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Cross-border supervisory cooperation: a progress report and research agenda

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Abstract

National supervisors in a world of integrated financial markets and cross-border banks face limited information and biased incentives, which can exacerbate financial fragility. While supervisory authorities have started cooperating across borders, such cooperation falls mostly short of supranational supervision as in the euro area. This paper summarises recent theoretical and empirical research in this area; it presents data on cross-border supervisory cooperation, shows the (limited) stability impact of such cooperation and reactions of global banking groups to increased supervisory cooperation.

Keywords

Cross-border cooperation, bank supervision, financial stability, regulatory arbitrage

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Table of contents

1. Introduction

Bank supervision is a critical component of the financial safety net. The traditional model of bank supervision is that of national supervisory authorities, supervising financial institutions incorporated in their respective jurisdiction. This national perimeter of bank supervision, however, clashes with the reality of integrated banking sectors and large cross-border banks active across multiple jurisdictions.

In the 1970s, concerns about bank failures (such as Herstatt Bank in 1974) having domino effects across countries led the G10[1] nations to form the Basel Committee on Banking Supervision (BCBS) in late 1974, under the auspices of the Bank for International Settlements (BIS). Concerns about aggressive competition between cross-border banks resulting in a downward spiral in capitalisation and thus financial instability led to a first agreement on regulatory capital minimum standards, known as Basel I, published in 1988. However, these agreements focused on regulatory standards, but not supervisory rules and norms. In 1997, the Basel Core Principles (BCP) for Effective Bank Supervision were issued by the BCBS as "minimum standards for sound prudential regulation and supervision of banks and banking systems." The BCP also contained some recommendation on cross-border cooperation between bank supervisors, including on the need for consolidated supervision by home country supervisors (Principle 23) and for host country supervisors to be able to share information needed by the home country supervisors of those banks for consolidated supervision (Principle 25), the need for home country supervisors to establish contact and information exchange with the various other supervisors involved, primarily host country supervisory authorities (Principle 24) and the need for host country supervisors to require the local operations of foreign banks to be conducted to the same high standards as are required of domestic institutions (Principle 25).

These principles reflect the fact that the effectiveness of bank supervision relies on information! While supervisors can force financial institutions in their own jurisdictions to share information, they cannot do so for financial institutions outside their regulatory perimeter. Taking decisions with limited information can result in inefficient decisions. Critically, however, formal agreements can be only made to share hard (e.g., accounting and management) information, but not soft information, often as important as hard data.

In addition, there is also the challenge of incentives. Supervisors have the legal mandate to safeguard financial stability in their respective jurisdiction. In a world of cross-border banks and integrated financial markets, however, financial fragility is not limited by national borders and there are important spillover effects, with the negative consequences of financial fragility affecting stakeholders outside national supervisory perimeters. In section 2, I will discuss how this geographic mis-match between supervisory perimeter and banks' footprint biases supervisory decisions.

Given the geographic mismatch between regulatory perimeter and cross-border banks' geographic footprint, starting in the late 20th century bank supervisors have started to cooperate, in the form of Memoranda of Understanding and Colleges of Supervisors. The last two decades have seen an increase in supervisory cooperation, a trend that accelerated after the Global Financial Crisis that saw the failure of several large cross-border banks. Most importantly, there has been a move from 'sunny-day' supervisory cooperation to a broader cooperation including resolution authorities and focusing on the possible failure stage of cross-border banks. In section 3, I will present some evidence on the incidence of such cooperation agreements, as well as discuss these different forms of cross-border supervisory cooperation.

What explains whether supervisors in different countries cooperate or not? On the one hand, stronger spillover effects or externalities across countries should incentivise countries to start cooperating and cooperate more intensively. These externalities can come through cross-border ownership links of banks, market linkages, regulatory arbitrage or countries being part of a currency union. On the other hand, countries with shared values, language and similar institutional and banking market structure might also be more likely to cooperate given the lower costs of cooperation. In section 4, I will discuss both theory and evidence that supports these hypotheses.

1 Belgium, Canada, France, (West) Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom and the United States, with Switzerland joining at a later stage.

Does supervisory cooperation across borders make large cross-border banks safer? In section 5, I present some evidence to this effect: specifically, on average, cross-border supervisory cooperation is associated with more stable banks, but this does not hold when focusing on a sample of the largest cross-border banks, the G-SIBs. This broad cross-country evidence is matched with evidence for the establishment of the Single Supervisory Mechanism in the euro area.

Why do we not find any evidence that cross-border supervisory cooperation makes the largest global banks more stable? An extensive literature has shown that banks react to regulatory changes and it is therefore not surprising that they also react to closer supervisory cooperation across borders. In section 6, I will present evidence that incomplete supervisory cooperation results in risk shifting into third countries. I will then discuss the specific case of 'small host countries', where subsidiaries of large cross-border banks have a substantial market share, while these subsidiaries make up a miniscule part of parent banks' balance sheets, which in turn gives home country supervisors limited incentives to cooperate with these host country supervisors. One of the few options left for such small host supervisors is to strengthen their own financial safety net and/or ringfence the foreign bank subsidiaries, so that they can survive independently in case the parent bank fails.

The research on cross-border supervisory cooperation is related to several other strands of the literature. There is a theoretical literature showing that cooperation among supervisors and regulators alters their behaviour. Acharya (2003) shows that coordinating capital adequacy ratios across countries affects resolution policies, possibly in undesirable ways. Dell'Ariccia and Marquez (2006) find that uncoordinated regulation leads to too low capital adequacy standards, as individual national regulators do not take into account the benefits of higher capital adequacy standards for other countries. Niepmann and Schmidt-Eisenlohr (2013) show that uncoordinated national governments' decisions to recapitalise failing banks are inefficient if banking systems are linked through interbank markets. Carletti et al. (2020) show that centralising supervision affects the information local regulators collect and can lead to lower effort by local supervisors.

Several papers have also examined theoretically how banks may adjust their behaviour following cooperation. Calzolari et al. (2018) show that cooperation between national supervisors increases monitoring of banks, providing incentives for banks to close foreign operations or to convert them into branches. In Colliard (2020), centralizing supervision endogenously encourages banks to integrate more cross-border. Loranth et al. (2022) show that a supranational architecture allows for voluntary support within a banking group, affecting banks' ex-ante incentives to take risks.

Finally, there are several papers that consider cooperation between securities markets regulators on the enforcement of securities laws. Silvers (2021) shows that agreements between securities regulators that enable enhanced cross-border enforcement, better regulatory decisions, and reduced compliance obligations for cross-border activities are associated with an 11% increase in cross-border investment between signing countries Lang et al. (2020) shows that following the signing of a multilateral MoU between global regulators, thus expanding the SEC's oversight of foreign firms cross-listed on a US stock exchange, foreign investment in US-cross-listed firms increases by $110 billion relative to non-cross-listed firms. Finally, Braumüller (2007) discusses the needs and challenges for cross-border cooperation between insurance supervisors.

Supervisory cooperation across borders is both a long-standing policy challenge and a relatively novel subject for researchers. While there are quite some theoretical papers, as just discussed, on these issues, empirical studies have been stymied by the lack of systematic data collection. This paper aims at contributing to this literature by summarising recent contributions.

