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Corporate Acquisitions and Bank Relationships

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Abstract

We study the dynamics of firm-bank relationships following corporate acquisitions using a novel firm-bank dataset for 23 European countries over 2008-2014. Our data allows us to track changes in both firm ownership and bank relationships over time. We find that acquisitions are associated with substantial changes in foreign and domestic bank relationships of target firms. Domestic acquirers actively change the composition of bank relationships, while foreign acquirers tend to retain the target's existing banks. Domestic acquirers replace domestic banks with a broad client base in favor of banks specializing in the target-firm industry. Our findings are consistent with theories emphasizing the accumulation of soft information about the real economy through bank relationships.

JEL: G21; G34; F36; E51

Keywords: Firm-bank relationships; foreign and domestic banks; bank specialization; acquisitions

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1 Introduction

Firms change banks for a variety of reasons. Switching banks may, for example, improve firms' access to and cost of funding, particularly in the case of opaque firms that cannot borrow directly from the public debt markets (Diamond, 1991). Firms may want to switch to more "informed" banks to take advantage of the soft private information collected through their financial intermediation activities, including dealing directly with other corporate clients (Leland and Pyle, 1977, Diamond, 1984). Such monitoring would otherwise have to be done by individual small investors and depositors, which would be prohibitively costly.[1] Existing empirical work related to these traditional theories of banking focuses on the effects of relationship lending (see surveys by Boot 2000 and Kysucky and Norden 2016), on explaining cross-sectional variation in the number of bank relationships (Detragiache et al., 2000), or on countries' institutional differences behind the average number of bank relationships observed per firm (Ongena and Smith, 2000b). The literature has established that while most firms typically have a single bank, there are many instances where firms maintain relationships with multiple banks and may even switch banks over time. There is no systematic evidence, however, on the dynamics of bank relationships, even though the creation and termination of bank relationships matter for the economic performance of borrowing firms (Degryse and Ongena, 2001)[2], and for the effects of bank-level and monetary shocks on aggregate economy-wide lending and investment (Amiti and Weinstein, 2018). We analyze the dynamics of firm-bank relationships within the context of corporate acquisitions, aiming to isolate and identify possible reasons for these changes.

Establishing why firms switch banks is generally challenging since it is not a random occurrence. We exploit events where firms change majority owner to narrow down the possible reasons. Controlling shareholders exercise significant power over firms, far exceeding

[1] See also the theoretical contributions by Rajan (1992), Ramakrishnan and Thakor (1984), and Allen and Carletti (2015) on the superior ability of banks to collect and process information compared to the public bond markets and by Williamson (1986), Krasa and Villamil (1992), and Hellwig (2000) on intermediation as a form of delegated monitoring.

[2] See Rosenfeld (2014) and Yildirim (2020) for recent empirical evidence on relationship banking's role in reducing the probability of default and improving the efficiency of a borrowing firm.

their cash flow rights (Shleifer and Vishny, 1986, La Porta et al., 1999). Consequently, the acquisition event can be interpreted as a shock to corporate control that may trigger changes in firm-bank relationships, for reasons largely beyond the target firm's direct influence—that is, not due to shifts in the firm's own demand for bank relationships. To credibly compare acquired firms to similar non-acquired firms, we use a large firm-level panel dataset from 23 European countries over 2008–2014 and employ difference-in-difference regressions to assess whether acquired firms undergo more changes in the number and composition of their bank relationships than non-acquired firms. To further mitigate concerns related to the endogeneity of acquisitions, we employ a combination of granular firm and sector-year fixed effects alongside trends and controls (either explicit or through matching) for the lagged ownership structure of firms, their recent performance, and their pre-acquisition bank relationships.[3]

Theory offers various potential explanations for why a majority investor might take an active role in altering the target firm's bank relationships. On the one hand, incumbent banks may prevent switching and "hold up" borrower-firms by building an information monopoly relative to outside banks, as argued by Sharpe (1990) and Rajan (1992) and demonstrated by Petersen and Rajan (1994) and Ioannidou and Ongena (2010).[4] The acquiring majority investor may be more effective in enhancing the firm's access to bank credit by breaking these longstanding relationships. Likewise, acquirers may seek to use banks to obtain more information about the local economy, the target's sector, or both, given banks' superior role in collecting information. These theories imply that acquired firms are more likely to end up with more banks than non-acquired firms, even if both have the same demand for bank relationships. On the other hand, a larger firm, resulting from an acquisition, may rely less on banks and instead turn to internal capital markets (e.g., Gertner et al., 1994, Stein, 1997).

