

# Freeze! Financial Sanctions and Bank Responses<sup>1</sup>

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## Abstract

When the UN or another political body impose financial sanctions on a country, banks are typically required to end business relations with targeted counterparties. Based on German regulatory data for years 2002-15, we show that parent institutions of multinational banking groups reduce their positions in sanctioned countries by -38%. However, their branches and subsidiaries in countries with weak policies against financial crime increase lending by +68% after sanctions are imposed. These branches and subsidiaries receive additional intra-group credit from their parent banks. The evidence suggests that credit is rerouted to sanctioned countries through bank branches and subsidiaries in offshore locations.

**Keywords:** financial sanctions, law and finance, cross-border lending, international banking

**JEL-Classification:** F51; G18; G28; K3

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## 1. Introduction

Over the past century, the United Nations (UN) and other political bodies have imposed economic sanctions on more than 110 countries (Hufbauer, Schott, Elliott, and Oegg, 2007). These sanctions typically require the financial sector to cut capital supply and to freeze the financial assets of targeted entities. However, banks do not always comply with these requirements. According to a recent study by Moody's (2019), European banks were fined over USD 16bn for money laundering and sanction breaches between 2012 and 2018.<sup>2</sup>

In this paper, we try to understand the determinants of banks' business decisions in sanctioned countries. To fix ideas, we assume that banks do not automatically withdraw from sanctioned countries but optimize an economic trade-off that weighs the profits from business against sanction-related costs (Becker, 1968). Sanctions create two types of costs. First, if banks breach sanctions and engage in illegal business with blacklisted counterparties, they must bear the expected costs of litigation and reputational damage. Second, supervisors typically introduce new regulations to implement sanctions – for example, with respect to record keeping or due diligence. Such compliance requirements even make legal business with non-targeted counterparties in sanctioned countries more expensive. We posit that the (expected) size of these litigation and compliance costs determines whether a bank will forgo otherwise profitable business.<sup>3</sup>

As we do not observe expected litigation and compliance costs, we need to make one simplifying assumption to identify banks' economic trade-off for business in sanctioned

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<sup>2</sup> For example, the U.S. sentenced BNP Paribas to pay USD 8.9bn in 2015 (U.S. Department of Justice, 2015); and the Netherlands imposed a fine of EUR 775m on ING Groep in 2018 (Sterling and Meijer, 2018). In 2015, Commerzbank and Deutsche Bank paid USD 1.45bn and USD 258m, respectively, to settle charges of doing business on behalf of entities in U.S.-sanctioned countries like Iran or Russia (Freifeld and Dunsmuir, 2015; Barlyn, 2015). In 2017, Deutsche Bank was fined USD 0.63bn for laundering more than USD 10bn of Russian money, which the bank was moving through accounts in London, Cyprus, Estonia, and Latvia (Treanor, 2017). In 2018, police forces and tax inspectors raided Deutsche Bank to investigate potential money-laundering activities of a former unit of Deutsche Bank on the Virgin Islands (Storbeck, 2018). In 2019, criminal prosecutors launched an investigation into the involvement of Deutsche Bank in the EUR 200bn money-laundering scandal in an Estonian branch of Danske Bank in 2018 (Storbeck, 2019).

<sup>3</sup> We also note that sanctions typically increase uncertainty with respect to the question whether (certain) transactions are legal or not. This would increase the (perceived) legal risk even of legal business.

countries. In particular, we assume that sanction-related costs depend on the institutional environment of banks. More specifically, litigation and compliance costs should be higher for banks that face strict supervision and compliance requirements and an effective judicial system. For example, we expect that banks in Germany – a country with high institutional quality – would withdraw business from countries that have been targeted by financial sanctions. In contrast, banks in countries with weaker anti-crime policies like, for example, Panama (O’Donovan, Wagner, and Zeume, 2019) are predicted to do relatively more business in sanctioned countries.

To test this hypothesis, we analyze data from the External Position Report of the Deutsche Bundesbank for the years 2002 to 2015. This regulatory dataset comprises all German bank assets and liabilities with non-German counterparties. These external positions are aggregated by various asset characteristics such as asset class or currency of denomination.<sup>4</sup> For example, we observe, at monthly frequency, a given bank’s total outstanding loans with counterparties in Iran. Importantly, all German banks must report their external positions in foreign borrower countries separately. For example, a German bank subsidiary in Panama and its parent institution at home in Germany would report their exposures in Iran separately from each other. We also observe the group affiliations of bank branches and subsidiaries, as bank affiliates that belong to the same parent institution in Germany carry a common group identifier. For the years 2010 to 2015, our data allow us to study internal capital markets in German banking groups. For example, we would observe the intra-group loans and advances that a German parent bank sends to its affiliates in Panama.

We identify the effect of sanctions on different groups of German banks in a standard differences-in-differences setting. For example, we compare the business of German banks in Iran before and after the country is targeted by sanctions. Then we test whether these position

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<sup>4</sup> Hence, we do not observe the identities of a bank’s individual counterparties abroad. Similarly, we do not observe the names of the banks in our sample, which were anonymized for confidentiality reasons.

changes are different for German bank establishments that are located in Germany and, for example, in Panama. To address concerns that sanctions are not imposed randomly, we control for borrower country fixed effects interacted with month fixed effects. In our example for Iran, these interactions would control for any macroeconomic or political changes in the country that could jointly determine Iran's aggregate credit demand and its probability of being sanctioned (Khwaja and Mian, 2008). We also include bank-month fixed effects, which control for time variation in unobserved bank-level variables. Hence, we can address concerns that, for example, the recent financial crisis could have affected banks in Panama and in Germany differently. Finally, bank-borrower country fixed effects control for the distance and for persistent cultural and economic ties between (the location of) a bank establishment and its borrower countries.

Germany imposes financial sanctions on eleven different borrower countries in our data set.<sup>5</sup> We find that the effect of these sanctions on German credit supply varies considerably across bank locations.<sup>6</sup> German banks that are located in Germany reduce their positions in targeted countries by, on average, -38% after sanctions are imposed. However, German bank establishments located outside Germany behave very differently from their parent banks at home. On average, they do not reduce their positions in sanctioned countries – even though bank affiliates abroad and parent banks in Germany follow a close parallel trend before sanctions are imposed. Importantly, German bank affiliates abroad account for a sizable portion of total German bank assets in sanctioned countries. In some years, they hold even more assets in the eleven borrower countries that are sanctioned during our sample period than their parent banks in Germany. When we include all German banks (domestic parent banks as well as German bank affiliates abroad) in the regression sample, we find that

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<sup>5</sup> Another nine (small) sanctioned countries are missing in our data because German banks are not trading there.

<sup>6</sup> For simplicity, we often speak of credit supply by German banks as if we were only analyzing bank loans. However, for most of our analysis, we use the most comprehensive definition of foreign bank investments and consider all German bank assets with foreign counterparties. In subsample analyses, we find that results are indeed similar for loans and for other bank assets. Our findings are not driven by one particular asset class.

the average bank (irrespective of its location) reduces its positions in sanctioned countries by only -24% and not by -38%, which is the reduction by the banks located inside Germany.

The plain distinction between banks' domestic and foreign locations ignores differences between countries' willingness to enforce sanctions and to supervise bank compliance. Therefore, in a first set of extensions, we test whether German bank affiliates in host countries with strong or weak policies against financial crime respond differently to sanctions. To proxy for countries' willingness to enforce sanctions, we use membership in the Financial Action Task Force (FATF).<sup>7</sup> As an intergovernmental organization, the FATF is widely recognized to combat "money laundering, terrorism financing, and other related threats to the integrity of the international financial system."<sup>8</sup>

We find that German banks (bank affiliates) that are located in member states of the FATF decrease their business in sanctioned countries – on average by -27%. However, German bank affiliates outside the FATF increase their bank assets in targeted countries by, on average, 68% after sanctions are imposed. This increase becomes even stronger if we focus on host countries that the FATF has officially declared as non-cooperative.<sup>9</sup> German bank affiliates in these so-called high-risk or monitored jurisdictions increase positions in sanctioned countries by 126%. This result is not explained by closer cultural or linguistic ties between bank locations outside the FATF and sanctioned countries.

Overall, our findings suggest that banks consider the intensity of local supervision and prosecution of crime when they decide to lend in sanctioned countries. German banks in non-FATF countries with weak anti-crime policies even increase their positions after the imposition of sanctions, possibly picking up some of the business terminated by banks that reside in FATF member states. However, we note that the bank affiliates outside the FATF

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<sup>7</sup> Other papers, which study financial risk and not legal risk related to misconduct or money laundering, typically use data from World Bank surveys to construct measures of regulatory quality (Barth, Caprio, and Levine, 2004, 2006, 2008, 2013) or rely on the governance indicators of Kaufmann, Kraay, and Mastruzzi (2009).

<sup>8</sup> See <http://www.fatf-gafi.org/>.

<sup>9</sup> Non-cooperative jurisdictions with German bank presence as of February 2018 include Malta, Russia, Guernsey, Jersey, Mauritius, Cyprus, the Islamic Republic of Iran, Pakistan, and the Philippines.

account for only 2.6% of total German bank assets in sanctioned countries (as of December 2015). Hence, increased credit from non-FATF countries only partially offsets the reduction in lending by German banks inside the FATF. Considering all German banks (parents and affiliates inside as well as outside the FATF), bank assets still decrease by, on average, -24%.

Sanctions have a negative effect on credit supply by German banks located inside the FATF but a positive effect on credit supply by German banks outside the FATF. As discussed above, this finding indicates that banks in countries with weak supervision and financial standards benefit from a competitive advantage relative to banks in stricter jurisdictions. However, we also note that, despite their different geographic locations, all the banks in our sample are German and many of them affiliated with the same banking groups. This poses the question whether our findings also indicate bank behavior akin to regulatory arbitrage. More specifically, we ask whether large German banking groups allocate positions in sanctioned countries to their affiliates abroad to minimize (expected) litigation and compliance costs.

Testing the hypothesis of regulatory arbitrage directly is difficult due to data limitations. We observe neither the identities of individual counterparties nor any “position IDs.” For example, we cannot check directly whether a multinational bank moves a given exposure with a given counterparty from the parent institution in Germany to a subsidiary in Panama. However, we do observe intra-group loans and advances that parent banks in Germany provide to their affiliated establishments abroad. We show that an affiliate receives roughly 16% more intra-group credit from its parent in months when the affiliate increases its own positions in sanctioned countries. This effect is entirely driven by German bank affiliates in non-FATF countries – i.e., precisely by those affiliates that are located in presumably laxer jurisdictions. Other bank affiliates do not seem to receive additional funding from their parent banks. We stress that these results are robust if we control for an affiliate’s total lending growth across all (sanctioned and non-sanctioned) borrower countries. We also include fixed effects that absorb shocks to a parent’s total (group-wide) supply of intra-group credit and

shocks to unobservables in the affiliates' host countries. Overall, our analysis of internal capital markets is consistent with the hypothesis that credit is rerouted to sanctioned countries through internal capital markets of multinational banking groups.

We explore mechanisms that could help 'level the playing field' and ensure that, for example, German banks in Panama and in Germany face similar trade-offs in sanctioned countries. First, we ask what would happen if non-FATF countries increased the intensity of supervision and enforced sanctions, too. Specifically, we compare sanctions that are imposed by the entire United Nations (UN) to sanctions that are only imposed by the European Union (EU). We expect that supervision in non-FATF countries is stronger for 'UN-wide' sanctions. Consistent with this prediction, we find no significant difference in the response to 'UN-wide' sanctions by German bank affiliates inside and outside the FATF. Bank affiliates outside the FATF only lend more than affiliates inside the FATF in the case of 'EU only' sanctions.

A second mechanism could help level the playing field even if sanctions are only enforced by the EU but not by non-FATF countries. Possibly, the legal status of bank affiliates could be changed such that affiliates abroad must satisfy the same compliance requirements as their parent banks at home. To evaluate this proposition, we compare the effects of sanctions on branches versus subsidiaries. Whereas subsidiaries are legally independent and only subject to host country regulation, all European branches worldwide are subject to EU regulations. At least formally, a German branch in Panama must satisfy the same compliance requirements as its parent institution in Germany. Hence, we expect that branches reduce positions in sanctioned countries in much the same way as their parent banks at home – irrespectively of their location. Surprisingly, we do not find any evidence for this hypothesis. Subsidiaries as well as branches both supply relatively more funds to sanctioned countries if they are located outside the FATF. It seems that the quality of local supervision in affiliates' host countries is more important than the formal compliance requirements implied by the affiliates' legal status. Possibly, some information regarding compliance is only

available locally, which increases the relevance of local supervision and law enforcement relative to ‘imported’ compliance requirements.<sup>10</sup>

Our analysis addresses a fundamental problem in the design of international financial architecture: finance is a global industry dominated by large multinational institutions, but regulation is typically local and enforced by national authorities. Therefore, existing research has emphasized the need to harmonize different regulations across countries and markets. This paper shows that harmonizing rules is necessary but not sufficient. Studying cross-border lending in the context of financial sanctions, we emphasize the need to harmonize the enforcement or rules and supervision as well. We share this focus with Acharya (2003) who shows, in a theoretical model, how regulation and supervision in different countries interact.

Our paper is closely related to the literature that studies international regulatory arbitrage. For example, in models by Acharya (2003) and Dell’Ariccia and Marquez (2006), banks in countries with weak regulation and forbearing supervision benefit from a competitive advantage relative to banks in stricter jurisdictions.<sup>11</sup> Empirically, countries with lax regulation indeed attract international bank flows (Houston, Lin, and Ma, 2012), risk taking by foreign banks (Ongena, Popov, and Udell, 2013), and bank acquisitions from countries with stricter regulation (Karolyi and Taboada, 2012). Demirgüç-Kunt, Horváth, and Huizinga (2019) also compare lending choices by parent banks and their subsidiaries.<sup>12</sup> We make three contributions to this literature. First, we emphasize the need to harmonize supervision and compliance requirements in bank regulation. Second, we are, to the best of our knowledge, the first to analyze the effect of regulatory shocks on internal capital markets and intra-group credit. Third, we focus on political regulations and on legal risks in banking.

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<sup>10</sup> For example, if German law enforcement suspected German branches abroad to breach European sanctions, they would normally be unable to raid the premises of these branches themselves and search for evidence.

<sup>11</sup> In a related paper, Morrison and White (2009) predict that capital mobility implies a cherry-picking effect whereby high-quality auditing in some countries reduces the size and efficiency of banks in weaker economies.