The remainder of the paper is structured as follows. The next section discusses the financial stability implications arising from the geographic mis-match between regulators and banks. Section 3 presents an overview of different types of cross-border supervisory cooperation and their development over the past decades. Section 4 discusses different factors that explain why and

how intensively supervisory authorities cooperate across border, drawing both on cross-country regressions and specific examples. Section 5 shows the extent to which cross-border cooperation can improve financial stability, while section 6 provides evidence that incomplete cooperation can result in regulatory arbitrage by large global banks, undermining the stability effects of cross-border supervisory cooperation. Section 7 concludes.

2. The geographic mis-match between regulators and banks

Many countries, both advanced and emerging, have seen rapid increases in cross-border banking over the past decades. Take the example of the transition economies in Central and Eastern Europe: within two decades, these countries moved from socialist mono-bank to market-based banking systems and in 2005, two thirds of the almost 30 countries had banking systems dominated by foreign banks, many of them from Western Europe. Cross-border banking across Western European countries intensified after the introduction of the Euro and the regulatory convergence process within the European Union in the early 2000s. Several Latin American countries have also seen rapid increases in foreign bank ownership, most prominently Mexico, where foreign bank participation rose from 2 percent to 83 percent of assets between 1997 and 2005. And while many Sub-Saharan African countries had traditionally very high levels of foreign bank participation in their financial systems, this share increased even further in the first decade of the 21st century, with the rise of regional banks. While this trend seems to have reached a plateau with the Global Financial Crisis, there is little evidence for retrenchment.

The Global Financial Crisis saw the failure of several cross-border banks in Europe and their rather problematic resolution and clearly showed the problem of a misalignment of geographic boundaries of banks and their supervision. The resolution of the cross-border bank Fortis on the national level, undertaken separately by Dutch, Belgian and Luxembourg authorities has confirmed Charles Goodhart's and Mervyn King's point that "banks are international in life and national in death." The failure of the Icelandic banks, with wide-ranging economic and political repercussions across Europe, has shed doubts on the viability of large multinational banks in small countries. The absence of a proper cross-border framework to address their failure led to significant political tensions between the Dutch and the UK governments, on the one hand, and the Icelandic government, on the other hand, on the compensation of Dutch and British depositors of the failed Icelandic banks, leading the British government to even invoke anti-terrorism legislation.

The failure of several cross-border banks also confirms that as ‘the proof of the pudding is in the eating’ the proof of supervisory cooperation is in the phase of managing bank failures. Even though there was a cooperation agreement in place between supervisory authorities in the three Benelux countries, this failed to sustain a multilateral resolution approach, with the three countries splitting and recapitalising the respective national components of the Fortis Group (Kudrna, 2012).

Bank failure can have important negative effects, including beyond the immediate stakeholders in a banks. As discussed in Beck (2011), the failure of banks results in three negative externalities[2]:

- the *domino problem* that results from banks belonging to a network – the failure of one institution can easily result in the failure of other institutions in spite of sound fundamentals in these other banks; the above mentioned example of Herstatt Bank is a prominent early example for this;
- the *hostage problem* that results from the maturity mismatch and the incapacity of banks to satisfy the liquidity needs of all their customers in the case of a bank run, which in turn might lead to contagion effects throughout the financial system; the insolvency of Lehman Brothers in 2008 led to widespread freezing of financial markets; using micro-date, Iyer and Puri (2008) and Iyer et al. (2016) use the case of idiosyncratic bank failures in India to document the mechanics of a bank run and of interbank market contagion;

2 The terms ‘hostage problem’ and ‘refrigeration problem’ were coined in the context of the Argentine reform of the resolution framework. Efficient bank resolution should avoid allowing ‘perishable assets’ to leave the refrigerator, i.e. the banking system, and should ‘take the hostages, i.e. the depositors, out’ first. See De la Torre (2000).

- the *refrigeration problem* that results from lender–borrower relationships deteriorating due to loss of information if the institution fails. Bernanke (1983), Calomiris and Mason (2003), and Kupiec and Ramirez (2013) have shown the negative economic repercussions of bank failures in the 1920s and 1930s and the consequent loss of lending relationships, while Ashcraft (2005) links the decline in lending following the closure of a large (solvent) affiliate in a regional bank holding company in Texas in the 1990s to a decline in local GDP. Beck et al. (2021) show that the failure of a large Portuguese bank in 2014 resulted in the loss of access to lines of credit for many borrowers who subsequently had to cut investment.

While these negative externalities apply to purely domestic as to cross-border banks, regulators and supervisors can internalise them in the case of domestic banks to a certain extent through an effective financial safety net, balancing supervisory and market discipline. If these negative externalities fall outside the geographic perimeter of regulators and supervisors, however, it becomes more difficult.

Home country supervisors of multinational banks supervise on a consolidated basis, which gives them a more important role, more knowledge and thus also more power than host country supervisors. Consolidated supervision however, relies to some degree on cooperation between home and host country supervisors, especially for the exchange of soft information. However, the protection of financial and national interests as well as asymmetric information availability across home and host country supervisors can skew decision-making processes in favour of the former and at the expense of the latter.

The diverging interests become even clearer during times of distress as discussed by D'Hulster (2012). If the problem arises in the parent bank, the home country supervisor has strong incentives to delay and minimise information sharing, while the host country supervisor has strong incentives to ring-fence and thus prevent local assets from being up-streamed to offset losses in the parent bank's financial position or in other parts of the group. If the problems arise in the subsidiary, on the other hand, the home country supervisor has incentives to share information with the host country supervisor, while the host country supervisor has incentives to overstate the problem vis-à-vis the home country supervisor (possibly triggering capital and liquidity support from the parent) but also to ring-fence. Ultimately, in times of distress the interests of home and host country supervisors are not aligned.

Holthausen and Ronde (2002) formally model the exchange of information between home and host country supervisor and its implication for the intervention decision for a multinational bank. Given that national regulators represent national interests, a misalignment of interests leads to suboptimal exchange of information and distorted intervention decisions. Specifically, while the host country supervisor reports to the home country supervisor, she reveals only as much information as serves her own interests, which can result in either too stringent or too lenient an intervention decision. Holthausen and Ronde (2002) also show that banks can exploit the divergence of interests of home and host country supervisors with profit-maximizing but welfare reducing investment choices.

In a paper with Wolf Wagner and Radomir Todorov (2013), we provide both theoretical and empirical evidence that the geographic mis-match between the regulatory perimeter and the footprint of cross-border banks results in biased intervention decisions by national supervisors. Specifically, we show in a theoretical model that national supervisors' incentives to intervene in a timely manner into a fragile bank increase in the foreign equity share and decrease in the share of foreign deposits and assets. The intuition for this result is that the gains from letting a weak bank continue mainly accrue to equity, while the costs accrue to debt holders and other stakeholders in the economy; for example borrowers of foreign subsidiaries and branches lose access to external funding. The result is robust to variations in the utility function of the regulator, endogenizing risk choice by banks and type of intervention (bank closure or bailout).