We draw insights from both the banking and the international finance literature to further distinguish between information- or financing-seeking motives behind the changes in bank

[3]We refrain from testing the subsequent effect of changes in bank relationships on firms' financial and non-financial outcomes, because this would require us to solve the issue of a double consecutive treatment (of acquisition on bank relationships and of bank relationships on outcomes) that is likely endogenous in both steps. We investigate the effect of changes in bank relationships on firm outcomes in a companion paper.

[4]Schäfer (2018) shows that even relationship banks that have shown leniency toward struggling firms by extending financial support in times of distress engage in rent extraction and secure future business in return.

relationships that we observe. Our argument is as follows. Acquirers vary in their level of information asymmetry about the country and (local) economy in which the target operates. Consequently, they might have varying preferences regarding the choice of banks with which they would like their newly acquired subsidiaries to continue (or establish) relationships. To investigate this aspect, we leverage the fact that the globalization of banking has enabled firms to set relationships with both domestic and foreign banks (see Claessens, 2017, Buch and Goldberg, 2020). On the one hand, foreign investors may face a disadvantage due to higher asymmetric information concerning the host market (Gordon and Bovenberg, 1996, Brennan and Cao, 1997). Therefore, they may opt to retain existing banks to capitalize on these banks' knowledge of the local economy, especially when compared to domestic acquirers. On the other hand, foreign acquirers are often multinational corporations with substantial financial resources (see Desai et al., 2004, Manova et al., 2015, Jang, 2017). Such "deep-pocketed" acquirers may be more inclined to reduce their reliance on banks and replace them with internal or international capital market alternatives. We exploit the richness of our dataset and examine how the nationality of the acquirer influences both the target's bank relationships and its interactions with foreign and domestic banks.

Finally, we study the characteristics of the evolving bank relationships and exploit the heterogeneity across target firms in terms of their size, market, and industry of operation. This approach allows us to further identify the potential underlying motivations behind acquisition-induced changes in bank relationships. In particular, to investigate the information channel more fully, we introduce several measures of "bank knowledge." These measures are derived from the set of other corporate clients (the client base) of the bank and serve as a plausible proxy for the level of banking expertise within a particular country, city, or industry. We use the number of corporate clients a bank serves (weighted by the assets of these firms) within a given country or city and the number of cities in which the bank operates, and the degree of industry specialization.

For our analysis, we assemble a unique and large firm-bank panel dataset for 23 European countries over 2008-2014 using Orbis, Orbis Bank Focus (formerly Bankscope), and

Orbis Ownership databases by Bureau van Dijk (BvD).[5] For firms, our dataset contains information on firm variables from financial statements, the type and nationality of their owners, ownership changes, and stakes owned. For banks, we track all firms' bank relationships over time, the banks' nationality (based on their global headquarters), their ultimate owner, and their client base: the size, sector, and geographical distribution of their client firms. Knowing bank characteristics enables us to examine types of added and dropped banks in terms of their nationality, and "knowledge" and specialization. Our final dataset includes listed and unlisted firms of various sizes, covering a comprehensive part of the European economy. Empirically, we examine how bank relationships change from the year before to the year after the acquisition, relative to non-acquired firms.

We set the stage for our analysis by noting that firms have 1.6 bank relationships on average within our data. Our data thus covers firms with single bank relationships and with multiple relationships: 61% of firms report at most one bank relationship in a given year, 20% of firms report two bank relationships, and another 19% report at least three bank relationships. We find that these bank relationships change substantially after the acquisition events. After being acquired by another firm, target firms tend to increase bank relationships relative to control firms. This upsurge is driven by new parents actively changing and churning bank relationships by dropping some banks and adding others.

Moreover, the nationality of the parent, relative to that of the target firm, matters. Domestic acquirers both bring in new banks and remove other banks. Conversely, foreign acquirers tend to retain domestic banks but they do not add foreign banks. We interpret this evidence as foreign acquirers—with arguably larger *a priori* information asymmetry than domestic acquirers—seeking access to local knowledge offered by domestic banks.