<sup>12</sup> Other recent papers include Barth, Caprio, and Levine (2004, 2006, 2008, 2013), Beck, Demirgüç-Kunt, and Levine (2006), Laeven and Levine (2009), Beck, Levine, and Levkov (2010), Houston, Lin, and Ma (2012), Berrospide, Correa, Goldberg, and Niepmann (2016), and Delis, Iosifidi, Kokas, Xefteris, and Ongena (2018).

By contrast, most other papers in this literature have focused only on financial risks. This seems surprising since a series of recent scandals suggests that legal and other nonfinancial (i.e., operational) risks have grown in importance. For the years 2011 to 2016, Oliver Wyman (2018) estimate that global losses related to nonfinancial risks exceed USD 250bn.<sup>13</sup>

Our work also relates to research on the political economy of banking and the economics of crime. A closely related paper by O'Donovan, Wagner, and Zeume (2019) shows that firms use offshore vehicles in Panama for corruption, tax evasion, and shareholder expropriation.<sup>14</sup> Our own analysis shows that offshore locations outside the FATF also attract bank business in sanctioned countries. Slutzky, Villamizar-Villegas, and Williams (2019) study how banks respond to political measures against financial crime. These authors mainly focus on money laundering on the liability side of banks' balance sheets whereas we study legal risk on the asset side of banks' balance sheets (i.e., lending). Other papers about financial crime and misconduct study terrorism financing (Limodio, 2019), tax evasion (e.g., Desai, Dyck, and Zingales, 2007; Mironov, 2013; Beck, Lin, and Ma, 2014), corruption (e.g., Zeume, 2017, Giannetti, Liao, You, and Yu, 2019), and misconduct by financial advisers (e.g., Egan, Matvos, and Seru, 2019). Several papers study the effect of corporate culture and governance on illicit corporate behavior (e.g., DeBacker, Heim, and Anh Tran, 2015; Guiso, Sapienza, and Zingales, 2015; Liu, 2016).

Finally, our paper relates to previous research that examines the economic effects of sanctions on targeted countries. In empirical studies, a wide range of outcome variables are analyzed, including, for instance, international trade (Haidar, 2017), cross-border financial flows (Besedeš, Goldbach, and Nitsch, 2017, 2018) and economic growth (Neuenkirch and Neumeier, 2015). Hufbauer, Schott, Elliott (2007) and Biersteker, Eckert, Trouinho, and Hudakova (2013) study the design and effectiveness of sanctions as a policy instrument.

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<sup>13</sup> For years 2008 to 2012, McKinsey (2016) report losses of USD 200bn.

<sup>14</sup> Also see Bennedsen and Zeume (2017).

Kaempfer and Lowenberg (2007) provide an extensive review of the earlier literature on sanctions. Other papers exploit state visits by the Dalai Lama to study the relation between geopolitics and trade (Fuchs and Klann, 2013) and capital flows (Li and Ngo, 2017). To the best of our knowledge, our paper provides the first detailed microanalysis of bank network responses to sanctions.

The remainder of the paper is organized as follows. Section 2 discusses the legal and institutional background of financial sanctions in the European Union. In Section 3, we describe our data on the external positions of German banks. The heart of the paper is Section 4, which presents our empirical results, followed by an extensive robustness analysis in Section 5. Finally, Section 6 provides a brief conclusion.

## **2. Financial sanctions in the European Union**

Although sanctions can take various forms, including, for example, export restrictions, visa and travel bans, and arms embargoes, our focus is on financial measures that restrict the free movement of capital through asset freezes. An asset freeze means that (i) targeted entities cannot access existing funds and (ii) that no new resources or financial services can be provided to sanctioned entities. Consequently, the restrictions affect the supply of credit but also of other funds and financial services like brokering and international transfer payments or the sale and trade of property.

In the European Union (EU), the Council of the EU imposes, amends, and lifts sanctions as part of the Common Foreign and Security Policy (CFSP).<sup>15</sup> As part of their international commitments, the EU enforces sanctions imposed by the Security Council of the United Nations (UN). In addition, however, the EU also occasionally imposes sanctions autonomously, aiming “to bring about a change in policy or activity by the target country, entities, or individuals” (European Union, 2014). EU member states are responsible for

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<sup>15</sup> See [https://eeas.europa.eu/headquarters/headquarters-homepage/423/sanctions-policy\\_en](https://eeas.europa.eu/headquarters/headquarters-homepage/423/sanctions-policy_en).

implementing and enforcing these sanctions. A narrow mandate to coordinate national provisions against financial crime was given to the European Banking Authority (EBA) only after the money-laundering scandal in an Estonian branch of Danske Bank in 2018 (Binham and Arnold, 2019).

Although restrictive measures are typically designed as ‘smart sanctions’, with a limited number of targets inside a sanctioned country in order to minimize harm to civilians, in practice, sanctions also affect non-targeted individuals and companies in sanctioned countries, for at least two reasons. First, sanctioned entities can be of considerable relevance to the entire economy (and, hence, cause spillover effects to non-targeted entities). Second, due to increased compliance requirements, for example, related to due diligence or record keeping, sanctions increase the administrative costs of doing business with sanctioned countries. Besedeš, Goldbach, and Nitsch (2017) provide consistent evidence that financial sanctions reduce the number (and value) of cross-border financial flows between Germany and sanctioned countries by about -25 to -35%.

Financial sanctions apply within the jurisdiction of the EU, i.e., within EU territory, to EU nationals, and to companies and organizations incorporated under the law of a member state. Importantly, they apply whether or not citizens, companies, or organizations are located in the EU. Hence, they also encompass branches (but not legally independent subsidiaries) of EU companies in third countries and any business done in whole or in part within the EU (European Union, 2014).

### **3. Data**

#### **3.1. Data sources**

Our main source of data is the External Position Report compiled by the Deutsche Bundesbank. Based on mandatory reports, this database collects information on assets and liabilities vis-à-vis non-residents of the entire German banking population (roughly 2,000

banks), i.e. German banks located in Germany, their subsidiaries and branches abroad, as well as the subsidiaries of foreign banks operating in Germany.<sup>16</sup> Importantly, the external positions of subsidiaries and branches are not attributed to their German parents but recorded separately.<sup>17</sup> Hence, the data set provides a comprehensive picture of the external assets and liabilities of German banks, their geographic distribution across different host countries of branches and subsidiaries, and the network relationships between banks of the same group.<sup>18</sup> Fiorentino, Koch, and Rudek (2010) and Krueger, Munzert, and Stahl (2017) provide a detailed description of this data set. Micro-level data on individual banks are confidential and available to external researchers only on the premises of the central bank. For confidentiality reasons, the Deutsche Bundesbank anonymizes bank names and randomly deletes ten percent of the positions.<sup>19</sup>

The External Position Report contains all assets and liabilities with foreign counterparties as well as domestically held assets and liabilities denominated in foreign currency on a monthly basis since March 2002.<sup>20</sup> One observation in the data set is a bank-country-month triplet  $(b,c,t)$  in which  $c$  is one given destination country of bank  $b$  in month  $t$ .<sup>21</sup> Consequently, individual positions of bank  $b$  with counterparties in country  $c$  are aggregated and counterparty identities are not observed. Yet, this aggregation takes place within a number of categories, described in more detail below, thereby ensuring high granularity of information:

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<sup>16</sup> Banks located in Germany are not separated by country of ownership.

<sup>17</sup> Each individual subsidiary files its own report whereas several branches of one particular group located in the same country submit a joint report.

<sup>18</sup> We are not aware of other data sources of similar granularity or sample coverage as the German External Position Report. For example, the confidential FFIEC 009a database in the U.S. seems to report only a sub-sample of foreign bank claims (see Temesvary, 2014).

<sup>19</sup> The External Position Report is used by the banking supervisors, the balance of payments analysis division, and the monetary analysis division of the Deutsche Bundesbank. Further recipients of (aggregated) data are the European Central Bank (ECB) and the Bank for International Settlements (BIS).

<sup>20</sup> Positions in 2002 are only recorded for institutions with external positions above Euro 10m. Yet, with this threshold level, the database still covers more than 90% of total volume. Since January 2003, literally all positions have to be reported.

<sup>21</sup> Destination countries include all sovereign countries as well as several offshore destinations that must be reported explicitly.

1. Positions are aggregated separately for the following different types of counterparties: banks (affiliated and non-affiliated with the reporting bank  $b$ ), insurance companies, other financial intermediaries, non-financial corporations, households, non-profit institutions, central government and other general government.
2. Positions are broken down by different asset and liability classes. In particular, the data set differentiates between non-tradeable (e.g., loans, advances and irrevocable credit commitments) and tradeable positions (e.g., shares, money market papers or funds, other debt securities).
3. External positions are reported separately in their currency of denomination (available only for the major currencies Euro, U.S. dollar, Japanese yen, Swiss franc, and pound sterling). Additionally, the data source reports all positions after converting them into Euro at a reference rate chosen on the reporting date.
4. Depending on the asset/liability class, positions are categorized by original maturity (for example, repayable on demand, maturity up to a year, between one and two years, etc.).

We complement the external assets and liabilities data with public information on financial sanctions, which have been imposed by the European Union between 2002 and 2015. The information is mainly obtained from the service center Financial Sanctions of the Deutsche Bundesbank, which is responsible for the enforcement of financial sanctions under EU regulations in Germany.<sup>22</sup> Table 1 lists the eleven episodes in our sample.

### **3.2. Summary statistics**

Panel A of Table 2 provides summary statistics for 2,390,051 bank-counterparty country-month triplets  $(b,c,t)$  between March 2002 and December 2015. Branches and subsidiaries of German banks abroad account for about one half of these bank-country relations. Moreover, reviewing the location of foreign affiliates in more detail, 18% (8%) of

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<sup>22</sup> See [https://www.bundesbank.de/Navigation/EN/Service/Financial\\_sanctions/financial\\_sanctions.html](https://www.bundesbank.de/Navigation/EN/Service/Financial_sanctions/financial_sanctions.html).

all bank-country relations are covered by branches and subsidiaries located outside the EU (respectively, outside the FATF). German bank affiliates that are located outside Germany must also report their positions with non-German counterparties in their own host countries. For example, a German subsidiary in France would report its positions with French entities. Panel A of Table 2 shows that such bank-country relations where bank and counterparty are located in the same country account for only 2% of the observations. Business relations with sanctioned countries are relatively rare. Only 2% of the observations reflect business with counterparties in countries sanctioned by the UN. Sanctions imposed by the EU alone affect another 1% of the observations.

The average bank-country-month triplet  $(b,c,t)$  has external assets of Euro 231,440,790 (aggregated across all counterparties, currencies of denomination, and asset classes). Among the different counterparties, positions with banks, including intra-group positions between bank  $b$  and its affiliated branches and subsidiaries in country  $c$ , are the most relevant positions and equal, on average, Euro 96,146,070.<sup>23</sup> However, positions with foreign non-financial corporations, households, and non-profit institutions are also significant and equal, on average, Euro 61,873,030. The largest asset class are loans supplied to foreign counterparties which, on average, equal Euro 170,510,240, whereas all other external bank assets are on average Euro 60,930,550. Among the different host countries, external positions of banks in Germany are the largest and equal, on average, Euro 234,620,100. The average position held by German affiliates outside Germany is slightly smaller and equals Euro 228,125,200. All distributions shown in Panel A exhibit large sample variation and long right tails.<sup>24</sup> To reduce the influence of extreme realizations, we calculate the natural logarithm of total external bank assets  $Assets_{b,c,t}$  (plus 1 Euro), which reduces the skewness from 44.86 to 0.13.

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<sup>23</sup> It is not possible to separate the external positions with non-affiliated banks from the external positions with affiliated branches and subsidiaries as reporting banks do not disclose the identities of individual counterparties. We only observe the intra-group advances and loans for observations after 2009. We discuss this limitation in detail in Section 5.2 and show that our results are robust if we exclude positions with all financial counterparties.

<sup>24</sup> We are not allowed to report individual data points like minima and maxima for confidentiality reasons.

Panel B of Table 2 presents separate summary statistics for positions in countries that are never sanctioned (columns 1 to 3) and in countries that were sanctioned in at least one month between 2002 and 2015 (columns 4 to 6). The distribution of bank locations across host countries inside and outside the EU and/or the FATF is very similar in both groups. Unsurprisingly, external positions tend to be much larger in countries that are never sanctioned, irrespective of counterparty category, asset class, or affiliates' host countries.

### **3.3. Geographic distribution and evolution of German cross-border activity**

Figure 1 illustrates the presence of German banks worldwide over time. In 2002, at the beginning of our sample period, almost 80 German banking groups had at least one subsidiary or branch abroad. This number declines to about 60 banking groups until the financial crisis and remains relatively constant thereafter. About one third of these banking groups have a bank affiliate outside the EU. About 20 German banking groups have at least one affiliate in a country that is not a member in the FATF. The right-hand graph of Figure 1 shows that German branches and subsidiaries are located in about 60 different host countries. A bit more than 35 of these bank locations are outside the EU and about 25 are outside the FATF.

Figure 2 provides time series plots of German banks' external positions. The left-hand graph of the figure shows positions with counterparties in countries that are never sanctioned between 2002 and 2015. The four lines trace the positions of banks located in Germany, the positions of their foreign affiliates, and the positions of subsets of branches and subsidiaries located outside the EU and the FATF, respectively. Several stylized facts are noteworthy. First, branches and subsidiaries abroad hold almost as many foreign assets as their parent institutions at home. Second, among the foreign affiliates, branches and subsidiaries outside the EU account for roughly one third of all external positions. Third, German bank affiliates outside the FATF own relatively small but still significant positions with foreign

counterparties of about Euro 250bn. Fourth, external positions (with the exception of assets owned by affiliates outside the FATF) grow rapidly until 2009 and decline again afterwards.

The right-hand graph of Figure 2 provides analogous plots for external positions with counterparties in the eleven countries that were sanctioned at least once between 2002 and 2015. Again, assets owned by foreign branches and subsidiaries of German banks account for an important share of total German external positions although the shares are smaller than for non-sanctioned countries. Moreover, the evolution of positions is similar to the left-hand graph except that the decline for assets owned by foreign branches and subsidiaries starts about three years earlier. While it is tempting to attribute this early decline to the sequential imposition of financial sanctions on the eleven targeted countries in the sample, such a conclusion would ignore possible confounding effects.