We then provide empirical evidence consistent with the model using a sample of intervened banks during the crisis of 2007-2009. Taking their CDS spread at the time of intervention as a measure of regulatory lenience, we find that higher foreign asset and deposit shares and a lower foreign equity share are associated with more lenient regulatory decisions. These findings are robust to including an array of bank-level and country-level control variables, testing for anticipation effects and controlling for selection bias.

In sum, the bank failures during the Global Financial Crisis not only tested regulatory and supervisory frameworks on the national level (and led to substantial reforms of bank resolution frameworks), but also showed the limitations of cross-border supervisory cooperation. Overall, the mis-match between the geographic footprint of large cross-border banks and regulatory and supervisory responsibilities contributed to suboptimal supervisory decisions.

3. Cross-border supervisory cooperation - data

Over the past five years, Consuelo Silva-Buston, Wolf Wagner and I have collected data on whether and how supervisory authorities across countries have cooperated. We gathered the information from the supervisory bodies' websites and official documents available online. Based on guidelines of the Basel committee, we distinguish four (and increasingly intensive) forms of cooperation: 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 supervisor (BIS, 2001). I will discuss each of these in turn.

- A *Memorandum of Understanding* in the cross-border context is a declaration of intent of cross-border cooperation between the parties regarding the supervision of international banks. They introduce the appropriate procedures and principles that facilitate such cooperation. These agreements are not legally binding and usually define supervision guidelines during normal times, including the establishment of information sharing between supervisors to facilitate effective consolidated supervision of multinational financial institutions, mutual assistance in carrying out on-site inspection of these establishments, the recognition of the importance of mutual trust and protection of the information shared, and the ongoing coordination between the parties. In addition to its non-binding nature, an important challenge is that only the exchange of hard information can be mandated, while it is often the soft information about a bank's health, not necessarily reflected in balance sheet ratios, that is relevant for supervisors. These limits to information sharing and asymmetric information, modelled by Holthausen and Ronde (2002), can lead to biased intervention decisions.
- One step further in cooperation are the *Colleges of Supervisors*, which are multilateral working groups of supervisors that collaborate with the purpose of enhancing effective consolidated supervision of a given multinational banking group. These colleges, convened by the parent supervisor of cross-border financial institutions, include typically the most important host countries (from the viewpoint of the parent supervisor) and meet on a regular basis to exchange information. Even though they are not decision-making bodies, they can also operate as conduits of information for contingency planning in crisis management groups. Similar to Memoranda of Understanding, Colleges of Supervisors suffer from several shortcomings: (i) they are as strong as their weakest link in terms of supervisory quality; (ii) their structure is asymmetric as they primarily represent the home country supervisor's interests who might leave out host country supervisors with subsidiaries that are dominant in the host market, but not of material importance to the overall bank, as I will discuss in more detail below; (iii) there is the issue of committee decisions: given that colleges of supervisors are informal rather than sanctioned by legal agreements, the accountability of supervisors to their countries, and the difficulties of taking and enforcing decisions in a group that lacks statutory authority, each supervisor is in effect free to take her own decision, even if not in line with the decisions of the committee or the interests of other supervisors.

- While Memoranda of Understanding and supervisory colleges have been traditionally focused on normal or 'sunny' times, a Memorandum of Understanding on *crisis management* is intended to provide authorities with additional guidelines during crisis periods, including the exchange of additional information, not shared during normal times, but which is necessary during crisis periods. This information could involve, for instance, cross-sectoral flows of information, between the central bank and the supervisor. These agreements also provide effective sets of bank resolution tools, such as the promotion of ex-ante burden sharing (BIS, 2010). Such agreements can also include joint crisis management exercises and expansion from supervisory to resolution colleges, which include resolution authorities, deposit insurers and potentially ministries of finance. We therefore see such form of cooperation as a further step beyond Memorandum of Understanding and College of Supervisors.[3] It is important to stress, however, that even such agreements are still not legally binding and there is no guarantee that cooperation between countries during crisis times will play out as planned beforehand.
- Countries reach the highest level of cooperation when moving towards *centralised supervisory authorities*. This form of cooperation transfers banks' supervision from the national level to a single supranational level authority. While the Single Supervisory Mechanism at the ECB is the prominent example, being responsible for bank supervision in 19 countries, both the Central and the West African monetary unions also each share a bank supervisor. Such supranational supervisors can internalise cross-border spillover effects of bank fragility within their supervisory perimeter even though it is unlikely that spillover effects will be limited to the perimeter of such a supranational supervisor in most circumstances.

Figure 1: Cross-border cooperation between supervisors across the globe

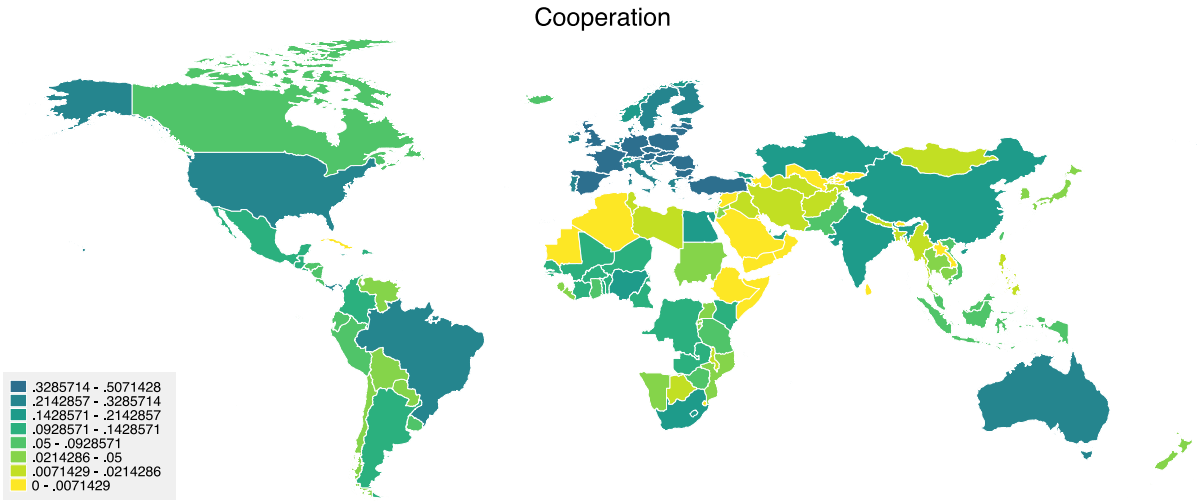

Figure 1 shows the extent to which countries cooperate with other countries across the globe in 2020. One notes large differences across the world in the incidence of cross-border supervisory cooperation, ranging from zero to 50%. While some countries in Northern and Eastern Africa have no or little cooperation, cooperation is quite intensive in Europe (with supervisors within Europe and across the globe).

Over the 25 year period, for which we have data, cooperation between supervisors of different countries has increased, both in terms of countries having cooperation agreements with other as in the intensity of such cooperation arrangements. One important event that led to more cross-border supervision cooperation was, not surprisingly, the Global Financial Crisis. For example, in Beck et al. (2023b) we show that before the failure of Royal Bank of Scotland (RBS) in 2008, the UK's FSA had only cross-border supervisory agreements with one country where RBS had a subsidiary, while it established agreements with several other countries in 2008, most importantly with Ireland, which

3 The stronger focus on cross-border dimensions in bank resolution is also reflected in the Key Attributes of Effective Resolution Regimes (FSB, 2011), which has a strong emphasis on cross-border cooperation.

hosted an important subsidiary of RBS. As I will discuss in more detail below, the Scandinavian countries intensified their cooperation after the Global Financial Crisis and were, compared to other parts of Europe, among the first to start cooperating more closely among supervisory and resolution authorities. Finally, and as discussed in detail below, countries within the euro area moved to significantly closer cooperation, culminating in the establishment of the Single Supervisory Mechanism in 2014.