Finally, and consistent with our latter interpretation, we show that domestic and foreign acquirers exhibit distinct preferences when selecting banks for their newly acquired target

[5] BvD's Orbis database is nationally representative and internationally comparable as was shown by Kalemli-Ozcan et al. (2023) who described and validated this data. We rely on their harmonized dataset of financial and ownership information (covering the period 2000-2014) and enrich it with the data on firm-bank relationships (that became available in Orbis from 2010), manually checking bank names to ensure we follow unique banks. Orbis Bank Focus superseded the Bankscope database, commonly used in the banking literature, after the acquisition of BvD by Moody's in 2017.

firms. These preferences are captured by the general or specialist knowledge embedded within the client base of the banks they retain, add, or drop. When actively reshaping bank relationships of target firms, domestic acquirers tend to substitute general knowledge for specialist industry expertise of the local banks. Foreign acquirers instead seek the general expertise that domestic banks have in dealing with firms from the target's country. This divergence may stem from the fact that these foreign acquirers are either multinationals possessing cutting-edge knowledge themselves or from the fact that they prefer "connected" domestic banks as the conduit of knowledge from their other client firms.

In sum, we interpret these combined findings as evidence of an information advantage offered by domestic banks, which can leverage their existing relationships with firms from the same market and their expertise in specific sectors.

Our work contributes to several strands of literature. First, we contribute to the growing empirical literature on relationship banking and to the literature on the reasons for changes in bank relationships.[6] Bank switching may be triggered by firms' desire to escape the informational monopoly of the incumbent banks (the "hold-up problem") and to expand their access to credit and capital market services (Hale and Santos, 2009, Ioannidou and Ongena, 2010, Gopalan et al., 2011). We complement this literature by showing that a firm's large ownership change due to majority acquisitions is an additional reason to change banks, where the switch to/from a bank is likely to be initiated by the new controlling shareholder. In this respect, we differ from papers that use the acquisitions between banks to study their spreads (Martinez Peria and Mody, 2004) and firm-bank relationships or lending practices (Giannetti and Ongena, 2012), because we focus on the dynamics of bank-firm relationships following acquisitions of non-financial firms.

Second, our paper contributes to the literature on bank heterogeneity, which reflects the diverse nature of financial institutions, encompassing differences in size and scope, business models, risk profiles, and operational strategies across various contexts. We use two dimensions of bank heterogeneity in an attempt to uncover the reasons for changes in bank

[6]See references in the first paragraph of this introduction and Ongena and Smith (2000a) and Berger and Udell (2002) for surveys of the literature on relationship lending.

relationships after the acquisition shock. One dimension is the distinction between foreign and domestic banks. There is a voluminous empirical literature documenting potential benefits arising from the globalization of banking, as surveyed in Claessens (2017), including more competition, better access to and lower costs of financial services, and faster economic growth, but also adverse crisis-related spillover effects across borders.[7] Our evidence is more consistent with the idea that existing and mostly domestic banks possess an information advantage in local markets over foreign banks, in line with Beck et al. (2018). Investors who, *a priori*, face more information asymmetry in acquisitions—specifically in deals involving foreign acquirers, smaller targets, or in shallow financial markets—tend to switch to banks that possess such an information advantage.

Another related literature studies bank heterogeneity in the differentiation between specialized and universal banks. This literature recognizes the tension between the better ability of the specialized banks to assess firms from the same industry (Gopal, 2021, Paravisini et al., 2023, Blickle et al., 2023) and the inferior ability of the specialist banks to spread risk efficiently (Winton, 1999, Acharya et al., 2006), with opposite consequences for the terms of credit these banks offer. We demonstrate that the breadth of a bank's network of clients or branches (which we interpret as the stock of a bank's knowledge about the local economy) and the bank's specialization within specific sectors are important factors that influence the choice of bank with which to establish new relationships.

Finally, our paper relates to the literature on the impact of merger and acquisition (M&A) activity on firm outcomes. The M&A research in finance has traditionally focused on returns to investors in M&A firms; this literature has established that M&As seem to create shareholder value, with target firms being the main beneficiaries (see surveys by Andrade et al., 2001, Betton et al., 2008). Other fields focus on the effect of M&As on operational and financial synergies, access to better technology, improved organizational structure, and corporate governance (see Hoberg and Phillips, 2010, Bena and Li, 2014, among others), or the positive productivity effects for acquired foreign affiliates (Javorcik, 2004, Guadalupe

[7]The literature after the Global Financial Crisis has demonstrated the adverse spillover effects linked to foreign banking (e.g., Cetorelli and Goldberg, 2012, Giannetti and Laeven, 2012).