#### **4. Empirical analysis**

This section consists of four parts. In subsection 4.1, we show that a bank's response to the imposition of financial sanctions depends on its location and on the willingness of local authorities to fight financial crime. In subsection 4.2, we show that cultural and linguistic ties between the locations of banks and borrowers do not explain why banking groups use their affiliates in weak jurisdictions for business in sanctioned countries. In subsection 4.3, we analyze internal capital markets and show that bank affiliates abroad receive intra-group credit from their parent institutions to fund business in sanctioned countries. In subsection 4.4, we explore possible mechanisms that could help level the playing field and ensure that banks worldwide face similar trade-offs in sanctioned countries.

##### **4.1. Heterogeneous sanctions effects across bank locations**

To identify the effects of financial sanctions on the geographic composition of German bank credit, we rely on the staggered, time-variant imposition of sanctions on borrower

countries in a standard differences-in-differences setting. We briefly discuss several potential endogeneity concerns. First, sanctions are not imposed randomly but in response to political developments in the target country (war, violations of human rights or UN resolutions, etc.). These underlying political developments as well as the sanctions themselves have direct effects on macroeconomic fundamentals in the target country and can therefore shift credit demand. To control for changes in political and economic country characteristics, we estimate regressions with counterparty country fixed effects interacted with month fixed effects.

A second endogeneity concern could arise because financial sanctions depend on the diplomatic and economic ties between the coalition of imposing countries and the sanctioned country itself. These ties are potentially endogenous to banks' foreign exposures. We control for economic and diplomatic ties between a bank's host country and the countries of its counterparties through bank fixed effects interacted with counterparty country fixed effects, which also absorb variation due to geographic distance or cultural and linguistic differences. Finally, it is useful to note that the decision to impose sanctions is made at the supra-national level (e.g., U.N. or E.U.) and is, therefore reasonably beyond the control of the individual German bank branch or subsidiary.

We begin our analysis by estimating the following parsimonious regression model to identify the effect of financial sanctions on German bank positions in foreign countries:

$$(1) \quad \text{Log } Assets_{b,c,t} = \beta_S \text{Sanction}_{c,t} + \alpha_{b,c} + \alpha_t + \varepsilon_{b,c,t}$$

As dependent variable we use the most comprehensive definition of foreign investments by banks, comprising all external assets  $Assets_{b,c,t}$  of bank  $b$  with counterparties in country  $c$  in month  $t$ . Later, in Section 5.1, we distinguish between loans and other positions to study the potentially heterogeneous sanction effects on different forms of bank investments. The main regressor in equation (1) is the indicator variable  $\text{Sanction}_{c,t}$  which equals one if financial

sanctions are in place for counterparty country  $c$  in month  $t$  (and zero otherwise).<sup>25</sup> In this first specification, we only include time fixed effects ( $\alpha_t$ ) and counterparty country-bank fixed effects ( $\alpha_{b,c}$ ), which control for time-invariant bank and country characteristics as well as for the geographic distance and diplomatic and economic ties between country pairs. The coefficient of interest is  $\beta_S$  which captures the effect of financial sanctions on  $\text{Log Assets}_{b,c,t}$ .

Column 1 in Panel A of Table 3 reports the coefficient estimate  $\widehat{\beta}_S$  if the sample is restricted to banks that are located inside Germany. As the dependent variable is log-transformed and  $\text{Sanction}_{c,t}$  is dichotomous, the highly significant coefficient of -0.480 indicates that German bank  $\text{Assets}_{b,c,t}$  are 38% ( $=\exp(-0.480)-1$ ) lower after the imposition of sanctions. This result remains largely unchanged when we augment the specification with bank-time fixed effects ( $\alpha_{b,t}$ ) to control for time variation in the average size of bank  $b$ 's external positions (Panel A, column 2).<sup>26</sup> The evidence suggests that a sizeable part of bank business becomes unattractive after the imposition of sanctions. Possibly, banks located in Germany judge that many exposures in sanctioned countries pose too high legal risks or would need to comply with too expensive requirements for due diligence and record keeping.

In column 3 of Panel A, we extend the regression sample to German branches and subsidiaries that are located outside Germany. The coefficient  $\widehat{\beta}_S$  moves closer to zero and remains only weakly significant. Taken literally, the point estimate of -0.275 implies that the external positions of all German banks, irrespective of their location, decrease, on average, by about -24% after the imposition of financial sanctions. The weaker effect in the full regression sample suggests that position changes in response to sanctions depend on the geographic location of German banks and their affiliates.

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<sup>25</sup> Sanctions are imposed instantaneously. We code sanctions imposed after the middle of a given month as being enforced from the beginning of the next month onwards (see Besedeš, Goldbach, and Nitsch, 2017, 2018).

<sup>26</sup> When we control for bank-time fixed effects, coefficient  $\widehat{\beta}_S$  of  $\text{Sanction}_{c,t}$  is only identified for banks that do business in sanctioned as well as non-sanctioned countries. This approach loses 348 of 1,218,059 observations.

To identify the change in the geographic composition of bank positions with respect to the country of residence, we add the interaction term  $Sanction_{c,t} * Abroad_b$ :

$$(2) \quad \text{Log } Assets_{b,c,t} = \beta_S Sanction_{c,t} + \beta_{SA} Sanction_{c,t} * Abroad_b + \alpha_{b,c} + \alpha_t + \varepsilon_{b,c,t}$$

where  $Abroad_b$  is an indicator variable that takes the value of one if bank  $b$  is located outside Germany (and zero otherwise). The differences-in-differences estimate  $\widehat{\beta}_{SA}$  of this specification is reported in column 1 of Panel B in Table 3. Its positive and significant value means that the foreign affiliates of German banks adjust their positions considerably less following the imposition of sanctions than banks that are domiciled in Germany. Again, this result remains qualitatively unchanged when we include bank-time fixed effects in column 2 of Panel B. To measure the effect of sanctions on the external positions of branches and subsidiaries that are located abroad, we compute the sum of the coefficient estimates  $\widehat{\beta}_S$  and  $\widehat{\beta}_{SA}$ . In column 2 of Panel B, this sum equals only 0.062 and is statistically indistinguishable from zero. Whereas banks located in Germany reduce their positions by -38% ( $=\exp(-0.470)-1$ ), financial sanctions have no (statistically significant) effect on credit supply by German affiliates located abroad.

Figure 3 illustrates the heterogeneous effects of sanctions on the external positions of banks domiciled inside and outside Germany. The vertical axis shows differences-in-differences estimates  $\widehat{\beta}_{SA,t}$  conditional on bank-counterparty country and bank-time fixed effects. They are measured at different time lags and leads  $t$  relative to the imposition of financial sanctions at  $t=0$ . Confidence intervals are drawn at the 95%-level. Figure 3 shows that the common trend assumption is satisfied. Differences-in-differences estimates are statistically insignificant and located near zero prior to the imposition of financial sanctions.

About four months after sanctions are imposed, the external positions of German bank establishments outside Germany increase relative to the positions of parent banks at home.

The direct economic effects of sanctions as well as the underlying political developments that lead to their imposition (such as human rights violations) can reduce the demand for credit in sanctioned countries. In turn, lower demand can explain why German bank assets decline in targeted countries. However, this demand channel is less likely to explain why only banks inside Germany (and not their affiliates abroad) reduce their positions after sanctions are imposed. Indeed, we still find a heterogeneous effect on banks inside and outside Germany if we control for political and macroeconomic fundamentals in the counterparty countries. In column 3 of Panel B in Table 3, we include counterparty country-time fixed effects ( $\alpha_{c,t}$ ), which absorb all time variation at the country-level and capture, for example, changes in aggregate credit demand (Khwaja and Mian, 2008). Comparing columns 2 and 3 of Panel B, we find that  $\widehat{\beta}_{SA}$  remains almost unchanged. Sanction effects on the geographic composition of credit seem to be driven by the banks (supply side explanation).

Columns 1 to 3 of Panel B show a clear change in the geographic composition of credit towards German bank establishments located outside Germany. However, it remains unclear whether this effect is due to a shift in credit *within* banking groups or *across* banking groups. To answer this question, we exploit the fact that we observe the group affiliations of subsidiaries and branches and include banking group-counterparty country-time fixed effects ( $\alpha_{g,c,t}$ ) in column 4. After dropping singleton observations, we still retain 1,439,900 observations. We find that the coefficient  $\widehat{\beta}_{SA}$  of the interaction increases relative to column 3 and remains statistically significant. As identification in column 4 is only driven by credit shifts within banking groups, the positive coefficient estimate suggests that the average German bank establishment abroad increases its credit in sanctioned countries relative to its own parent institution at home and not relative to the parents of other banking groups.

The plain distinction between banks located inside and outside Germany in Table 3 pools all foreign host countries regardless of their different economic and legal characteristics. Next, we check whether German bank branches and subsidiaries respond differently to financial sanctions if they are located in countries that are more or less committed to the enforcement of financial sanctions.

FATF membership seems to be a transparent way of proxying a country's commitment to enforce financial sanctions, for various reasons. First, the FATF is a large intergovernmental body, which was founded on the initiative of the G7 summit in 1989 and comprises many developed democracies. Second, its objective is to combat "money laundering, terrorist financing, and other related threats to the integrity of the international financial system."<sup>27</sup> Third, its recommendations for good practice explicitly address the implementation of financial sanctions:

*"to freeze without delay the funds or other assets of, and to ensure that no funds or other assets are made available, directly or indirectly, to or for the benefit of, any person or entity either (i) designated by, or under the authority of, the United Nations Security Council under Chapter VII of the Charter of the United Nations (...)"* (FATF, 2012, p.11)

Fourth, besides offering broad policy guidelines, the FATF also recommends precise preventive measures, which regulate, for example, customer due diligence, record keeping, transparency of counterparty information, international cooperation, business in high-risk countries, etc.<sup>28</sup>

Figure 4 shows FATF members as of October 2017. Unsurprisingly, many sanctioned countries (e.g., Egypt, Iran, etc.) are not members of the FATF (with the exception of Russia). However, many African and Eastern European countries as well as (offshore) financial centers (e.g., Cayman Islands, Isle of Man, Jersey, Liechtenstein, Malta, Monaco, etc.) are

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<sup>27</sup> See <http://www.fatf-gafi.org/>.

<sup>28</sup> For instance, "financial institutions should be prohibited from keeping anonymous accounts or accounts in obviously fictitious names." (FATF, 2012, p.12)

also absent from the list of member countries. As reported in Panel A of Table 1, about 8% of all bank-country relationships in our database are accounted for by branches and subsidiaries domiciled outside the FATF. Panel B of Table 1 shows that this share is slightly lower (7%) for the subset of bank positions in sanctioned countries. In terms of aggregated volume, affiliates of German banks outside the FATF account for 2.6% of total German bank assets in sanctioned countries (as of December 2015).

In Table 4, we analyze whether German banks (bank affiliates) respond differently to the imposition of sanctions if they are located in member countries of the FATF or in jurisdictions with allegedly weaker policies against financial crime. Again, we start with a parsimonious regression specification along the lines of equation (2) with only bank-counterparty country and time fixed effects. The positive significant coefficient of the interaction term  $Sanction_{c,t} * Outside\ FATF_b$  in column 1 indicates that branches and subsidiaries located outside the FATF respond differently to the imposition of a sanction than other banks. In fact, the sum of the two reported coefficients is significant at the 10% level and suggests that branches and subsidiaries outside the FATF *increase* their positions in sanctioned countries by 46% ( $=\exp(0.377)-1$ ) after sanctions are imposed.

In column 2, we add bank-time fixed effects to capture the variation in a bank's average supply of credit and other bank assets over time. With this extension, the three reported coefficient estimates increase in both absolute terms and statistical significance. The negative coefficient of -0.317 suggests that German banks located in FATF member countries reduce their positions by -27% after the imposition of sanctions. At the same time, branches and subsidiaries outside the FATF increase their positions. The sum of the coefficients of  $Sanction_{c,t}$  and  $Sanction_{c,t} * Outside\ FATF_b$  in column 2 equals 0.519, which corresponds to an increase by 68%.

At first sight, the positive sanctions effect on the positions of German bank affiliates outside the FATF (+68%) seems to overcompensate the negative sanction effect on the

positions of parent banks in Germany (-38% according to Table 3). However, as we already noted above, bank affiliates outside the FATF account only for a small fraction of total German bank assets in sanctioned countries (2.6% as of December 2015). Indeed, the estimated sanction effect averaged over all German parent banks and affiliates worldwide remains negative (-24% according to Table 3) – albeit significantly weaker than the strong reduction of -38% by the banks located in Germany.

In column 3 of Table 4, we include counterparty country-time fixed effects to control for country-specific time variation in political and macroeconomic fundamentals like aggregate credit demand. As the reported interaction term decreases only marginally compared to column 2, the heterogeneous sanctions effects on credit supply by banks inside and outside the FATF do not seem to be driven by changes in aggregate credit demand or other borrower country variables. In column 4, we add banking group-borrower country-time fixed effects. The interaction term decreases from 0.730 to 0.340 but remains economically and statistically significant. Hence, a significant share of credit seems to be reallocated *within banking groups* towards bank affiliates outside the FATF.

Although the variable *Outside FATF<sub>b</sub>* is a transparent proxy for the quality of supervision and anti-crime policies in different bank locations, we still point out two potential sources of measurement error. First, many countries outside the FATF are members of regional organizations with similar objectives as the FATF and, therefore could be as committed to fighting financial crime as FATF members.<sup>29</sup> Second, besides committing to FATF standards, countries must also be strategically important in terms of size and financial sector development to become FATF members. Hence, our proxy *Outside FATF<sub>b</sub>* is likely to identify several small but committed economies as well. Similarly, there could exist some larger FATF member states that were FATF-compliant in the past but are not anymore and

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<sup>29</sup> For example, whereas Argentina and Brazil are the only South American members of the FATF, most other South American countries are members of the Grupo de Acción Financiera de Latinoamérica (GAFILAT).

even subject to financial sanctions today (like Russia). We stress that this classification error would bias the coefficient estimate  $\widehat{\beta}_{SF}$  towards zero.