4. What explains cross-border supervisory cooperation?

The negative cross-border externalities discussed in section 2 provide an important factor in predicting whether two countries' supervisors cooperate. However, in a financially integrated world, there are various other channels through which a shock arising from the failure of one bank can spill over to other countries. This includes fire sale externalities (e.g., Stein (2009)), informational contagion, or panics. For such effects to materialize, no direct cross-border links have to exist between two banking systems as these spillovers can arise through capital markets. Such spillovers tend to be more pronounced when countries have integrated capital markets. Kara (2016) models correlated asset fire sales by banks, which generate systemic risk across national financial markets. Absent coordination, national regulators choose inefficiently low levels of macroprudential regulation. While symmetric countries always benefit from relinquishing their authority to a central regulator that establishes uniform regulations across countries, there might be a limit to coordination when countries are sufficiently asymmetric.

Another source of externalities from cross-border banking is regulatory arbitrage. Banks have incentives to move their activities to jurisdictions with lighter regulation – such jurisdictions benefit from an "inflow" of banking business but this will cause negative externalities for other countries if and when lighter regulation leads to bank failure (Ongena, Popov and Udell, 2013). Related to this, a cross-border financial institution subject to regulation and possible resolution in different jurisdictions might trigger a regulators' run on the bank leading to an efficient resolution process (D'Hulster, 2011). Again the externalities are higher among financially more integrated countries since the hurdles to moving business across borders are lower.

Finally, negative externalities of bank failures are also more pronounced in a monetary union. First, in a monetary union, it is more difficult for governments to deal with spillovers from other countries. As the fiscal capacity of sovereigns is more limited (they cannot print their own money), it is more difficult to backstop troubled banks, resulting in more failures and higher costs. This mechanism was at play during the European Sovereign Debt Crisis. Second, the presence of a common lender of last resort in a monetary union might result in a tragedy of commons problem, as it is in the interest of every member government to share the burden arising from troubles at its own banks with the other members.

In a paper with Consuelo Silva-Buston and Wolf Wagner (2023a), we find significant evidence for these different channels in our empirical analysis of the incidence and depth of bi- and multilateral supervisory cooperation agreements across 93 countries over the period 1995 to 2013. Specifically, country pairs with higher cross-border activities, country pairs that share a G-SIB and either a common currency or a fixed exchange rate, and country pairs with a higher average stock market correlation when each country's index experiences the 5% lowest returns are more likely to have a supervisory cooperation agreement.

However, there are also costs of closer cooperation. If countries were identical ex ante, they would agree on the type of supranational supervision they want to implement (and the implementation would not be particularly burdensome). However, countries differ in practice along various dimensions, which increases the cost of cooperation, in particular as common policies may then not be optimal for either country (or both of them). One such dimension is heterogeneity in preferences: countries might perceive different costs to letting banks fail and have different fiscal preferences.

Their banking market structure might also vary, so that the failure of a bank imposes different costs on either economy. A second dimension are geographic, institutional, and linguistic distance, which makes cooperation more costly as it increases differences in failure and resolution costs, but also makes cooperation efforts itself more costly.

Third, heterogeneity can also result from incentive asymmetries. Such asymmetries arise when the importance of the foreign country's subsidiaries in the host banking system is large compared to the importance of these subsidiaries in the home country's banking system. As discussed in Ahmad Fontan et al. (2019), for example, the subsidiaries of many Western European countries have important market shares in many smaller Central, Eastern and South-Eastern European countries, but these subsidiaries make up a miniscule part of the parent banks' consolidated balance sheets. While host country supervisors therefore care strongly about cooperation, parent bank supervisors do not.

In Beck, Silva-Buston and Wagner (2023a), we find evidence for the importance of heterogeneity for the incidence and depth of supervisory cooperation across countries. Specifically, country pairs that have different preferences, have asymmetric bank linkages, and are more distant from each other are less likely to have a supervisory cooperation agreement as do country pairs that do not share the same language.

Externalities and heterogeneity thus can explain if countries cooperate or not in bank supervision. This trade-off between externalities and heterogeneity can also explains why calls for a global bank supervisor after the Global Financial Crisis have not been heeded. Specifically, in a paper with Wolf Wagner (2016) we show with a simple theoretical model, that supranational supervision is more likely to be welfare enhancing when externalities are high and country heterogeneity is low. This suggests that different sets of countries (or regions) should differ in the extent to which their regulators cooperate across borders.

Critically, there is a political economy dimension as well: even though supranational supervision might be welfare-enhancing for both countries, incentive compatibility can seriously limit the implementation of a supranational solution. We also show that small countries—even if their preferences only have little effect on supranational decision making—can benefit more from delegation than large countries. Finally, we show that biases arising from national supervision of cross-border banks can also result in too lenient licensing of banks. In sum, not only are there off-setting effects of externalities from financial integration and country heterogeneity, but also political economy constraints that limit countries from moving towards closer supervisory cooperation.

Beyond regression analysis one can also think of specific examples that support these hypotheses. Take the example of Scandinavia: The strong cross-border links across the region have resulted in supervisors across the Nordic-Baltic region cooperating and coordinating closely with each other. In 2001, the merger of four large national banks into the Nordea bank (which was designated as a G-SIB by the Financial Stability Board in 2011) resulted in the establishment of the Nordea College, considered to be the first supervisory college in the EU; the college was extended to the Baltic countries as Nordea expanded into these markets. In 2003, the Nordic central banks adopted a Memorandum of Understanding (MoU) on the "Management of a financial crisis with cross-border establishments". In 2010, the Nordic-Baltic countries adopted an MoU, which included the establishment of the Nordic-Baltic Stability Group (NBSG) to ensure that the parties are prepared to deal with financial crisis situations by agreeing in advance on procedures for cooperation, sharing of information and assessments. This broader MoU, also including the ministries of finance, was signed with an explicit focus on crisis management and resolution, as well as specific burden sharing agreements.

This high and increasing cooperation is in line with high externalities among the Nordic-Baltic countries, but also low heterogeneity. Most of the cross-border banking activity in the Nordic region is done by Nordic banks and banks from outside the region generally have low market shares. The four largest Swedish banks have presence – in the form of either branches or subsidiaries – in

neighbouring and other European countries. Banking systems in the region experienced banking crises in the 1990s, following financial market liberalisation. They are all characterised by high concentration and high focus on mortgage lending (with high levels of household indebtedness). Beyond similarities in banking structure, the Nordic countries share strong historic, linguistic and cultural links, and there is thus a low heterogeneity and cost of cooperation.