et al., 2012, Javorcik and Poelhekke, 2017, Fons-Rosen et al., 2021). Our paper uncovers a new potential effect of corporate acquisitions on firm activities and provides a novel explanation for why controlling shareholders might manage the target's bank relationships. Traditionally, acquirers have primarily sought to establish bank ties in target firms for financial or transactional purposes, such as securing financing or optimizing cash flows. Our evidence points to a novel perspective that considers the acquisition of "soft information" about the domestic market and industry of the target company—such as market trends, consumer behavior, or industry-specific nuances—through these bank relationships (see survey on the role of information in financial markets by Liberti and Petersen, 2018). By actively managing bank relationships of the new subsidiary, acquirers can tap into this wealth of information, potentially leading to more effective integration strategies, market positioning, and competitive advantage in the market of the acquired firm.

The rest of the paper proceeds as follows. Section 2 describes the construction of our dataset and general patterns observed in bank relationships. In Section 3 we present our hypotheses and in Section 4 we discuss the empirical identification strategy. Section 5 presents the results and Section 6 concludes.

2 Data

2.1 Compiling the dataset

We construct a database of firm ownership over time, firm-bank relationships, and characteristics of firms and banks using the Orbis database by Bureau van Dijk. Every annual vintage provides information on firms' financial and operational activities from balance sheets and income statements, together with detailed information on firms' domestic and international ownership structure. We use the harmonized financial and ownership data from Kalemli-Ozcan et al. (2023) (covering the period 2000-2014), which is cleaned to reduce survivor bias present in direct Orbis downloads, and ensures good coverage of historic data for ownership and financials. This results in a panel of firms covering 39 European countries over

1999-2014. We exclude firms that are owned by banks directly.

In addition, we collect information on the firms' banks, which has also been available in Orbis since the 2010 vintage. Similar to ownership data, bank data comes from individual vintages of the Orbis database. We collect all the bank information from the 2010-2015 vintages, which, using the timestamp of the financial data, results in bank relationship information for the years 2005-2014 but with the bulk of relationships covering 2009-2013.[8] We observe both firms with multiple bank relationships (39% of observations) and firms with a single bank relationship (61% of observations).

This data originates from the Kompass database and has been used before by Ferrando et al. (2019) and Kalemli-Ozcan et al. (2019). However, they used a cross-section of firm-bank relationships observed for eight Eurozone countries in 2014 and 2013, respectively, and focus their attention on the 'main bank' (assumed to be the bank that is listed first). Closer to our paper, Giannetti and Ongena (2012) used 2000 and 2005 vintages for 13 Eastern European countries to track changes in bank relationships over time, but focused on foreign bank entry through acquisition of a domestic bank and whether any relationships were added or dropped between these dates. They also show that the banker information from Kompass is broadly consistent with independent surveys, such as the EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS).

Compared to these papers, we dramatically expand the coverage of banks and firms across 23 countries. We track all bank relationships over time using the panel structure of our firm-level data.[9] We can thus reveal novel descriptive evidence of substantial churning in bank relationships. In addition, we differentiate the nationality of the bank relative to that of the firm. We define the foreign status of a bank with respect to the host country of the target firm.

[8]The original variable is called 'banker name' and can take multiple entries. The date of banking information, per firm, is not codified separately, but from our conversation with the BvD representatives, we learned that the primary source of the bank data is firms' annual reports. Consequently, we assume that the date of banking information corresponds to the latest year of financials for each firm in a given vintage (for example, if the available variable 'latest year' for financials is 2013, we assume the same timestamp for the bank information).

[9]The 23 countries are Austria, Bulgaria, Germany, Denmark, Spain, Estonia, France, the UK, Greece, Hungary, Croatia, Ireland, Iceland, Lithuania, Latvia, Moldova, North Macedonia, Poland, Portugal, Russia, and Ukraine.

For example, suppose a firm in Austria reports a bank relationship with Commerzbank AG, which Bankscope or Orbis Bank Focus lists as a German bank. In that case, we designate this relationship as foreign. Specifically, we investigate, in the order of priority, i) the nationality of the bank's shareholder from the most recent Orbis Bank Focus , ii) the nationality of the global ultimate owner of the bank from the same source, and iii) the legacy ID of the bank from the older vintage of the Bankscope database.[10] Finally, we conservatively check whether the original spelling of the bank name contains foreign endings capturing the legal form (such as, for example, Dutch "BV" or "NV" meaning, correspondingly, a "private limited liability" or "public limited liability" firm for banks operating outside of the Netherlands) or foreign parts of names (including mentioning the city name or similar). As in the case of the literature on firm-level foreign-direct investment (FDI), we assume that the bank is domestic if we cannot find the information on its nationality or its owners in our data or on the Internet.

