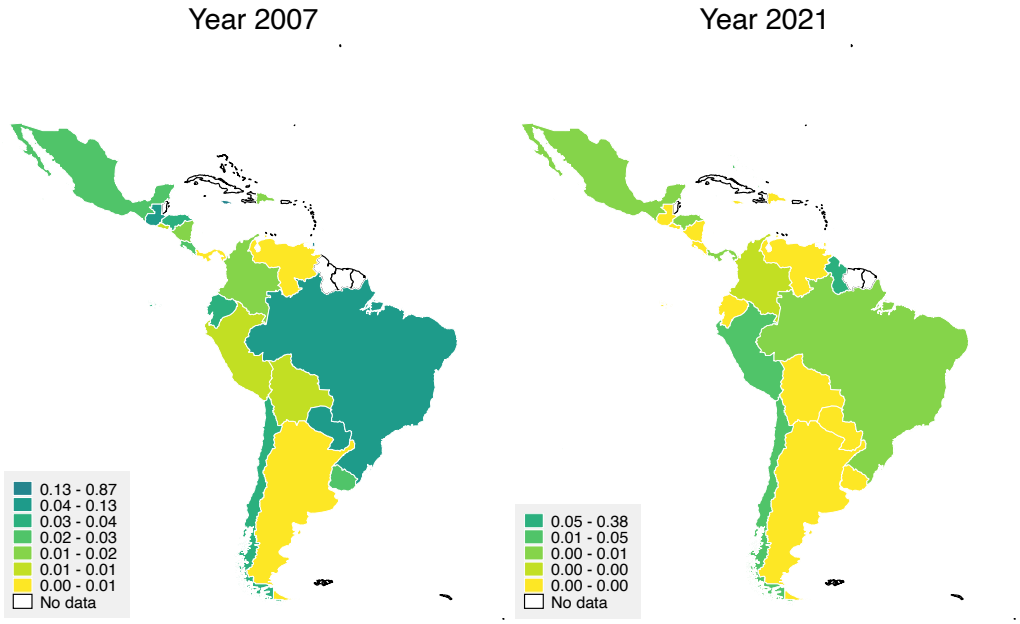

Figure A.1: Vulnerability across countries. The figure illustrates each country's vulnerability to risk shifts in 2007 and 2021. Darker green areas indicate higher vulnerability, measured by the share of countries covered under agreements where a foreign bank, hosted in a given LAC country, operates (excluding the bank's home country). This measure is calculated as an asset-weighted average across all banks hosted in each country.