Another example is the cooperation between Australia and New Zealand. The four largest banks in New Zealand are subsidiaries of the four largest banks in Australia, and there is thus a very close interconnectedness between their banking systems but also high cross-border externalities. This has led to extensive cooperation and information sharing between the Australian Prudential Regulatory Authority (APRA) and the Reserve Bank of New Zealand (RBNZ), further strengthened by a 2006 amendment to the Reserve Bank of New Zealand Act, which legally obliges the RBNZ to cooperate and consult with Australia's financial supervisory authorities to try to avoid actions that may negatively affect financial system stability in Australia. The Australian Banking Act was amended in similar manner. There is also a Trans-Tasman Council on Banking Supervision (which includes the RBA and the Australian and New Zealand Treasuries) that meets on a regular basis. Recently, a Memorandum of Cooperation on Trans- Tasman Bank Distress Management was drafted. This close cooperation is not only in line with the high externalities, but also low heterogeneity between these two countries, including common history and language, similar levels of regulatory development, and a common legal tradition.

Finally, the European Union and the Eurozone offer an interesting case study on deepening regulatory and supervisory cooperation, with a move within 20 years from completely national supervision over cooperation arrangements with different degrees of depth to a supra-national supervisor for the Eurozone (Teixeira, 2020).

The Single Market, including for Financial Services, was established in 1992, allowing a financial institution licensed anywhere in the EU to set up a branch or offer financial services directly in any member state, without licensing by the local supervisor or local supervision. In the wake of this major liberalization measure, a legislative framework was put in place to integrate the segmented EU financial markets and reduce the costs of cross-border financial intermediation, in the form of the Financial Services Action Plan (FSAP), launched in 1998. Most of these efforts, however, aimed primarily at harmonisation, leaving supervision clearly on the national level. 1999 saw the introduction of the Euro and with it a further push towards financial integration, with a pick-up in cross-border mergers between banks and cross-border financial transactions afterwards (Kalemli-Ozcan, Papaioannou, and Peydro, 2010). This also led to increasing attempts at cross-border supervisory cooperation. In the mid-2000s, a first institutionalised attempt was made at supervisory coordination on the EU level, in the form of the Committee of European Banking Supervisors (CEBS), established in 2004.[4]

The 2008 Global Financial Crisis saw a further intensification of regulatory cooperation, as the European Banking Authority was established in 2011, with the objectives to ensure effective and consistent prudential regulation and supervision across the European banking sector and more specifically, to create a European Single Rulebook and contribute to convergence of supervisory practices. The eurodebt crisis, for which the link between banks and sovereign was at the core, resulted in the final step so far, the establishment of the Single Supervisory Mechanism for the Eurozone in late 2014, after the Comprehensive Assessment comprising Asset Quality Review and Stress Tests aiming at a level field across the most significant financial institutions within the Euro area. In line with the theoretical analysis by Beck and Wagner (2016), however, political economy constraints not only delayed the introduction of such a centralised regulatory and supervisory structure, but also resulted in an incomplete banking union, with limitations on the tools and powers of the Single Resolution Board and no European Deposit Insurance. In sum, increasing cross-border integration of banking systems and consequent cross-border externalities have driven increasing

4 Other important agreements included the 2003 Memorandum of Understanding among EU central banks and supervisory authorities and the 2005 Memorandum of Understanding between central banks, banking supervisors and finance ministries, both of which set out guiding principles for cooperation in crisis situations.

cross-border cooperation. The additional externalities within a currency union led to the establishment of a supranational supervisor. High heterogeneity across EU and, more specifically, euro area countries, however, resulted in a rather slow process of increasing cross-border cooperation and an incomplete banking union.

Political scientists have developed different hypotheses of how the European Union arrived at the current point of a 'half-baked' banking union. On a broader note, Monnet's method posits that 'Europe will be forged in crises, and will be the sum of the solutions adopted for those crises.' (Monnet, 1978, p. 417) and the banking union is certainly evidence in this favour. New institutions (SSM and SRM) were established when existing national solutions were no longer sufficient. Jones, Kelemen and Meunier (2016), on the other hand, put forward the dynamic hypothesis of *failing forward*: in an initial phase, lowest common denominator intergovernmental bargains led to the creation of incomplete institutions, which in turn sowed the seeds of future crises, which then propelled deeper integration through reformed but still incomplete institutions – thus setting the stage for the process to move integration forward.

In sum, attempts to overcome the geographic mis-match between cross-border banking and regulatory and supervisory responsibilities through cross-border cooperation is driven by the need to cooperate (externalities) but also structural differences and differences in preferences across countries. Political economy constraints are also important.

5. Supervisory cooperation and financial stability

Cross-border supervisory cooperation, if effective, should improve banking stability. However, failure of cross-border banks is rare to observe, so that alternative measures have to be considered to test this hypothesis. In Beck, Silva-Buston and Wagner (2023a) we therefore use an accounting-based measure - Z-score indicating distance to default – and a market-based gauge- the bank's Marginal Expected Shortfall, which measures a bank's average return when the market experiences stress, thus capturing systemic risk exposure (Acharya, Pedersen, Philippon, and Richardson, 2017). Our sample consists of 197 parent banks in 52 home countries and 116 host countries, between 1995 and 2013, with the subsidiaries of these parent banks spanning 401 home-host country pairs.

We regress a measure of bank stability on a measure of cross-border cooperation, namely the share of host supervisors (i.e., supervisors of the parent bank's subsidiaries) with whom the home (parent bank) supervisor has a cooperation agreement, weighted by the subsidiary's share in the parent bank's total foreign assets, including control variables, bank fixed effects to control for time-invariant unobserved bank characteristics and year fixed effects to control for global trends in bank stability that might covary with cooperation agreements. By including bank fixed effects, we effectively exploit within-banking group variation in cooperation intensity and stability.

We find that a higher incidence of supervisory cooperation is associated with higher bank stability. The economic effect is large. For example, a standard deviation increase in supervisory cooperation intensity at the bank level improves the bank's Z-score by 24%. Critically, we find the association to be concentrated at the smaller institutions in our sample of cross-border banks, consistent with supervision at larger banks being less effective due to too-big-to-fail and higher complexity.

Focusing on the sample of relatively smaller banks, we then show that the link between cooperation and bank stability runs through asset risk. This is consistent with the notion that asset risk is difficult to observe and control at arms-length; intensive cooperation and information exchange should hence have a pronounced effect. Regulatory harmonisation, through the Basel process, on the other hand, have resulted in higher capitalisation, rather than supervisory cooperation. We also find that effectiveness of cooperation increases both with the stringency of home and host supervision, as well as the quality of information that is available to supervisors. While we acknowledge possible

biases of endogeneity and are cautious to infer causality, these findings are consistent with cross-border supervisory cooperation helping improve financial stability, but also with its limitations when it comes to the largest cross-border banks.