Our treatment is a change in ownership in non-financial firms. We focus on changes where the new owner (domestic or foreign) acquires a stake such that its ownership amounts to more than 50%. The threshold of 50% ensures a substantial majority influence over the firm, which has a meaningful potential impact on its bank relationships. Smaller stakes are conventionally considered portfolio investments. Control firms do not change owners (but we allow them to change small, i.e., <10%, stakes). For our analysis, we retain firms for which we know the bank name and firm ownership and which report data for at least five consecutive years, which results in 1.2 million observations and more than 400,000 after taking differences and conditioning on observables.

Tables A1.1 and A1.2 in the Appendix provide details for an example firm in Spain. We observe this firm's bank relationships for five consecutive years (as listed), but its ownership for more years, which shows that it was acquired by a domestic firm in 2009. Its bank relationships changed over time, with banks being dropped on three occasions and banks

[10] All the Orbis Bank Focus data was matched to our banks by normalized name using the fuzzy-match app of Microsoft with a very stringent rule, ruling out multiple banks due to different spelling of the names. After the match, we manually reviewed the matches.

being added on three other occasions. One of these new banks, Banco Caixa General, has a foreign bank owner with Portugal as its home country.

2.2 Bank relationships across firms and time

In our dataset of unlisted and listed firms, 61% report at most one bank in a given year, 20% of firms report two banks, and another 19% report at least three bank relationships in a given year.[11] On average, firms have 1.6 bank relationships (see also Table 1).[12] This number declines over time during the period analyzed, consistent with a backdrop of consolidation that may be related to the global financial crisis.[13]

An examination of detailed changes shows the degree of churning of bank relationships. On average, 11% of firms increased the number of relationships by adding one or more banks in any given year, and 9% reduced relationships by dropping one or more banks. The additions and terminations of relationships over a two-year window increase to 13% and 14%, respectively. Moreover, 6% of firms replaced relationships while keeping the total number of relationships constant. Even firms with only one bank replace their bank in 5% of firm-years (with all cases involving a change of domestic banks).[14]

We relate the dynamics of firm-bank relationships to changes in firm ownership and report in Table 1 the descriptive statistics for bank relationships, split between firms which never experienced ownership change (Group 1), had a non-controlling ownership change (less than 50% stake, Group 2), and majority acquisitions (more than 50% acquired, Group 3). Panel A reports the number of bank relationships of these sub-groups. Firms in our sample have, on average, just under 1.6 domestic bank relationships and only 0.06 foreign bank relationships.

[11] For comparison, firms listed on the Japanese stock market report a median of seven bank relationships between 1990 and 2010 (Amiti and Weinstein, 2018).

[12] The distribution of bank relationships is very skewed, with the 75th percentile equal to 2 banks and the maximum equal to 22 unique banks (or 5 and 15 banks, respectively, when excluding Russia). Given our large sample size, these average numbers are not surprising.

[13] For firms that were never acquired, the average declined by 7% between 2010 and 2013, from 1.646 to 1.531. For firms that were acquired in any year within our dataset, the respective numbers are 1.692 in 2010 and 1.661 in 2013: a 2% decline.

[14] The share of firm-years in which single-bank firms switch banks differs greatly by country: it is only 0.7% in Russia, 3% in Germany, and 15% in Portugal.

Firms that have experienced an acquisition tend to have slightly more bank relationships.

Panel B shows the changes in bank relationships from the year before the ownership change (t-1) to the year after (t+1). This is a net change taking into account adding and dropping the relationship over two-year intervals. We observe the overall decline in the number of bank relationships in Groups 1 and 2, driven by domestic bank relationship dynamics. In Group 3, majority acquisitions, the overall number of bank relationships increases without greatly sacrificing the domestic relationships. In all these groups, if foreign bank relationships change, the changes are positive, so the number of foreign banks in our sample increases on average.

Panel C shows the number of banks added and dropped to demonstrate what lies behind these net changes. It confirms the patterns of net changes from Panel B and shows that most of the action comes from replacing domestic banks. There appears to be more churning of bank relationships in ever-acquired firms. Overall, acquisitions seem to be related to rethinking bank relationships at the target-firm level.