Nevertheless, we make additional efforts to refine our classification of countries and exploit the fact the FATF periodically audits member states as well as non-member states. Countries that do not comply with FATF standards are declared non-cooperative. In Table 5, we replace the proxy  $Outside\ FATF_b$  with the binary variable  $Non-Cooperative\ Country_b$ . This alternative proxy takes the value of one if a German bank affiliate is located in a so-called high-risk or monitored jurisdiction. Our sample comprises nine non-cooperative countries with German bank branches or subsidiaries: Cyprus, Guernsey, the Islamic Republic of Iran, Jersey, Malta, Mauritius, Pakistan, the Philippines, and Russia. Table 5 shows that the interaction effect  $Sanction_{c,t} * Non-Cooperative\ Country_b$  is positive and statistically significant. In column 2, the sum of the coefficients of  $Sanction_{c,t}$  and  $Sanction_{c,t} * Non-Cooperative\ Country_b$  equals 0.817 and has a p-value of 0.052. On average, banks located in countries declared as non-cooperative by the FATF increase positions in sanctioned countries by 126% ( $=\exp(0.817)-1$ ). The interaction term  $Sanction_{c,t} * Non-Cooperative\ Country_b$  remains large when we control for unobserved country-specific time variation in credit demand and in other macroeconomic fundamentals (column 3 and 4), but it loses its statistical significance in column (4) when identification relies only on variation within banking groups.

#### **4.2. The effect of linguistic, cultural, and geographic distance on credit supply**

German bank affiliates located outside the FATF seem to have a competitive advantage for doing business in sanctioned countries. They increase lending after the imposition of sanctions whereas German banks inside the FATF decrease their positions in targeted countries. This result suggests that the effects of sanctions on bank lending depend on the quality of local bank supervision and anti-crime policies in banks' host countries.

An alternative interpretation would be that sanctions increase uncertainty, albeit to varying degrees in FATF and non-FATF countries. For example, banks in Germany might find it more difficult to ascertain which transactions in (distant) sanctioned countries remain legal and which counterparties were blacklisted. Similarly, banks located very far from the sanctioned countries might find it harder to judge the economic impact of sanctions on the expected profitability and risk of bank business. Banks in some non-FATF countries, on the other hand, could possess local knowledge in sanctioned countries and have “people on the ground” with access to soft information that is unavailable in Germany.

We try to disentangle the role of institutional quality and supervision in banks’ host countries from the role of informational asymmetries across bank locations. We follow the international trade literature and assume that geographic proximity as well as a common language or culture can reduce informational asymmetries and facilitate trade (e.g., Melitz and Toubal, 2014). In our setting, linguistic and other cultural ties might help banks and borrowers exchange soft information pertinent to lending decisions in sanctioned countries.

In column 1 of Table 6, we compare again the effects of sanctions on the external positions of German banks located in- and outside the FATF. Additionally, we interact the dummy  $Sanction_{c,t}$  with a new control  $Same\ Official\ Language_{b,c}$ , which equals one if counterparty country  $c$  and the host country of bank  $b$  share the same official language (and zero otherwise). Consistent with the idea that a shared official language facilitates bank business in sanctioned countries, the coefficient of  $Sanction_{c,t} * Same\ Official\ Language_{b,c}$  is positive and significant. More importantly, also the interaction term  $Sanction_{c,t} * Outside\ FATF_b$  remains significant and its magnitude barely changes compared to the original specification in Table 4 (column 2). Differences in the quality of anti-crime policies in- and outside the FATF remain relevant.

A shared official language does not guarantee that people from different countries can communicate directly without need of translation. For example, Melitz and Toubal (2014)

show that the probability that two random people from South Africa and Liberia understand one another equals only 24%, despite the fact that English is an official language in both countries. To capture linguistic ties more accurately, we interact the sanctions dummy with the continuous variable *Spoken Language Overlap*<sub>b,c</sub>, defined as the probability that two random people from a given country pair speak at least one common language.<sup>30</sup> In column 2 of Table 6, the new control is statistically significant. More importantly, its inclusion does not change the coefficient estimate for the interaction *Sanction*<sub>c,t</sub> \* *Outside FATF*<sub>b</sub>.

Melitz and Toubal (2014) hypothesize that ethnic ties help create trust between counterparties from different countries, which could also facilitate the exchange of soft information. In column 3 of Table 6, the interaction *Sanction*<sub>c,t</sub> \* *Native Language Overlap*<sub>b,c</sub> allows for the possibility that ethnic ties between the host countries of banks and borrowers become more important when sanctions are imposed on one of them. The variable *Native Language Overlap*<sub>b,c</sub> represents the probability that two people, for example, from Libya and Syria speak the same native language (possibly Arabic). We find that *Sanction*<sub>c,t</sub> \* *Native Language Overlap*<sub>b,c</sub> is indeed positive and significant in column 3. However, once again, the quality of anti-crime policies, as measured by FATF membership, remains important and the coefficient estimate  $\widehat{\beta}_{SF}$  of *Sanction*<sub>c,t</sub> \* *Outside FATF*<sub>b</sub> changes very little.

Next, we consider geographic rather than linguistic or ethnic distance, motivated by existing research on relationship lending: “if a lender has to have direct contact with the small business to collect information about it, it has to have a local presence. If, in addition, much of this information is soft and difficult to communicate, the decision to offer credit has to be made very close to where the information is gathered (Petersen and Rajan, 2002, p. 2533-2534).”<sup>31</sup> In column 4, we interact *Sanction*<sub>c,t</sub> with *In Neighbor Country*<sub>b,c</sub>, which equals one if bank *b* is located in a country that shares a border with counterparty country *c*. However,

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<sup>30</sup> We thank Melitz and Toubal (2014) for sharing the data on <http://faridtoubal.com>.

<sup>31</sup> Also see, for example, Berger et al. (2003), Degryse and Ongena (2005), Buch (2005), and Beck et al. (2019).

the insignificant coefficient  $\widehat{\beta}_{NC}$  of this interaction cannot confirm that geographic proximity becomes more important after the imposition of sanctions – unlike the distinction between FATF and non-FATF countries.

Finally, we examine business between German bank affiliates and counterparties that are located in the same country. Clearly, these relationships are special as geographic, linguistic, and cultural distance and, hence, asymmetric information should be minimal if lenders and borrowers are located in the same country. Another special case arises when a bank establishment itself is located in one of the sanctioned countries, as this affiliate would not face any *local* supervision related to sanctions. To verify that our main finding is robust to these special cases, we include  $Sanction_{c,t} * In\ Counterparty\ Country_{b,c}$ , which identifies business relationships between German bank affiliates and counterparties that are both located in the same (sanctioned) country. Column 5 reports a large coefficient for this interaction. Its estimate  $\widehat{\beta}_{SF}$  suggests that sanctions lead those banks that are located in the targeted country themselves to increase their local positions by 205% ( $=\exp(\widehat{\beta}_{SF} + \widehat{\beta}_S)-1$ ). However, despite the large effect of this control, the interaction  $Sanction_{c,t} * Outside\ FATF_b$  itself remains robust.

Overall, Table 6 supports the hypothesis that banks' linguistic, cultural, or geographic distance to their counterparties becomes more important after the imposition of sanctions – possibly, because proximity helps banks reduce sanctions-induced uncertainty. Even more important for us is the fact that the coefficient of  $Sanction_{c,t} * Outside\ FATF_b$  is remarkably stable across the different specifications of Table 6. Clearly, differences in the quality of supervision and anti-crime measures in- and outside the FATF constitute a distinct channel through which sanctions affect the geographic composition of bank supply.

#### **4.3. The role of internal capital markets and intra-group credit**

The regressions with banking group-borrower country-month fixed effects suggest that business in sanctioned countries is reallocated *within banking groups* towards affiliated banks

outside the FATF.<sup>32</sup> This raises the question whether multinational banks arbitrage differences in countries' willingness or ability to enforce sanctions. Ideally, we would like to check whether a banking group moves a given exposure with a given counterparty in a sanctioned country, for example, from the parent institution in Germany to an affiliate in Panama. Unfortunately, our data set contains neither counterparty identities nor position IDs. However, we do observe internal capital markets. Hence, we can test whether parent banks  $b$  in Germany provide more intra-group loans and advances to their affiliates in country  $c$  if these affiliates in country  $c$  increase lending to sanctioned destinations:

$$(3) \quad \text{Log Growth Intra-Group Credit}_{b,c,t} = \beta_A \text{Log Growth Affiliates' Sanctioned Credit}_{b,c,t} \\ + \alpha_{b,c} + \alpha_t + \varepsilon_{b,c,t}$$

The dependent variable is the one-month change of the natural logarithm of intra-group loans and advances that parent bank  $b$  in Germany extends to its affiliated branches and subsidiaries in country  $c$  in month  $t$ . The independent variable is the one-month log change of credit to counterparties in (any) sanctioned countries by the branches and subsidiaries of bank  $b$  in country  $c$ . We estimate this regression only for the period from 2010 to 2015 because we do not observe intra-group credit in earlier years.

Column 1 of Table 7 shows that the coefficient estimate  $\widehat{\beta}_A$  is statistically significant and positive. Affiliates' credit growth in sanctioned countries correlates positively with more intra-group funding from the affiliates' parent banks in Germany. As we control for bank-country fixed effects ( $\alpha_{b,c}$ ), this finding is not driven by persistent differences in parent-affiliate relations. One could be concerned that affiliates' credit growth in sanctioned countries is systematically stronger in months when intra-group funding from the parent is more readily available. To address this concern, we include bank-month fixed effects ( $\alpha_{b,t}$ ),

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<sup>32</sup> Identification in columns 4 of Tables 3 to 5 relies only on variation *within* banking groups.

which absorb any shocks to the total (i.e., group-wide) supply of intra-group credit by bank  $b$  (column 2). Another potential issue is that affiliates' business growth in sanctioned countries is correlated with unobserved variation in local economic conditions in the affiliates' host countries  $c$ . In column 3, country-month fixed effects ( $\alpha_{c,t}$ ) address this concern because they control for any shocks to unobservables in affiliates' host countries. Finally, we also address concerns that affiliates could be expanding their business in sanctioned countries precisely in times when they are also lending more in other (non-sanctioned) countries. To address this concern, we control for the log change of affiliates' total external positions in column 4.<sup>33</sup> Indeed, the coefficient  $\widehat{\beta}_{AT}$  of this control variable is significant and confirms that affiliates with generally high credit growth receive more intra-group credit. More importantly, however, the coefficient of interest  $\widehat{\beta}_A$  remains almost unchanged and statistically significant.

In column 5, we replace the continuous regressor with a binary variable that is equal to one if *Affiliates' Sanctioned Credit Growth* $_{b,c,t}$  is strictly positive and zero otherwise. The coefficient estimate  $\widehat{\beta}_D$  of this dummy equals 0.044 and is statistically significant. Affiliates receive roughly 4 to 5% more intra-group credit from their parent institutions in months when the affiliates increase their positions in sanctioned countries. Again, we control for affiliates' total credit growth and for the full set of fixed effects.<sup>34</sup> Affiliates seem to use the additional intra-group credit to fund new business in sanctioned countries.

In the previous subsection, we showed that the willingness of a country to enforce policies against financial crime determines how banks in this country respond to financial sanctions. In particular, German bank affiliates in non-FATF countries increase lending after the imposition of sanctions. Now we explore whether these same affiliates outside the FATF

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<sup>33</sup> The control *Log Growth Affiliates' Total Credit* $_{b,c,t}$  is not absorbed by country-month fixed effects ( $\alpha_{c,t}$ ). It varies along three dimensions ( $b,c,t$ ) because several parent banks  $b$  can have affiliates in country  $c$ .

<sup>34</sup> When we estimate coefficient  $\widehat{\beta}_D$  in a more parsimonious specification with fewer controls (see column 1), the point estimate slightly increases to 0.046 and becomes statistically significant at the 5% level.

are also the ones that strongly rely on additional credit from their parent banks. To this end, we add an additional interaction term to the regression specification in column 5 of Table 7:

$$(4) \quad \begin{aligned} \text{Log Growth Intra-Group Credit}_{b,c,t} = & \beta_D \text{Dum}(\text{Affiliates' Sanctioned Credit Growth}_{b,c,t} > 0) \\ & + \beta_{DF} \text{Dum}(\text{Affiliates' Sanctioned Credit Growth}_{b,c,t} > 0) * \text{Outside FATF}_c \\ & + \beta_{AT} \text{Log Growth Affiliates' Total Credit}_{b,c,t} + \alpha_{b,c} + \alpha_{b,t} + \alpha_{c,t} + \varepsilon_{b,c,t} \end{aligned}$$

In equation (4), the variable *Outside FATF<sub>c</sub>* is a binary variable, which equals one if the host country *c* of bank *b*'s affiliates is not a member of the FATF. The coefficient  $\beta_{DF}$  of the interaction term shows whether bank affiliates outside the FATF rely more or less on intra-group credit to fund new business in sanctioned countries.<sup>35</sup>

Column 6 of Table 7 shows that the interaction term is indeed positive and significant. Bank branches and subsidiaries in non-FATF countries receive roughly 16% ( $= \widehat{\beta}_D + \widehat{\beta}_{DF}$ ) more intra-group credit in months when they increase their positions in sanctioned countries. By contrast, the point estimate  $\widehat{\beta}_D$ , which measures the effect on affiliates inside the FATF, is now insignificant and roughly three times smaller than in column 5. We conclude that mainly bank affiliates outside the FATF receive additional intra-group credit from their parent when they increase lending in sanctioned countries. In other words, our result on internal capital markets is driven precisely by those branches and subsidiaries that are located in jurisdictions with lax financial standards and that were shown to increase lending in sanctioned countries the most. This result is also robust if we restrict the regression sample to these affiliates in non-FATF countries and drop all other parent-affiliate observations. In column 7, the coefficient estimate  $\widehat{\beta}_D$  remains significant and implies again that bank affiliates in non-FATF

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<sup>35</sup> Results are qualitatively the same if we estimate equation (4) with the continuous variable *Log Growth Affiliates' Sanctioned Credit<sub>b,c,t</sub>* and not with  $\text{Dum}(\text{Affiliates' Sanctioned Credit Growth}_{b,c,t} > 0)$ .

countries receive roughly 16-17% more intra-group credit from their parent when they grow their business in sanctioned countries.

Overall, the evidence is consistent with the hypothesis that credit is rerouted to sanctioned countries via affiliated banks in offshore locations outside the FATF. However, this result on intra-group credit is only based on the second half of the sample period.

#### **4.4. Harmonizing compliance requirements**

Finally, we explore two simple mechanisms that could potentially level the playing field and ensure that banks inside and outside the FATF face similar economic trade-offs in sanctioned countries. In subsection 4.4.1, we analyze whether the effects of financial sanctions on lending become more homogeneous across bank locations when a larger coalition of countries enforces financial sanctions. In subsection 4.4.2, we evaluate whether a change in the legal status of bank affiliates (branches vs. subsidiaries) can align sanction responses of bank affiliates abroad with their parent institutions in Germany.