There is also a small literature focusing specifically on the stability effects of the establishment of the Single Supervisory Mechanism (SSM) in the euro area in 2014.[5] The establishment of a supranational supervisory authority resulted in larger banks (significant institutions) coming under direct supervision by the SSM in Frankfurt (though effectively, they were supervised on a day-to-day basis by Joint Supervisory Teams comprising both SSM and national supervisory staff), while other institutions (less significant institutions) stayed under national supervisory responsibility. While the assignment of banks to significant and less significant status was obviously not random, the differentiation does allow for the exploration of differential effects across banks. Fiordelisi, Ricci, and Stentella Lopes (2017) show that banks that expected to come under the supervision of the SSM reduced their lending activities and increased their capital ratios in comparison with banks below the asset threshold for supervision by the SSM. This is in line with findings of Eber and Minoiu (2016) who show that SSM-supervised banks reduced their asset size and reliance on wholesale debt over the period 2012-15, compared with banks that did not fall under the supervision of the SSM. It is also consistent with Altavilla, Boucinha, Peydro, and Smets (2020) who show with credit-registry data that banks under supranational supervision reduced credit supply to firms with very high ex-ante and ex-post credit risk, while stimulating credit supply to firms without loan delinquencies. Finally, Ampudia, Beck and Popov (2022) show that firms borrowing from SSM-supervised banks reduce intangible assets and increase cash holdings relative to firms borrowing from banks remaining under national supervision, suggesting that centralised bank supervision can slow down the shift from the capital-based to the knowledge-based economy. Alternatively, one can interpret this finding as emphasising the need for non-bank financial institutions and public and private capital market to take on part of the financial intermediation function, as Europe is moving away from a bank-biased financial system (Langfield and Pagano, 2016).

The establishment of the SSM also had implications for sovereign risk. Cuadros-Solas, Salvador and Suarez (2023) show that sovereign ratings improve in euro area countries after the largest banks are supervised supranationally rather than nationally. However, there are also general equilibrium effects of putting some but not all banks under centralised supervision. Specifically, Haselmann, Singla and Vig (2022) show that tighter supervision of larger banks results in a shift of particularly risky lending activities to smaller banks.

In sum, cross-border cooperation as response to the negative consequences of the geographic mis-match between cross-border banking and regulatory and supervisory responsibility can have financial stability enhancing effects, but also has limitations.

6. Incomplete supervisory cooperation

Why do large cross-border banks not show any increase in stability as supervisory cooperation increases? And do banks react to supervisory cooperation? An extensive literature has shown that banks react to regulatory reforms or regulatory differences between countries. Several papers have also provided evidence for regulatory arbitrage arising from regulation and supervision by examining international bank flows (Houston, Lin, and Ma, 2012), trust-preferred securities (Boyson et al. 2016), international bank M&As (Karolyi and Taboada, 2015), subsidiaries of U.S. Bank Holding Companies (Frame, Mihov, and Sanz, 2019), and syndicated lending (Demirguc-Kunt, Horvath and Huizinga, 2019).

In a recent paper with Consuelo Silva-Buston and Wolf Wagner (2023b) we show that there is a decline in lending by subsidiaries of cross-border banks after the respective host authority has embarked on supervisory cooperation with the home country supervisor. However, this finding is

5 For an overview of the theoretical and empirical debate on centralised versus decentralised bank supervision, see Ampudia et al. (2019).

clearly subject to endogeneity biases, and we therefore focus our main analysis on third-country effects. Specifically, using data on banking groups in 47 home and 116 host countries during 1995-2019, we investigate whether, how, and why risk allocation into a specific (foreign) subsidiary changes when cooperation in the remaining banking group changes due to new cooperation agreements being formed.

We show that a subsidiary's lending (as a proxy for the amount of risk-taking) increases when supervisory cooperation between the country of the parent bank and the other host countries of the group increases. The effect is also economically large: a one-standard-deviation increase in cooperation coverage increases subsidiary lending on average by 15%. The subsidiary-level estimates thus imply large country-level effects. For instance, the combined impact of cooperation agreements outside a country is to increase a country's share of foreign loans by 13 percentage points. We also find that the lending increase goes along with the higher riskiness of the subsidiary in general: the balance sheet becomes more leveraged, and default risk (as proxied by the *Z*-score) increases.

These findings are also confirmed on the loan-level: we find that the probability of allocating a specific syndicated loan to a particular subsidiary increases in the supervisory cooperation coverage of the rest of the banking group. Specifically, this probability increases by two percentage points, which is economically significant considering an unconditional probability of 8%. The effect is stronger for riskier loans, again consistent with risk-shifting.

What explains this risk-shifting by cross-border banks? The results are consistent with risk being shifted to third countries as a result of cooperation making it more difficult to take risks in cooperating countries because of increased supervisory stringency in these countries, while we do not find evidence for risk shifting being driven by supervision becoming more effective in cooperating countries. Specifically, we show that risk-shifting into third countries is more pronounced when externalities among the countries involved in the cooperating agreements (proxied by the importance of joint banking operations) are higher, consistent with the idea that cooperating countries internalise cross-border spillovers among them. We also show that risk-shifting into third countries is more pronounced when the distance to the highest supervisory standards among the cooperating countries is higher before cooperation, consistent with the idea that they tend to converge to the supervisory standards of stricter supervisors.

Risk-shifting into third countries can be mitigated (that is, lending responds less to cooperation between the home supervisor and the supervisors of other host countries) when the subsidiary country has stricter supervision and better market discipline relative to other countries in which the group has foreign operations. Risk-shifting is also mitigated when the subsidiary country cooperates with the home country, as well as when it cooperates with the other host countries of the group. Again, these results are consistent with a risk-shifting motive following cooperation. While we are careful not to overinterpret the results as causal, these findings are consistent with regulatory arbitrage by global cross-border banks shifting risk in reaction to cross-border supervisory cooperation.

The policy implications of this analysis are that limited supervisory cooperation across countries can undermine the effectiveness of such cooperation, as global banks can shift risks into third countries. While some countries might welcome such risk shifting to boost their standing as financial centre, for others such risk shifting is consequence of being excluded from closer cross-border supervisory cooperation. ‘Small host countries’ are often among this group.

As discussed above, one factor restraining cooperation is the asymmetries in incentives between large home and small host countries. Take the example of Bosnia-Herzegovina. In 2017, Unicredit had a market share of 24%, while the subsidiary made up 0.4% of Unicredit’s total balance sheet. (Ahmad Fontan et al., 2019). More generally, one can define small host countries as “those in which subsidiaries of multinational parent banks are of systemic importance, while the foreign operation is not material for the parent bank and thus for the home country authority” (Ahmad Fontan et al., 2019).

This asymmetry between host and home country's interests are often also reflected in supervisory cooperation, or rather the lack thereof. For the home country, cooperating with a small host country is an afterthought, especially when convening a college of supervisors. For the host country, on the other hand, such cooperation is rather critical.

Within the EU this asymmetry has been partly addressed. Specifically, non-euro area EU member countries' supervisory authorities have the right to participate in Supervisory and Resolution Colleges, thus gaining access to critical information on the consolidated level about the subsidiaries in their countries. One important tool for small host countries in the EU is mediation by the European Banking Authority (EBA), which can be used in cases of disagreements between supervisors and, despite its name, is binding as long as it does not infringe on fiscal policy. However, non-EU member countries can be invited as observers to join supervisory and resolution colleges, but have no right to such invitation and their participation is conditional on an equivalence assessment by the EBA and agreement by the college members.

The reaction of small host countries is often to ring-fence, which, however, undermines the benefits from cross-border banking. A similar situation exists in many countries in Sub-Saharan African countries, where large European banks have substantial market shares while the subsidiaries make up a miniscule part of the parent banks' balance sheet. The recent shift in cross-border banking, however, has led to an increasing importance of regional banks, including South African, Nigerian, Moroccan and Kenyan banks across the region. This expansion has also led to an increase in supervisory cooperation within the region, even though from a very low level (Beck et al., 2014).

In sum, the incompleteness in cross-border supervisory cooperation across the globe (in line with country heterogeneity discussed in section 4) can result in regulatory arbitrage by large global cross-border banks and risk shifting into third countries, especially those with weak supervisory and regulatory frameworks, undermining financial stability.

7. Conclusions

This paper has summarised recent theoretical and empirical research on cross-border supervisory cooperation as well as an overview over recent policy debates. This research has shown a clear trade-off between stability in a world with integrated banking and capital markets and a national perimeter for supervisors. This observation is consistent with a trilemma where only two of the following three objectives can be achieved: financial stability, financial integration and national regulatory and supervisory sovereignty (Schoenmaker, 2011). While the Bretton-Woods period of fixed exchange rates after World War II had limited financial integration and thus financial stability and national regulatory and supervisory sovereignty, the increasing financial integration starting in the 1980s has led to more financial instability.

Only few country groupings have gone all the way to abandon national sovereignty in bank supervision, most prominently so the euro area with the Single Supervisory Mechanism. But even here, centralisation has not gone all the way as other important elements of the financial safety net are still on the national level, including bank failure management (in spite of the Single Resolution Board) and deposit insurance.

Cross-border supervisory cooperation is a way to ease the tension between national supervisory perimeter and the geographic footprint of cross-border banks by reducing information asymmetries between home and host country supervisors. However, with few exceptions, these are not legally binding arrangements and thus do not touch on 'supervisory sovereignty'. And even where they are legally binding, such as in the case of EBA mediation, when money comes into play, national sovereignty still rules.

While this paper has focused a lot on the asymmetries between home and host country supervisors, an increasing number of supervisory authorities are both home and host countries, both in advanced and developing economies. This provides new perspectives for supervisory cooperation. Bi- and multilateral agreements have increased at the same time, as international best practices on such cooperation are being developed and further improved. An important barrier, however, continues to be the importance of banking for governments across the world, which limits the degree to which governments are willing to yield sovereignty in any policy related to banking.

Another important issue concerns macroprudential regulation and supervision. The discussion so far has been primarily about micro-prudential regulation and supervision, i.e. coordination for individual banks. However, there are also important externalities stemming from credit boom and bust cycles in one country for fragility in other countries. While there is some coordination between macroprudential authorities (e.g., in the Nordic-Baltic region), macroprudential regulation is primarily on the domestic level. Case in point is the Eurozone: While the Single Supervisory Mechanism can use macro-prudential tool covered under the CRR and CRD IV, it cannot use other macro-prudential tools, which will remain exclusively under national authority (Sapir, 2014). Given that not only micro- but also macro-prudential decisions have externalities beyond national borders, this seems another gap in the banking union. The European Systemic Risk Board (ESRB), which does not have any formal powers beyond issuing warnings and recommendations, cannot completely fill this gap.

Given the young age of the theoretical and empirical literature on cross-border supervisory cooperation, there are many open research questions, which make for a rich research agenda going forward. Most of the empirical research has focused on subsidaries, given data availability. However, in many countries, including across the European Union, banks have the option of either establishing branches or subsidiaries. Theory predicts that cross-border supervisory cooperation might influence the choice for either branch or subsidiary (Calzolari et al., 2018; Colliard, 2020), but this is still to be tested empirically. A second area of research concerns the real effects of cross-border supervisory cooperation, in terms of firm funding and growth. On the one hand, less risk-taking by banks due to cross-border supervisory coopeation might result in lending retrenchment, with negative real consequences; on the other hand, more stable cross-border banks and more stable banking systems might be better able to support the real economy over the business cycle. A third area is that of cooperation in macroprudential policies and its possible effect on the build-up of financial imabalances and fragility. Will closer cooperation between countries in macroprudential regulatiom and supervision simply be an extension of cross-border microprudential cooperation or are there other, possibly political, factors preventing it. Can such cooperation reduce spillover effects of macroprudential policies and the build-up of financial imabalances and fragility? There is certainly a rich agenda for both theoretical and empirical work ahead.

While most of the research discussed in this paper has been undertaken by economists, I would like to end on a plea for more interdisciplinarity. Political scientists can make an important contribution to the debate by focusing on the political economy barriers to more cooperation and on institutional design of such cooperation. Research on the inaction bias and the influence of media, politicians and other part of the government are also critical questions in this context. Legal scholars will be important in telling us economists how to translate optimal policy into laws and regulations and to better understand subtle differences between different models of cross-border supervisory cooperation. While the data on cross-border supervisory cooperation described earlier are crude classifications, there are important qualitative details that cannot be captured well by quantitative indicators Finally, historians will remind us that while you never step in the same river twice and history does not repeat itself, it certainly rhymes.

References

Ahmad Fontan, I., T. Beck; K. d'Hulster, P. Lintner, and F. D. Unsal (2019). Banking Supervision and Resolution in the EU: Effects on Small Host Countries in Central, Eastern and South Eastern Europe. World Bank, FinSAC

Acharya, V. (2003). Is the international convergence of capital adequacy regulation desirable? *Journal of Finance* 58, 2745–2782.

Acharya, V.; L. Pedersen; T. Philippon; and M. Richardson. 2017. Measuring Systemic Risk. *Review of Financial Studies* 30, 2–47.

Altavilla, C., Boucinha, M., Peydró, J.-L., & Smets, F. R. (2020). Banking supervision, monetary policy and risk-taking: big data evidence from 15 credit registers. *ECB Working Paper No 2349*.

Ampudia, M, T. Beck and A. Popov (2021). Out with the New, In with the Old? Bank Supervision and the Composition of Firm Investment, Discussion Paper 16225, Centre for Economic Policy Research, London, UK.

Ampudia, M, T. Beck, A. Beyer, J.E. Colliard, A. Leonello, A. Maddaloni and D. Marques Ibanez. 2019. The Architecture of Supervision. ECB Working Paper 2287.

Ashcraft, A.B. 2005. Are Bank Really Special? New Evidence from the FDIC-induced Failure of Healthy Banks. *American Economic Review* 95, 1712–1730.

Bank for International Settlements (BIS). (2001). *Essential elements of a statement of cooperation between banking supervisors*. Basel, Switzerland.

Bank for International Settlements (BIS). (2010). *Report and. Recommendations of the Cross-border Bank Resolution Group*. Basel, Switzerland.

Basel Committee on Banking Supervision (1997). *Core Principles for Effective Banking Supervision*, Basel, Switzerland.

Beck, T. (2011). Bank Failure Resolution: A Conceptual Framework, in: Panagiotis Delimatsis and Nils Herger (Eds.): *Financial Regulation at the Crossroads: Implications for Supervision, Institutional Design and Trade*.