##### **4.4.1. EU versus UN sanctions**

Following Besedeš, Goldbach, and Nitsch (2017), we examine how the effect of sanctions on credit supply depends on the size of the sanctioning coalition. More specifically, we compare sanctions that are imposed by the entire UN to sanctions that are only imposed by the EU. We hypothesize that even non-FATF countries will enforce and supervise compliance more strictly if sanctions are imposed by the entire UN. German bank affiliates inside and outside the FATF should compete on a more equal footing in the case of UN-wide sanctions. By contrast, when sanctions are only imposed by the EU, German bank affiliates located outside the EU and, in particular, outside the FATF could still find it attractive to supply credit and other bank funds to targeted countries.

In Table 8, we define two indicator variables,  $EU\ Sanction_{c,t}$  and  $UN\ Sanction_{c,t}$ , which equal one if financial sanctions are imposed on counterparty country  $c$  in month  $t$  only by the EU or by the entire UN, respectively. Further, we interact both variables with the indicators  $Outside\ EU_b$  and  $Outside\ FATF_b$ , which equal one if a German bank affiliate  $b$  is located outside the EU or the FATF. As in previous sections, we start with a parsimonious model with only bank-counterparty country and time fixed effects. In columns 5 and 6, we sequentially add bank-time and counterparty country-time fixed effects.

The regression estimates in Table 8 confirm that bank locations matter more in the case of EU sanctions than in the case of UN sanctions. The interaction terms  $EU\ Sanction_{c,t} * Outside\ EU_b$  and  $EU\ Sanction_{c,t} * Outside\ FATF_b$  are positive and in most cases statistically significant. German bank affiliates take relatively larger positions in countries targeted by ‘EU only’ sanctions if they are located outside the EU and, in particular, outside the FATF. In column 5, the sum of the coefficients of  $EU\ Sanction_{c,t}$  and  $EU\ Sanction_{c,t} * Outside\ FATF_b$  ( $\widehat{\beta}_E + \widehat{\beta}_{EF} = 0.470$ ) corresponds to an increase of positions in EU-sanctioned countries by 60%. Hence, EU sanctions trigger a strong *increase* in bank supply by German affiliates located outside the FATF. In column 6, the interaction term  $EU\ Sanction_{c,t} * Outside\ FATF_b$  remains almost unchanged when we add counterparty country-month fixed effects to control, for example, for unobserved changes in aggregate credit demand.

The response to UN-wide sanctions seems to be more homogeneous across German bank affiliates located inside and outside the EU or the FATF. The interaction terms are either statistically insignificant (i.e. for  $UN\ Sanction_{c,t} * Outside\ FATF_b$ ) or even negative (i.e. for  $UN\ Sanction_{c,t} * Outside\ EU_b$ ). If anything, German bank affiliates outside the EU seem to *reduce* positions more strongly than affiliates inside the EU when the entire UN imposes sanctions (columns 5 and 6).

#### **4.4.2. Legal status of bank affiliates**

As pointed out in Section 2, all European citizens and companies must comply with European regulations whether or not they are located in the EU. Hence, financial sanctions apply to all branches of German banks worldwide but not to subsidiaries that are incorporated under foreign law outside the EU. As branches must satisfy the same formal compliance requirements as their parent institutions in Germany, we expect them to reduce their positions in sanctioned countries to a similar extent – irrespectively of their location. Therefore, our findings in previous sections should only be driven by German bank subsidiaries and their locations inside or outside the FATF.

Table 9 tabulates the results from our baseline regressions when the sample is restricted to subsidiaries (columns 1 and 2) or to branches (columns 3 and 4). Surprisingly, German bank branches abroad do not behave like their parent banks in Germany. Instead, they respond to sanctions in much the same way as German bank subsidiaries abroad. The interaction terms are all positive and statistically significant for subsidiaries as well as for branches. Regardless of their legal status, all bank affiliates supply relatively more funds to counterparties in sanctioned countries when they are located outside Germany and, in particular, outside the FATF (or inside the sanctioned countries themselves).

The quality of local supervision and law enforcement (proxied by FATF membership) appears more important than formal compliance requirements implied by the affiliates' legal status. A possible explanation for this result could be the existence of informational asymmetries between countries. For example, some information regarding bank compliance with sanctions might only be available locally in the host countries of German bank affiliates. This would increase the relevance of local supervision and anti-crime measures relative to compliance requirements that were 'imported' from the EU.

Our findings have broader implications for the design of international financial regulation. They suggest that harmonizing rules and compliance requirements across

countries is not enough. To ensure that banks worldwide compete at eye level, regulators also need to harmonize local efforts to supervise and enforce compliance with a given set of rules.

## **5. Robustness**

In this section, we exploit the high granularity of our data set in further detail to show that our results remain qualitatively unchanged when we restrict the regression sample to (i) loans versus other bank investments, (ii) positions with counterparties that are banks versus non-financial companies, and (iii) positions denominated in Euro.

### **5.1. Loans versus other bank assets**

In our analysis in Section 4, we consider all external assets  $Assets_{b,c,t}$  of bank  $b$  in counterparty country  $c$  in month  $t$ . Our intent was to use a dependent variable that encompasses all funds that German banks supply to counterparties in sanctioned countries. In Table 10, we show that our baseline results remain unchanged when we consider only bank loans (columns 1 and 2) or, alternatively, only non-loan bank assets with foreign counterparties (columns 3 and 4). In either case, we find that German banks tend to reduce external positions after the imposition of financial sanctions if they are domiciled in Germany or in another FATF member country. By contrast, their foreign affiliates supply more funds to counterparties in sanctioned countries if they are located outside the FATF and/or inside the target countries of sanctions.

### **5.2. Non-financial versus financial counterparties**

When a bank in Germany reports its external assets, the bank does not distinguish between positions with its own branches and subsidiaries abroad and positions with non-affiliated counterparties. We only observe intra-group positions separately for the period from 2010 to 2015 (see Section 4.3). For earlier years, intra-group positions cannot be

distinguished from other cross-border positions. Figure 5 provides a schematic illustration of this limitation. In the example, non-affiliated banks in a foreign country receive 25 from the parent of a banking group in Germany plus 25 from the parent's subsidiary in the country – for a total of 50 from the group. Yet, our data set would report the 25 from the affiliate as well as the 50 that the parent is lending to all financial counterparties (affiliated and non-affiliated banks) in the country, thereby leading to a double-counting of 25.

A correction for such intra-group positions is not possible, except in the case of intra-group loans and advances after 2009. Consequently, it is not advisable to compute group-wide or even country-wide positions with financial counterparties because aggregation at the group- or country-level would cause double-counting of intra-group positions. It should be noted that our analysis in Section 4 does not suffer from this caveat because we do not aggregate positions, neither at the country nor at the group level, but make inference based on bank-level data.

Nevertheless, we make additional efforts to show that our core findings are not driven by intra-group positions. In particular, we exploit the fact that the issue of intra-group positions does not arise when we restrict the analysis to positions with non-financial counterparties. Returning to the example in Figure 5, our data set would report loans to non-banks in a foreign country of 25 from the parent plus another 25 from the subsidiary, without any further correction being necessary. In columns 1 and 2 of Table 11, we use the external positions of bank  $b$  with non-bank counterparties in country  $c$  in month  $t$  as dependent variable. As expected, our main findings from Section 4 are confirmed. Banks in Germany and other FATF countries reduce their positions with non-bank counterparties after the imposition of financial sanctions. By contrast, branches and subsidiaries of German banks outside FATF countries and/or inside the sanctioned countries themselves supply more assets to non-bank counterparties. The regression coefficients are reasonably close to those reported in Tables 3 and 4.

Columns 3 and 4 of Table 11 present results for positions with foreign banks (affiliated and non-affiliated). None of the coefficients are statistically significant. We are therefore confident that our results in Section 4 are driven by positions with non-financials, and that intra-group positions between banks of the same group do not bias our results.

### **5.3. Euro-denominated positions**

In our data set, positions with foreign counterparties are converted into Euro at the exchanged rate observed on the reporting date. The dependent variables used in the preceding regressions are hence recorded in Euro although original positions are partly denominated in foreign currencies. This conversion could potentially bias our estimates if the reported values of positions denominated in foreign currencies fluctuate with changes in the exchange rate even in the absence of any new business transactions. To address this issue, we demonstrate in Table 12 that our baseline results remain unchanged when we restrict the analysis to positions that are denominated in Euro (and hence are not converted). Domestic banks and their affiliates in other FATF countries reduce their Euro-denominated positions in sanctioned countries. By contrast, their branches and subsidiaries outside the FATF and/or inside the sanctioned countries increase their Euro-denominated positions.

## **6. Conclusion**

Financial markets are highly integrated but regulation and supervision are typically local. To create a level playing field and curb international regulatory arbitrage, supervisors work together to harmonize regulations and financial standards across countries. These efforts include the regulation of financial risks (e.g., Basel I-III regulations) but also legal risks related to financial crime (FATF standards). Ours is one of the first papers to study legal risk.

Our analysis of financial sanctions and cross-border lending shows that harmonizing regulations is necessary but not sufficient. To ensure equal compliance with a given set of

rules, also supervision and law enforcement need to be harmonized. Our main contribution is to show that banks indeed exploit cross-country differences in supervision and law enforcement if given the chance.

We highlight two questions for future research, which we cannot answer conclusively due to data limitations. First, we are unable to identify who in a banking group decides whether group-affiliated establishments outside the FATF should lend more in sanctioned countries. For example, it is possible that each bank affiliate decides independently to trade in sanctioned countries or not. Headquarters could simply be unaware of such behavior or unable to control their affiliates – for example, due to informational asymmetries. When the CEO of Danske Bank resigned in 2018, he blamed the money laundering scandal in an Estonian branch on “a series of major deficiencies” in governance and control (Milne and Binham, 2018). However, there could also exist alternative explanations. Rerouting of credit is perhaps not the result of a governance problem. Headquarters themselves could be managing and optimizing the allocation of legal risk and compliance costs to their affiliates outside the FATF.

Second, we do not know whether banks in weak jurisdictions outside the FATF engage in illegal business with blacklisted counterparties or in legal business with non-targeted entities in sanctioned countries. Illegal business would be more attractive to banks in weak jurisdictions because expected litigation costs should be lower there. However, legal business would also be more attractive to banks in weak jurisdictions because they probably face fewer compliance requirements with regard to due diligence and record keeping. Clearly, this distinction matters from a legal viewpoint. However, economically, litigation and compliance costs both have the same effect on banks’ economic trade-off. In each case, banks in weak jurisdictions benefit from a competitive advantage relative to banks in stricter jurisdictions. Cross-country differences in litigation risk as well as in compliance costs both distort bank competition and can trigger evasion behavior.

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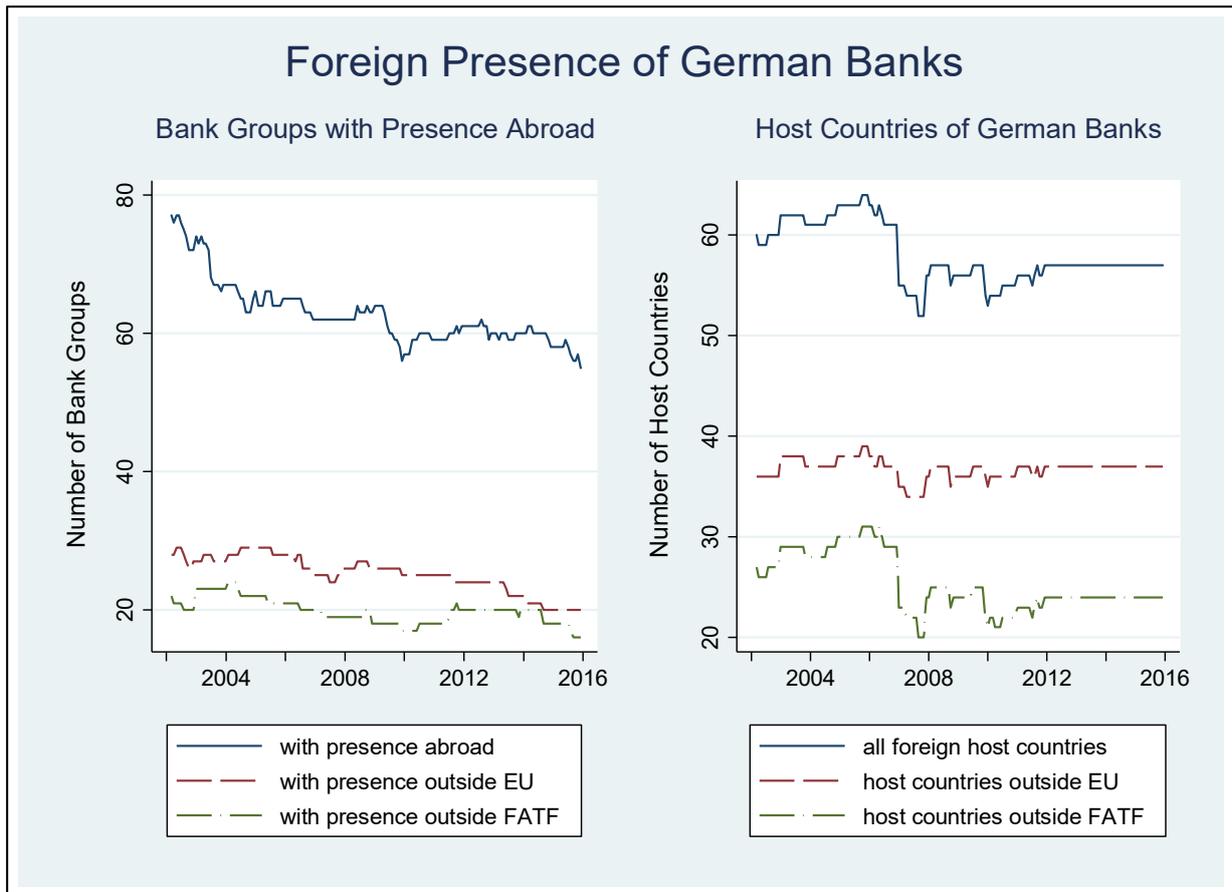
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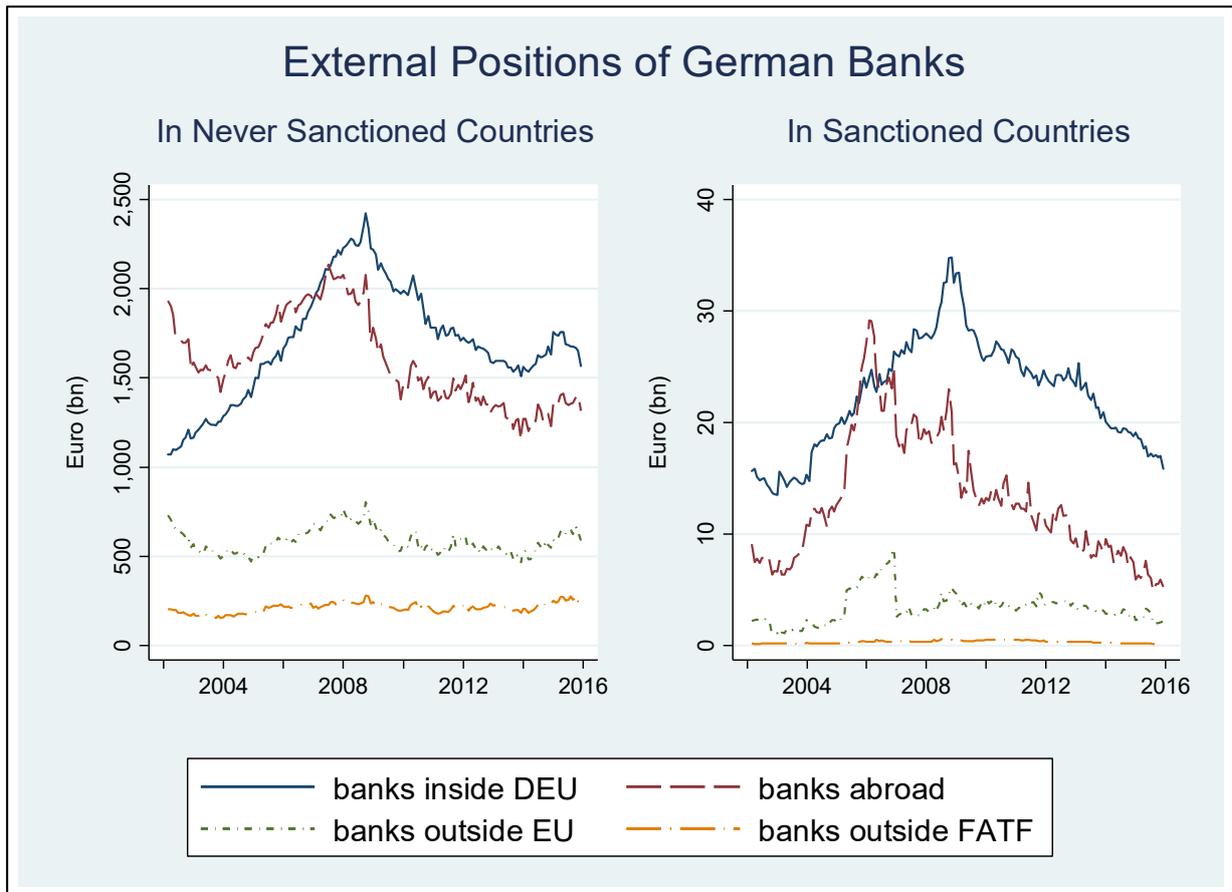
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**Figure 1. Foreign presence of German banks**