Beck, T., M. Fuchs, D. Singer and M. Witte (2014). *Making Cross-Border Banking Work for Africa*, GIZ and World Bank, 2014

Beck, T., S. da-Rocha-Lopes and A. Silva (2021). Sharing the Pain? Credit Supply and Real Effects of Bank Bail-ins, *Review of Financial Studies* 34, 1747-1788.

Beck, T., Todorov, R. and Wagner, W. (2013), Bank Supervision Going Global? A Cost-Benefit Analysis, *Economic Policy* 28, 285–44.

Beck, T., and W. Wagner. Supranational Supervision: How Much and for Whom? *International Journal of Central Banking,* 12 (2016), 221–268.

Beck, T, Silva-Buston, C. and W. Wagner (2023a), The Economics of Supranational Bank Supervision, *Journal of Financial and Quantitative Analysis* 58, 324-51.

Beck, T, Silva-Buston, C. and W. Wagner (2023a), Incomplete Supervisory Cooperation. Working Paper

Bernanke, B. S. 1983. Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression. *American Economic Review* 73, 257–276.

Boyson, N. M., R. Fahlenbrach, and R. M. Stulz (2016). Why don't all banks practice regulatory arbitrage? Evidence from usage of trust-preferred securities. *Review of Financial Studies* 29, 1821–1859.

Braumüller, P. (2007). Cross-Border Exchange of Information and Cooperation Between Insurance Supervisors. *The Geneva Papers on Risk and Insurance – Issues and Practice* 32, 301-18.

Calomiris, C. and J.R. Mason. 2003. Consequences of Bank Distress during the Great Depression. *American Economic Review* 93, 937-947.

Calzolari, G., J.-E. Colliard, and G. Loranth (2018). Multinational banks and supranational supervision. *Review of Financial Studies* 32, 2997–3035.

Carletti, E., G. Dell'Ariccia, and R. Marquez (2021). Supervisory incentives in a banking union. *Management Science* 67, 455–470.

Colliard, J.-E. (2020). Optimal supervisory architecture and financial integration in a banking union. *Review of Finance* 24, 129–161.

Cuadros-Solas, P.J., C. Salvador and N. Suarez (2023) Banking Supervisory Architecture and Sovereign Risk, CUNEF University, mimeo.

D'Hulster (2013) Cross Border Banking Supervision: Incentive Conflicts in Supervisory Information Sharing between Home and Host Supervisors. Policy Research Working Paper, World Bank, Washington DC.

Dell'Ariccia, G. and R. Marquez (2006). Competition among regulators and credit market integration. *Journal of Financial Economics* 79, 401–430.

De la Torre, A. (2000). Resolving Bank Failures in Argentina: Recent Developments and Issues. World Bank Policy Research Working Paper 2295

Demirguc-Kunt, A., B. Horvath, and H. Huizinga (2019). Regulatory arbitrage and cross-border syndicated loans. CentER Discussion Paper No. 2019-028 .

D'Hulster, K. (2012): Cross-border banking supervision: Incentive conflicts in supervisory information sharing between home and host supervisors, Journal of Banking Regulation, Vol. 13, Issue 4, p. 300-319.

Eber, M. and C. Minoiu (2016). How do banks adjust to stricter supervision? Mimeo.

Financial Stability Board (2011). Key Attributes of Effective Resolution Regimes for Financial Institutions. Basel, Switzerland.

Fiordelisi, F., Ricci, O., & Stentella Lopes, F. S. (2017). The unintended consequences of the launch of the single supervisory mechanism in Europe. *Journal of Financial and Quantitative Analysis 52,* 2809–2836.

Frame, W. S., A. Mihov, and L. Sanz (2020). Foreign investment, regulatory arbitrage, and the risk of US banking organizations. *Journal of Financial and Quantitative* Analysis 55, 955–988.

Haselmann, R. F. H., S. Singla, and V. Vig (2022). Supranational supervision. LawFin Working Paper No. 50.

Holthausen, C. and T.Ronde (2002), Cooperation in International Banking Supervision: A Political Economy Approach, ECB Working Paper 315, European Central Bank.

Houston, J. F., C. Lin, P. Lin, and Y. Ma. (2010). Creditor Rights, Information Sharing, and Bank Risk Taking. *Journal of Financial Economics* 96, 485–512.

Iyer, R. and M. Puri, (2012(. Understanding Bank Runs: The Importance of Depositor-Bank Relationships and Networks. *American Economic Review* 102, 1414-45.

Iyer, R, N. Ryan and M. Puri (2016). A Tale of Two Runs: Depositor Responses to Bank Solvency Risk**,** with Rajkamal Iyer and Nick Ryan, *Journal of Finance* 71, 2687-2726.

Jones, E., Kelemen, R. D., & Meunier, S. (2016). Failing forward? The Euro crisis and the incomplete nature of European integration. *Comparative Political Studies* 49, 1010–1034.

Kalemli-Ozcan, S., Papaioannou, E. and Peydro, J. L. (2010), What Lies Beneath the Euro's Effect on Financial Integration? Currency Risk, Legal Harmonization or Trade, *Journal of International Economics* 81, 75-88.

Kara, G. I. (2016). Systemic risk, international regulation, and the limits of coordination. *Journal of International Economics* 99, 192–222.

Karolyi, G. A. and A. G. Taboada (2015). Regulatory arbitrage and cross-border bank acquisitions. *Journal of Finance* 70, 2395–2450.

Kudrna, Z. (2012). Cross-Border Resolution of Failed Banks in the European Union after he Crisis: Business as Usual. *Journal of Common Market Studies* 50, 283-99.

Kupiec, P. and C.D. Ramirez (2013). Bank Failures and the Cost of Systemic Risk: Evidence from 1900-1930. *Journal of Financial Intermediation* 22, 285-307.

Lang, M., M. Moffett, J.D. Omartian and R.Silvers (2020). Regulatory cooperation and foreign portfolio investment. *Journal of Financial Economics* 138, 138-58.

Langfield, S. and M. Pagano (2016). Bank bias in Europe: effects on systemic risk and growth. *Economic Policy* 31, 51-106.

Loranth, G., J. Zeng and A. Segura (2022), Voluntary Support and Ring-Fencing in Cross-border Banks, CEPR Discussion Paper 16893.

Monnet, J. (1978). *Memoirs* (R. Mayne, Trans.). Doubleday and Company.

Niepmann, F. and T. Schmidt-Eisenlohr (2013). Bank bailouts, international linkages, and cooperation. *American Economic Journal: Economic Policy* 5, 270–305.

Ongena, S., Popov, A., and Udell, G. (2013), When the cat is away the mice will play: Does regulation at home affect bank risk-taking abroad?, *Journal of Financial Economics* 108, 727–750.

Sapir, A. (2014), Europe's Macroprudential policy framework in light of the banking union, in Dirk Schoenmaker, (ed.): *Macroprudentialism*, VoxEU e-book.

Schoenmaker, D. (2011), The Financial Trilemma. *Economic Letters* 111, 57-59.

Silvers, R. (2021). Does regulatory cooperation help integrate equity markets? *Journal of Financial Economics* 142, 1275-1300.

Stein, J. (2009). Presidential Address: Sophisticated Investors and Market Efficiency. *Journal of Finance* 64, 1517–1548.

Teixeira, P.G. (2020). *The legal history of the European banking union*. Hart, Oxford, London.

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