This figure shows the number of German banking groups with at least one subsidiary or branch located abroad (left-hand graph) as well as the number of countries hosting at least one German subsidiary or branch (right-hand graph).

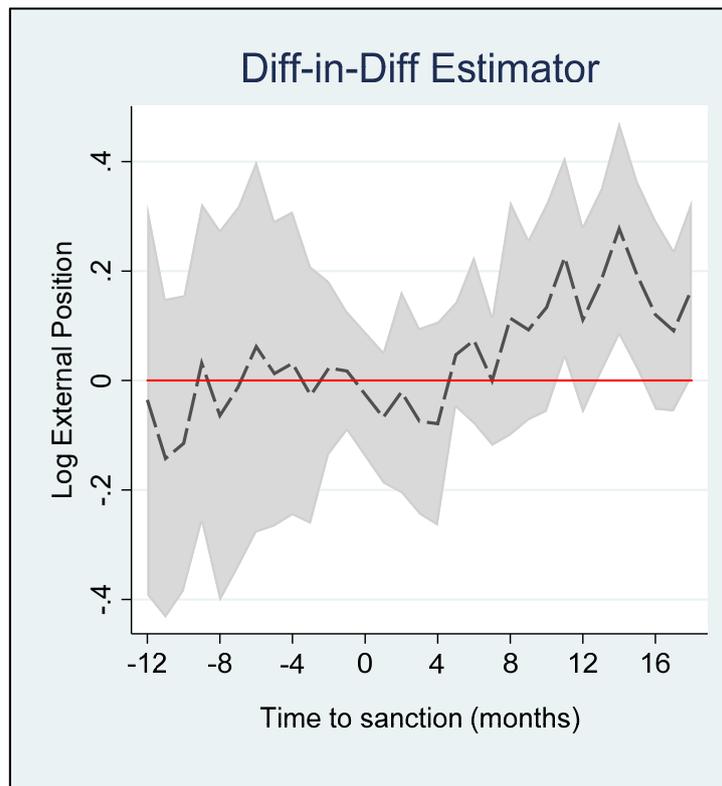
Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.



**Figure 2. External positions of German banks**

This figure shows the evolution of total external positions owned by German banks with counterparties in countries that have never been sanctioned (left-hand graph) or have been sanctioned at least once between 2002 and 2015 (right-hand graph). Positions are aggregated over all counterparties, asset classes, and currencies of denomination. They are broken down into total external assets of all banks located inside Germany (DEU), of all German branches and subsidiaries abroad, and of the subset of German banks that are located outside the EU or outside the FATF.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.



**Figure 3. Heterogeneous sanction effects on German banks' external positions**

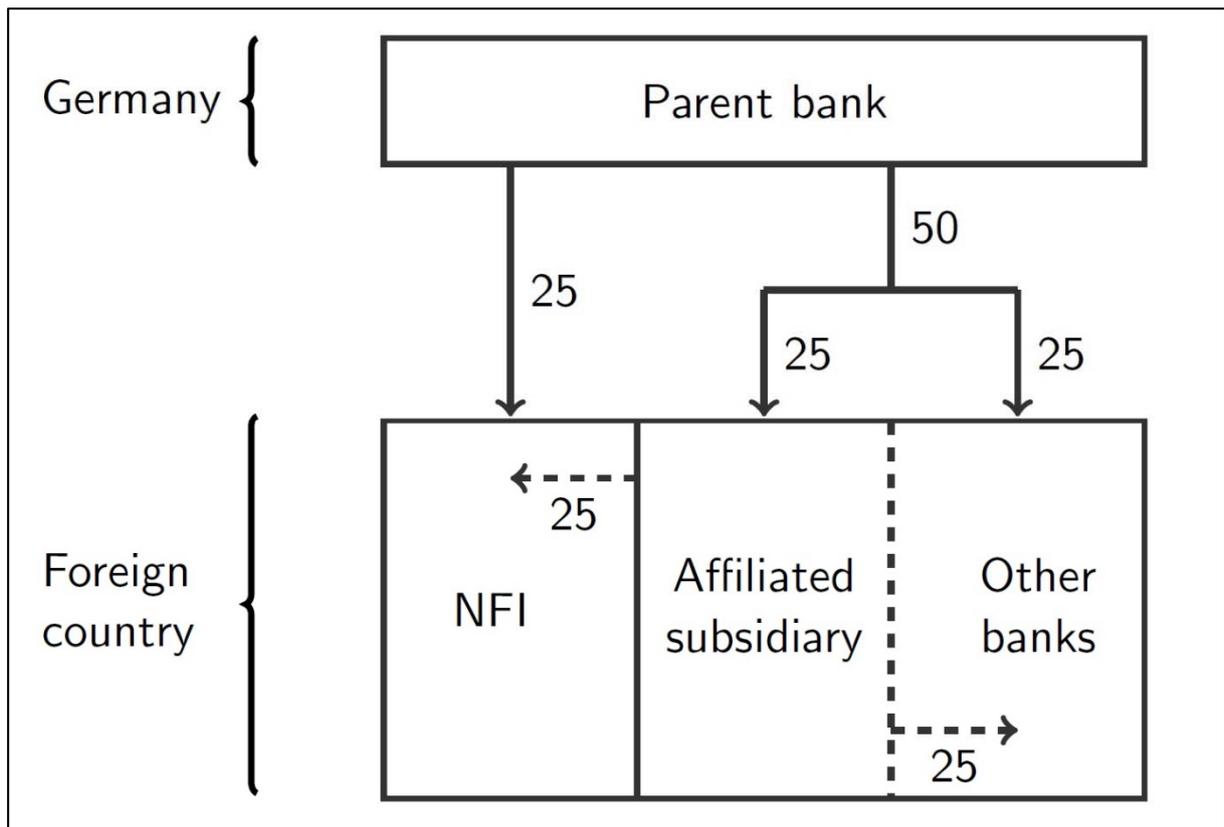
This figure shows the difference in the effect of sanctions on German banks domiciled either outside or inside Germany ( $\widehat{\beta}_{SA,t}$  in Table 3, Panel B). The horizontal axis shows event time measured in months. The sample includes all banks located in Germany as well as all their subsidiaries and branches abroad. The sample period covers the years 2002 to 2015. Confidence intervals are drawn for the 95%-level.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.



**Figure 4. Financial Action Task Force**

This figure shows the countries that are members of the Financial Action Task Force (FATF), which is an inter-governmental body committed to combatting money laundering and terrorism financing (see Section 4.2 for details), as of October 2017: Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Denmark, Finland, France, Germany, Greece, Hong Kong, Iceland, India, Ireland, Italy, Japan, Korea, Luxembourg, Malaysia, Mexico, Netherlands, New Zealand, Norway, Portugal, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.



**Figure 5. Example of intra-group positions in External Positions Report**

This figure illustrates the external positions of a group's parent bank and its subsidiary with counterparties in a particular foreign country. The parent bank in Germany supplies assets worth 25 to each of the following counterparties in the foreign country: non-financial institutes (NFI), affiliated subsidiary, and other (non-affiliated) banks. The affiliated subsidiary supplies bank assets worth 25 to the non-financial institutes as well as assets worth 25 to other banks in its host country.

**Table 1: List of financial sanctions newly imposed between 2002 and 2015**

This table lists the eleven countries in our sample (i) on which the European Union imposed new financial sanctions between 2002 and 2015 and (ii) in which at least one German bank owns a position.

Source: Deutsche Bundesbank, Service center ‘Financial Sanctions’ and own investigations.

	Announcement (1)	Additional non-financial sanctions (2)	Imposed by (3)
Liberia	Sept. 4, 2003 (lifted June 20, 2016)	export restriction on military equipment	Entire UN
Lebanon	Feb. 21, 2006	-	Entire UN
Belarus	May 18, 2006	export restriction on military equipment	Only EU
Iran	Feb. 2, 2007	export restriction on military equipment, chemicals and other resources	Entire UN
Tunisia	Feb. 4, 2011	-	Only EU
Libya	Mar. 2, 2011	export restriction on military equipment	Entire UN
Egypt	Mar. 21, 2011	-	Only EU
Syria	May 9, 2011	export restriction on military equipment, chemicals and other	Only EU
Afghanistan	Aug. 1, 2011	-	Entire UN
Russia	Mar. 5, 2014	export restriction on oil drilling machinery, chemicals and other resources	Only EU
Yemen	Dec. 18, 2014	-	Entire UN

**Table 2: Summary statistics**

This table provides summary statistics for the external positions in 105 foreign countries of 192 domestic banks in Germany plus their affiliated branches and subsidiaries abroad. One observation is a bank-counterparty country-month triplet  $(b, c, t)$ . Panel A shows variables describing the host country of bank  $b$ , whether the country of counterparty is sanctioned, and external positions disaggregated by counterparty type and asset class in the full sample. Panel B shows the same variables separately for positions in countries that are never sanctioned (columns 1 to 3) and in countries that are sanctioned in at least one month. All positions are reported in Euro 1,000. The sample is a random extraction of Deutsche Bundesbank's External Position Report and covers 90% of all external positions of all German banks worldwide between March 2002 and December 2015.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Panel A: Full sample

	Obs. (1)	Mean (2)	S.D. (3)	Skew. (4)
<u>Host country indicators of German bank:</u>				
<i>Abroad<sub>b</sub></i>	2,390,051	0.49	0.50	
<i>Outside EU<sub>b</sub></i>	2,390,051	0.18	0.39	
<i>Outside FATF<sub>b</sub></i>	2,390,051	0.08	0.26	
<i>In Counterp. Country<sub>b</sub></i>	2,390,051	0.02	0.15	
<u>Sanction indicators:</u>				
<i>Sanction<sub>c,t</sub></i>	2,390,051	0.03	0.17	
<i>EU Sanction<sub>c,t</sub></i>	2,390,051	0.01	0.11	
<i>UN Sanction<sub>c,t</sub></i>	2,390,051	0.02	0.13	
<u>External assets <math>Assets_{b,c,t}</math> by counterparty (in Euro 1,000):</u>				
All counterparty types	2,390,051	231,440.79	2,510,851.22	44.86
Banks	2,390,051	96,146.07	1,308,037.50	47.59
Other financials	2,390,051	9,056.44	301,561.90	96.76
Government	2,390,051	3,434.71	66,409.87	49.34
Non-financial firms, households, non-profit	2,390,051	61,873.03	1,181,520.67	68.74
<u>External assets <math>Assets_{b,c,t}</math> by asset class (in Euro 1,000):</u>				
Loans	2,390,051	170,510.24	2,129,962.98	45.63
Non-loan assets	2,390,051	60,930.55	567,338.02	40.74
Treasury bills	2,390,051	698.19	30,171.74	106.06
Money market funds	2,390,051	2,796.53	84,405.42	11.81
Fixed income securities	2,390,051	45,446.67	352,945.25	29.06
Shares	2,390,051	5,683.31	247,760.77	95.95
<u>External assets <math>Assets_{b,c,t}</math> by host country (in Euro 1,000):</u>				
Banks inside DEU	1,220,100	234,620.10	1,962,711	34.17
Banks abroad	1,169,951	228,125.20	2,976,845	44.78
Banks outside EU	438,153	223,229.60	2,498,737	29.29
Banks outside FATF	180,446	195,182.80	2,828,796	31.97
<i>Log (Total) <math>Assets_{b,c,t}</math></i>	2,386,762	5.92	4.85	0.13

Continued...

... Table 2 continued:

Panel B: Sanctioned versus never sanctioned counterparty countries

	<u>Never sanctioned</u>			<u>Sanctioned at least once</u>		
	Obs. (1)	Mean (2)	S.D. (3)	Obs. (4)	Mean (5)	S.D. (6)
<u>Host country indicators of German bank:</u>						
<i>Abroad<sub>b</sub></i>	2,230,944	0.49	0.50	159,107	0.43	0.49
<i>Outside EU<sub>b</sub></i>	2,230,944	0.19	0.39	159,107	0.15	0.35
<i>Outside FATF<sub>b</sub></i>	2,230,944	0.08	0.26	159,107	0.07	0.26
<i>In Counterp. Country<sub>b</sub></i>	2,230,944	0.02	0.15	159,107	0.01	0.07
<u>External assets <i>Assets<sub>b,c,t</sub></i> by counterparty (in Euro 1,000):</u>						
All counterparty types	2,230,944	245,299.52	2,597,298.05	159,107	37,118.39	268,686.54
Banks	2,230,944	101,970.32	1,353,109.47	159,107	14,480.36	148,378.98
Other financials	2,230,944	9,694.27	312,119.37	159,107	112.92	2,938.54
Government	2,230,944	3,598.37	68,430.31	159,107	1,139.94	24,179.01
Non-financial firms, households, non-profit	2,230,944	65,002.27	1,222,496.02	159,107	17,995.81	112,783.02
<u>External assets <i>Assets<sub>b,c,t</sub></i> by asset class (in Euro 1,000):</u>						
Loans	2,230,944	180,265.23	2,203,512.38	159,107	33,729.03	218,300.31
Non-loan assets, i.e.:	2,230,944	65,034.28	586,575.99	159,107	3,389.36	84,019.39
Treasury bills	2,230,944	741.11	31,186.84	159,107	96.32	6,050.41
Money market funds	2,230,944	2,984.22	87,332.48	159,107	164.75	8,266.67
Fixed income securities	2,230,944	48,553.78	364,847.09	159,107	1,879.82	52,433.59
Shares	2,230,944	6,024.74	256,267.81	159,107	895.83	35,198.47
<u>External assets <i>Assets<sub>b,c,t</sub></i> by host country (in Euro 1,000):</u>						
Banks inside DEU	1,129,281	250,184.80	2,038,252	90,819	41,081.21	231,612
Banks abroad	1,101,663	240,291.70	3,066,328	68,288	31,848.07	311,149
Banks outside EU	415,057	234,294.90	2,566,573	23,096	24,355.77	163,979
Banks outside FATF	169,218	207,811.60	2,920,695	11,228	4,837.94	19,427
<i>Log (Total) Assets<sub>b,c,t</sub></i>	2,227,854	6.08	4.85	158,908	3.69	4.29

**Table 3: The effect of sanctions on German banks at home and abroad**

This table shows coefficient estimates from panel regressions. The dependent variable  $\text{Log Assets}_{b,c,t}$  is the natural logarithm of one plus all external assets of bank  $b$  with counterparties in country  $c$  in month  $t$ . The regressor  $\text{Sanction}_{c,t}$  is a binary variable which equals one if a financial sanction is imposed on country  $c$  in month  $t$  (and zero otherwise). The regressor  $\text{Abroad}_b$  is a binary variable which equals one if bank  $b$  is located outside Germany (and zero otherwise). Specifications control for bank-counterparty country, time, bank-time, counterparty country-time, bank group-counterparty country-time fixed effects as indicated. The sample contains bank-country-month observations for years 2002 to 2015. In columns 1 and 2 of Panel A, the sample only includes banks that are located in Germany. All other specifications cover the banks in Germany as well as their subsidiaries and branches abroad. Robust standard errors (reported in parentheses) are clustered by bank host country, counterparty country and by month (in columns 1 and 2 of Panel A only by counterparty country and month). Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Panel A: Average sanction effects				
Dependent variable: $\text{Log Assets}_{b,c,t}$	Only banks in Germany		All banks	
	(1)	(2)	(3)	
$\widehat{\beta}_S : \text{Sanction}_{c,t}$	-0.480*** (0.157)	-0.470*** (0.151)	-0.275* (0.164)	
Time FE ( $\alpha_t$ )	Yes	No	No	
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	
Bank-time FE ( $\alpha_{b,t}$ )	No	Yes	Yes	
Country-time FE ( $\alpha_{c,t}$ )	No	No	No	
Bank group-country-time FE ( $\alpha_{g,c,t}$ )	No	No	No	
Obs.	1,218,059	1,217,711	2,385,938	
R <sup>2</sup>	0.839	0.858	0.840	
Panel B: Heterogeneous sanction effects				
Dependent variable: $\text{Log Assets}_{b,c,t}$	(1)	(2)	(3)	(4)
$\widehat{\beta}_S : \text{Sanction}_{c,t}$	-0.348*** (0.110)	-0.470*** (0.086)		
$\widehat{\beta}_{SA} : \text{Sanction}_{c,t} * \text{Abroad}_b$	0.370*** (0.135)	0.532*** (0.110)	0.511*** (0.169)	0.761*** (0.239)
$\widehat{\beta}_S + \widehat{\beta}_{SA}$	0.022	0.062		
<i>p-value</i>	0.917	0.753		
Time FE ( $\alpha_t$ )	Yes	No	No	No
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	Yes
Bank-time FE ( $\alpha_{b,t}$ )	No	Yes	Yes	Yes
Country-time FE ( $\alpha_{c,t}$ )	No	No	Yes	No
Bank group-country-time FE ( $\alpha_{g,c,t}$ )	No	No	No	Yes
Obs.	2,385,938	2,377,900	2,377,900	1,439,900
R <sup>2</sup>	0.817	0.840	0.844	0.878

**Table 4: The effects of sanctions and FATF membership**

This table shows coefficient estimates from panel regressions.  $\text{Log Assets}_{b,c,t}$  and  $\text{Sanction}_{c,t}$  are defined as in Table 3. The regressor  $\text{Outside FATF}_b$  is a binary variable which equals one if bank  $b$  is located in a host country that is not member of the Financial Action Task Force (and zero otherwise). Specifications control for bank-counterparty country, time, bank-time, counterparty country-time, bank group-counterparty country-time fixed effects as indicated. The sample contains bank-country-month observations for years 2002 to 2015 and covers the banks in Germany as well as their subsidiaries and branches abroad. Robust standard errors (reported in parentheses) are clustered by bank host country, counterparty country and by month. Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Dependent variable: $\text{Log Assets}_{b,c,t}$	(1)	(2)	(3)	(4)
$\widehat{\beta}_S : \text{Sanction}_{c,t}$	-0.243 (0.197)	-0.317* (0.161)		
$\widehat{\beta}_{SF} : \text{Sanction}_{c,t} * \text{Outside FATF}_b$	0.620* (0.313)	0.836** (0.372)	0.730** (0.321)	0.340** (0.171)
$\widehat{\beta}_S + \widehat{\beta}_{SF}$	0.377*	0.519**		
<i>p-value</i>	0.074	0.035		
Time FE ( $\alpha_t$ )	Yes	No	No	No
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	Yes
Bank-time FE ( $\alpha_{b,t}$ )	No	Yes	Yes	Yes
Country-time FE ( $\alpha_{c,t}$ )	No	No	Yes	No
Bank group-country-time FE ( $\alpha_{g,c,t}$ )	No	No	No	Yes
Obs.	2,385,938	2,377,900	2,377,900	1,439,900
R <sup>2</sup>	0.817	0.840	0.844	0.878

**Table 5: The effects of sanctions and non-cooperative countries**

This table shows coefficient estimates from panel regressions.  $\text{Log Assets}_{b,c,t}$  and  $\text{Sanction}_{c,t}$  are defined as in Table 3. The regressor  $\text{Non-Cooperative Country}_b$  is a binary variable which equals one if bank  $b$  is located in a host country that is declared as non-cooperative by the Financial Action Task Force (and zero otherwise). Specifications control for bank-counterparty country, time, bank-time, counterparty country-time, bank group-counterparty country-time fixed effects as indicated. The sample contains bank-country-month observations for years 2002 to 2015 and covers the banks in Germany as well as their subsidiaries and branches abroad. Robust standard errors (reported in parentheses) are clustered by bank host country, counterparty country and by month. Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Dependent variable: $\text{Log Assets}_{b,c,t}$	(1)	(2)	(3)	(4)
$\widehat{\beta}_S : \text{Sanction}_{c,t}$	-0.218 (0.199)	-0.287* (0.161)		
$\widehat{\beta}_{SN} : \text{Sanction}_{c,t} * \text{Non-Cooperative Country}_b$	0.493* (0.250)	1.104** (0.461)	1.111** (0.440)	0.708 (0.469)
$\widehat{\beta}_S + \widehat{\beta}_{SN}$	0.275	0.817*		
$p\text{-value}$	0.332	0.052		
Time FE ( $\alpha_t$ )	Yes	No	No	No
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	Yes
Bank-time FE ( $\alpha_{b,t}$ )	No	Yes	Yes	Yes
Country-time FE ( $\alpha_{c,t}$ )	No	No	Yes	No
Bank group-country-time FE ( $\alpha_{g,c,t}$ )	No	No	No	Yes
Obs.	2,385,938	2,377,900	2,377,900	1,439,900
R <sup>2</sup>	0.815	0.833	0.836	0.878

**Table 6: The effects of sanctions and the role of linguistic and geographic proximity**

This table shows coefficient estimates from panel regressions.  $\text{Log Assets}_{b,c,t}$ ,  $\text{Sanction}_{c,t}$ , and  $\text{Outside FATF}_b$  are defined as in Tables 3 and 4.  $\text{Same Official Language}_{b,c}$  is a binary variable which equals one if bank  $b$  is located in a host country that has the same official language as counterparty country  $c$ .  $\text{Spoken Language Overlap}_{b,c}$  and  $\text{Native Language Overlap}_{b,c}$  measure the probabilities that two people from bank  $b$ 's host country and from counterparty country  $c$  speak at least one common language or, respectively, share the same native tongue (Melitz and Toubal, 2014).  $\text{In Neighbor Country}_{b,c}$  and  $\text{In Counterparty Country}_{b,c}$  are binary variables which equal one if the host country of bank  $b$  and counterparty country  $c$  share a border or, respectively, if the host country of bank  $b$  coincides with the country of counterparties  $c$ . Specifications control for bank-counterparty country and bank-time fixed effects. The sample contains bank-country-month observations for years 2002 to 2015 and covers the banks in Germany as well as their subsidiaries and branches abroad. Robust standard errors (reported in parentheses) are clustered by bank host country, counterparty country and by month. Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Dependent variable: $\text{Log Assets}_{b,c,t}$	(1)	(2)	(3)	(4)	(5)
$\widehat{\beta}_S : \text{Sanction}_{c,t}$	-0.354** (0.151)	-0.462** (0.187)	-0.373** (0.175)	-0.317* (0.160)	-0.320** (0.159)
$\widehat{\beta}_{SF} : \text{Sanction}_{c,t} * \text{Outside FATF}_b$	0.839** (0.362)	0.799** (0.362)	0.826** (0.368)	0.803** (0.393)	0.826** (0.363)
$\widehat{\beta}_S + \widehat{\beta}_{SF}$	0.485**	0.337	0.453*	0.486*	0.506**
$p\text{-value}$	0.046	0.186	0.064	0.067	0.035
$\widehat{\beta}_{OL} : \text{Sanction}_{c,t} * \text{Same Official Language}_{b,c}$	0.677** (0.323)				
$\widehat{\beta}_S + \widehat{\beta}_{OL}$	0.323				
$p\text{-value}$	0.298				
$\widehat{\beta}_{SL} : \text{Sanction}_{c,t} * \text{Spoken Language Overlap}_{b,c}$		1.389*** (0.407)			
$\widehat{\beta}_{NL} : \text{Sanction}_{c,t} * \text{Native Language Overlap}_{b,c}$			4.121*** (1.299)		
$\widehat{\beta}_{NC} : \text{Sanction}_{c,t} * \text{In Neighbor Country}_{b,c}$				0.283 (0.497)	
$\widehat{\beta}_S + \widehat{\beta}_{NC}$				-0.034	
$p\text{-value}$				0.951	
$\widehat{\beta}_{SC} : \text{Sanction}_{c,t} * \text{In Counterparty Country}_{b,c}$					1.436*** (0.259)
$\widehat{\beta}_S + \widehat{\beta}_{SC}$					1.116***
$p\text{-value}$					0.000
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	Yes	Yes
Bank-time FE ( $\alpha_{b,t}$ )	Yes	Yes	Yes	Yes	Yes
Obs.	2,312,126	2,262,616	2,262,616	2,377,900	2,377,900
R <sup>2</sup>	0.840	0.835	0.835	0.840	0.840

**Table 7: The effects of sanctions on intra-group advances and loans**

This table shows coefficient estimates from panel regressions. The dependent variable  $\text{Log Growth Intra-Group Credit}_{b,c,t}$  is the one-month change in the (natural logarithm of) intra-group loans and advances that parent bank  $b$  in Germany extends to its affiliated branches and subsidiaries in country  $c$  in month  $t$ . The regressor  $\text{Log Growth Affiliates' Sanctioned Credit}_{b,c,t}$  is the one-month log change of business in sanctioned countries by the branches and subsidiaries that bank  $b$  operates in country  $c$ . In columns 4 to 7, the control variable  $\text{Log Growth Affiliates' Total Credit}_{b,c,t}$  is the log change of total external positions (in sanctioned and non-sanctioned countries) by bank  $b$ 's affiliates in country  $c$  in month  $t$ . In columns 5 to 7, the regressor  $\text{Dum}(\text{Affiliates' Sanctioned Credit Growth}_{b,c,t} > 0)$  is a binary variable which equals one if bank  $b$ 's affiliates in country  $c$  increase their positions in sanctioned countries in month  $t$  (and zero otherwise). We control for bank-counterparty country, time, bank-time and counterparty country-time fixed effects as indicated. The sample contains bank-country-month observations from 2010 to 2015. In column 7, we restrict the sample to intra-group credit provided to bank affiliates in non-FATF countries. In all other columns, all countries  $c$  are considered. Robust standard errors (reported in parentheses) are clustered by bank, month, and counterparty country. Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 06/2010 – 12/2015, own calculations.

Dependent variable: $\text{Log Growth Intra-Group Credit}_{b,c,t}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\widehat{\beta}_A$ : $\text{Log Growth Affiliates' Sanctioned Credit}_{b,c,t}$	0.039** (0.016)	0.040** (0.016)	0.039** (0.016)	0.034** (0.017)			
$\widehat{\beta}_D$ : $\text{Dum}(\text{Affiliates' Sanctioned Credit Growth}_{b,c,t} > 0)$					0.044* (0.025)	0.014 (0.030)	0.167*** (0.054)
$\widehat{\beta}_{DF}$ : $\text{Dum}(\text{Affiliates' Sanctioned Credit Growth}_{b,c,t} > 0) * \text{Outside FATF}_c$						0.146** (0.061)	
$\widehat{\beta}_{AT}$ : $\text{Log Growth Affiliates' Total Credit}_{b,c,t}$				0.399*** (0.091)	0.400*** (0.096)	0.400*** (0.096)	0.166* (0.090)
Time FE ( $\alpha_t$ )	Yes	No	No	No	No	No	No
Parent bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent bank-time FE ( $\alpha_{b,t}$ )	No	Yes	Yes	Yes	Yes	Yes	Yes
Country-time FE ( $\alpha_{c,t}$ )	No	No	Yes	Yes	Yes	Yes	Yes
Sample of affiliates	All	All	All	All	All	All	outside FATF
Sample period	2010-15	2010-15	2010-15	2010-15	2010-15	2010-15	2010-15
Obs.	471,318	471,133	471,133	471,133	471,133	471,133	237,704
R <sup>2</sup>	0.005	0.043	0.053	0.057	0.057	0.057	0.062

**Table 8: The effects of EU versus UN sanctions**

This table shows coefficient estimates from panel regressions.  $\text{Log Assets}_{b,c,t}$  is defined as in Table 3. The regressor  $EU\ Sanction_{c,t}$  is a binary variable which equals one if a financial sanction is imposed on country  $c$  in month  $t$  by the European Union alone (and zero otherwise). The regressor  $UN\ Sanction_{c,t}$  is a binary variable which equals one if a financial sanction is imposed on country  $c$  in month  $t$  by the entire United Nations (and zero otherwise). The regressor  $Outside\ EU_b$  is a binary variable which equals one if bank  $b$  is located in a host country outside the European Union (and zero otherwise). The regressor  $Outside\ FATF_b$  is a binary variable which equals one if bank  $b$  is located in a host country that is not member of the Financial Action Task Force (and zero otherwise). Specifications control for bank-counterparty country, time, bank-time and counterparty country-time fixed effects as indicated. The sample contains bank-country-month observations for years 2002 to 2015 and covers the banks in Germany as well as their subsidiaries and branches abroad. Robust standard errors (reported in parentheses) are clustered by bank host country, counterparty country and by month. Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Dep. variable: $\text{Log Assets}_{b,c,t}$	(1)	(2)	(3)	(4)	(5)	(6)
$\widehat{\beta}_E : EU\ Sanction_{c,t}$	-0.076 (0.202)	-0.148 (0.173)	-0.102 (0.219)	-0.165 (0.192)	-0.219 (0.194)	
$\widehat{\beta}_{EE} : EU\ San_{c,t} * Outside\ EU_b$		0.650** (0.248)		0.618** (0.235)	0.138 (0.283)	0.188 (0.359)
$\widehat{\beta}_E + \widehat{\beta}_{EE}$ <i>p-value</i>		0.502 0.146		0.453 0.214	-0.081 0.836	
$\widehat{\beta}_{EF} : EU\ San_{c,t} * Outside\ FATF_b$			0.530*** (0.179)	0.434*** (0.159)	0.689*** (0.205)	0.596*** (0.132)
$\widehat{\beta}_E + \widehat{\beta}_{EF}$ <i>p-value</i>			0.428*** 0.000	0.269** 0.014	0.470*** 0.000	
$\widehat{\beta}_U : UN\ Sanction_{c,t}$	-0.386* (0.218)	-0.394* (0.217)	-0.426* (0.232)	-0.416* (0.228)	-0.408* (0.226)	
$\widehat{\beta}_{UE} : UN\ San_{c,t} * Outside\ EU_b$		0.055 (0.072)		-0.078 (0.198)	-0.422* (0.219)	-0.535* (0.291)
$\widehat{\beta}_U + \widehat{\beta}_{UE}$ <i>p-value</i>		-0.339 0.207		-0.494 0.222	-0.830* 0.051	
$\widehat{\beta}_{UF} : UN\ San_{c,t} * Outside\ FATF_b$			0.742 (0.566)	0.775 (0.658)	1.177 (0.755)	1.073 (0.659)
$\widehat{\beta}_U + \widehat{\beta}_{UF}$ <i>p-value</i>			0.316 0.422	0.359 0.470	0.755 0.171	
Time FE ( $\alpha_t$ )	Yes	Yes	Yes	Yes	No	No
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	Yes	Yes	Yes
Bank-time FE ( $\alpha_{b,t}$ )	No	No	No	No	Yes	Yes
Country-time FE ( $\alpha_{c,t}$ )	No	No	No	No	No	Yes
Obs.	2,385,938	2,385,938	2,385,938	2,385,938	2,377,900	2,377,900
R <sup>2</sup>	0.817	0.817	0.817	0.817	0.840	0.844

**Table 9: The effects of sanctions on subsidiaries versus branches**

This table shows coefficient estimates from panel regressions.  $\text{Log Assets}_{b,c,t}$  and  $\text{Sanction}_{c,t}$  are defined as in Table 3. The different regressors are defined as in previous tables. Specifications control for bank-counterparty country, time, bank-time and counterparty country-time fixed effects as indicated. The sample contains bank-country-month observations for years 2002 to 2015. In columns 1 and 2 (respectively, columns 3 and 4) we exclude all branches (subsidiaries) of German banks abroad from the sample. Robust standard errors (reported in parentheses) are clustered by bank host country, counterparty country, and by month. Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Dep. variable: $\text{Log Assets}_{b,c,t}$	Only subsidiaries		Only branches	
	(1)	(2)	(3)	(4)
$\widehat{\beta}_S : \text{Sanction}_{c,t}$	-0.470*** (0.055)	-0.396*** (0.098)	-0.470*** (0.068)	-0.363** (0.149)
$\widehat{\beta}_{SA} : \text{Sanction}_{c,t} * \text{Abroad}_b$	0.491*** (0.020)		0.582* (0.312)	
$\widehat{\beta}_S + \widehat{\beta}_{SA}$	0.021		0.112	
$p\text{-value}$	0.779		0.769	
$\widehat{\beta}_{SF} : \text{Sanction}_{c,t} * \text{Outside FATF}_b$		1.133** (0.483)		0.487* (0.278)
$\widehat{\beta}_S + \widehat{\beta}_{SF}$		0.737* (0.067)		0.124 (0.656)
$p\text{-value}$		0.067		0.656
$\widehat{\beta}_{SC} : \text{Sanction}_{c,t} * \text{In Counterp. Country}_{b,c}$		1.352*** (0.134)		2.548*** (0.279)
$\widehat{\beta}_S + \widehat{\beta}_{SC}$		0.956*** (0.000)		2.185*** (0.000)
$p\text{-value}$		0.000		0.000
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	Yes
Bank-time FE ( $\alpha_{b,t}$ )	Yes	Yes	Yes	Yes
Obs.	1,780,575	1,780,575	1,815,036	1,815,036
R <sup>2</sup>	0.849	0.849	0.842	0.842

**Table 10: Loans versus other bank assets**

This table shows coefficient estimates from panel regressions. The dependent variable  $\text{Log Loans}_{b,c,t}$  in columns 1 and 2 is the natural logarithm of one plus all loans that bank  $b$  supplies to counterparties in country  $c$  in month  $t$ . The dependent variable  $\text{Log Other Assets}_{b,c,t}$  in columns 3 and 4 is the natural logarithm of one plus all non-loan assets that bank  $b$  supplies to counterparties in country  $c$  in month  $t$ . The different regressors are defined as in previous tables. Specifications control for bank-counterparty country, time, bank-time and counterparty country-time fixed effects as indicated. The sample contains bank-country-month observations for years 2002 to 2015 and covers the banks in Germany as well as their subsidiaries and branches abroad. Robust standard errors (reported in parentheses) are clustered by bank host country, counterparty country and by month. Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Dependent variable:	$\text{Log Loans}_{b,c,t}$		$\text{Log Other Assets}_{b,c,t}$	
	(1)	(2)	(3)	(4)
$\widehat{\beta}_S : \text{Sanction}_{c,t}$	-0.394*** (0.068)	-0.283** (0.137)	-0.127*** (0.033)	-0.053 (0.063)
$\widehat{\beta}_{SA} : \text{Sanction}_{c,t} * \text{Abroad}_b$		0.417*** (0.119)	0.242*** (0.023)	
$\widehat{\beta}_S + \widehat{\beta}_{SA}$		0.023	0.115**	
$p\text{-value}$		0.903	0.043	
$\widehat{\beta}_{SF} : \text{Sanction}_{c,t} * \text{Outside FATF}_b$		0.718** (0.339)		0.237** (0.105)
$\widehat{\beta}_S + \widehat{\beta}_{SF}$		0.435*		0.184**
$p\text{-value}$		0.057		0.013
$\widehat{\beta}_{SC} : \text{Sanction}_{c,t} * \text{In Counterp. Country}_{b,c}$		1.500*** (0.251)		1.018*** (0.307)
$\widehat{\beta}_S + \widehat{\beta}_{SC}$		1.217***		0.965***
$p\text{-value}$		0.000		0.002
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	Yes
Bank-time FE ( $\alpha_{b,t}$ )	Yes	Yes	Yes	Yes
Obs.	2,381,154	2,381,154	2,371,917	2,371,917
R <sup>2</sup>	0.817	0.817	0.840	0.840

**Table 11: External positions with non-bank versus bank counterparties**

This table shows coefficient estimates from panel regressions. The dependent variable  $\text{Log Assets}_{b,c,t}^{\text{non-banks}}$  in columns 1 and 2 is the natural logarithm of one plus the external positions of bank  $b$  in month  $t$  with non-banks in country  $c$  as counterparties  $t$ . The dependent variable  $\text{Log Assets}_{b,c,t}^{\text{banks}}$  in columns 3 and 4 is the natural logarithm of one plus the external positions of bank  $b$  in month  $t$  with banks in country  $c$  as counterparties. The different regressors are defined as in previous tables. Specifications control for bank-counterparty country, time, bank-time and counterparty country-time fixed effects as indicated. The sample contains bank-country-month observations for years 2002 to 2015 and covers the banks in Germany as well as their subsidiaries and branches abroad. Robust standard errors (reported in parentheses) are clustered by bank host country, counterparty country and by month. Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Dependent variable:	$\text{Log Assets}_{b,c,t}^{\text{non-banks}}$		$\text{Log Assets}_{b,c,t}^{\text{banks}}$	
	(1)	(2)	(3)	(4)
$\widehat{\beta}_S : \text{Sanction}_{c,t}$	-0.508*** (0.057)	-0.378*** (0.119)	-0.001 (0.029)	0.007 (0.092)
$\widehat{\beta}_{SA} : \text{Sanction}_{c,t} * \text{Abroad}_b$	0.464*** (0.029)		0.052 (0.182)	
$\widehat{\beta}_S + \widehat{\beta}_{SA}$ <i>p-value</i>	-0.044 0.610		0.051 0.812	
$\widehat{\beta}_{SF} : \text{Sanction}_{c,t} * \text{Outside FATF}_b$		0.693** (0.273)		0.209 (0.133)
$\widehat{\beta}_S + \widehat{\beta}_{SF}$ <i>p-value</i>		0.315** 0.044		0.216 0.169
$\widehat{\beta}_{SC} : \text{Sanction}_{c,t} * \text{In Counterp. Country}_{b,c}$		1.682*** (0.199)		-0.074 (0.370)
$\widehat{\beta}_S + \widehat{\beta}_{SC}$ <i>p-value</i>		1.304*** 0.000		-0.067 0.860
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes	Yes	Yes
Bank-time FE ( $\alpha_{b,t}$ )	Yes	Yes	Yes	Yes
Obs.	2,376,205	2,376,205	2,381,195	2,381,195
R <sup>2</sup>	0.839	0.839	0.795	0.795

**Table 12: Euro-denominated external positions**

This table shows coefficient estimates from panel regressions. The dependent variable  $\text{Log Assets}_{b,c,t}^{\text{Euro}}$  is the natural logarithm of one plus all Euro-denominated external assets of bank  $b$  with counterparties in country  $c$  in month  $t$ . The different regressors are defined as in previous tables. Specifications control for bank-counterparty country, time, bank-time and counterparty country-time fixed effects as indicated. The sample contains bank-country-month observations for years 2002 to 2015 and covers the domestic banks in Germany as well as their subsidiaries and branches abroad. Robust standard errors (reported in parentheses) are clustered by bank host country, counterparty country and by month. Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively.

Source: Research Data and Service Centre (RDSC) of the Deutsche Bundesbank, External position of banks (AUSTA), 03/2002 – 12/2015, own calculations.

Dependent variable: $\text{Log Assets}_{b,c,t}^{\text{Euro}}$	(1)	(2)
$\widehat{\beta}_S : \text{Sanction}_{c,t}$	-0.351*** (0.097)	-0.272** (0.114)
$\widehat{\beta}_{SA} : \text{Sanction}_{c,t} * \text{Abroad}_b$	0.405*** (0.065)	
$\widehat{\beta}_S + \widehat{\beta}_{SA}$ <i>p-value</i>	0.054 0.742	
$\widehat{\beta}_{SF} : \text{Sanction}_{c,t} * \text{Outside FATF}_b$		0.881*** (0.267)
$\widehat{\beta}_S + \widehat{\beta}_{SF}$ <i>p-value</i>		0.609*** 0.007
$\widehat{\beta}_{SC} : \text{Sanction}_{c,t} * \text{In Counterp. Country}_{b,c}$		1.963*** (0.440)
$\widehat{\beta}_S + \widehat{\beta}_{SC}$ <i>p-value</i>		1.691*** 0.000
Bank-country FE ( $\alpha_{b,c}$ )	Yes	Yes
Bank-time FE ( $\alpha_{b,t}$ )	Yes	Yes
Obs.	1,897,936	1,897,936
R <sup>2</sup>	0.843	0.843