In Table A2.2 we decompose the added banks by nationality relative to that of the firm and whether these banks are familiar with the country of the target or the acquirer (based on other identified relationships in our sample). We can see that almost all the added foreign banks in our sample, across a two-year window, are not new to the country or the acquirer. This means that new owners tend to bring their own foreign banks (if they do so), and these foreign banks are already present in the country. There are more instances where added domestic banks are new to the acquirer. However, their share is still small relative to the total number of added domestic banks. Target firms thus adopt bank relationships of the new parent.

3 Hypotheses development

Why would acquiring firms change the composition of the bank relationships of their new subsidiary and how does this relate to the nationality of the owner and the banks?

We study whether firm-bank relationships change after non-financial firms' acquisitions.

In doing so, we characterize the nature of these changes by tracking bank characteristics, such as their nationality, client base, and sector specialization. The expected direction of change of bank relationships after an acquisition event is unclear *a priori*. On the one hand, a growing firm may have increasing demand for new funding sources and other banking services (as suggested by Myers and Majluf (1984) and Myers (1984) in their pecking-order theory). Simultaneously, it might also become an attractive acquisition target.[15] These demand and selection effects would result in a positive association between acquisitions and the number of bank relationships, *ceteris paribus*. On the other hand, the supply of bank relationships—by which we understand the changes in the target firm's banks *not* initiated by the target firm itself—may increase or decrease. It may expand when banks actively pursue the recently acquired firms due to their improved risk profile and creditworthiness (Gopalan et al., 2007, Matvos and Seru, 2014, Santioni et al., 2019).[16] Moreover, the acquirer might seek external bank funding to realize its integration or growth plans for the new subsidiary (Fee and Thomas, 2004) and do so through the target's existing bank relationships or by initiating new ones for this purpose.[17] Alternatively, the increase in the number of bank relationships could be a by-product of the acquisition process when an investment bank is hired to advise on the acquisition deal.[18] However, bank relationships can also drop if the new owners replace bank lending with internal capital markets, as in Gertner et al. (1994) and Stein (1997). Firms may also face loan supply shocks, forcing some corporations to substitute loans (and bank relationships) for other types of borrowing such as from capital markets (Kashyap et al., 1993, Kroszner et al., 2007, Adrian et al., 2012).[19]

The theoretical effect of an acquisition on bank relationships is, thus, ambiguous, pri-

[15] See Eckbo (2014) for a review of research on takeovers.

[16] Bond (2004) shows that conglomerates financing is preferred to bank debt for high-risk, low-quality projects.

[17] New owners tend to restructure target firms: Arnold and Javorcik (2009) demonstrate the improvement in productivity of companies four years after majority acquisitions by foreign firms. This can be due to the transfer of technological knowledge (Aitken and Harrison, 1999) and/or good management practices (Bloom et al., 2012) and headquarter services (Javorcik and Poelhekke, 2017).

[18] The limitation of our data source is that it does not allow us to differentiate among the various roles of banks in a firm-bank relationship.

[19] Nonetheless, Hubbard et al. (2002) show that firms, in general, have difficulty replacing loans from one bank with loans from another, and Khwaja and Mian (2008) find that this is especially hard for small firms.

marily because of the complex interplay between demand and supply for banking services, both of which work through several potential channels. Our identification strategy (see next section) mitigates the concern that selection drives changes in bank relationships. To aid the interpretation of our findings, we formulate three hypotheses, where we look at the dynamics of relationships themselves following the acquisition, the changes in the composition of banks depending on the degree of information asymmetry between the acquirer and the target, and the changes in the characteristics of the bank relationships after the acquisition.

3.1 Dynamics of bank relationships

To reduce the chance that banks that merely advise on the acquisition will affect our results, we look at changes in bank relationships as of the year *following* the acquisition year.

We frequently observe one bank being replaced by another with zero net change. If we were to interpret our findings as the supply-driven changes and the consequence of active management of bank relationships by acquirers, we would see not only a significant increase in the number of bank relationships but also a reshuffling of bank relationships, where banks are dropped and/or replaced on acquisition. We hypothesize that after the acquisition deal, the new controlling owners engage in an active change in the supply of bank relationships:

Hypothesis 1 (H1): *Acquiring firms actively change bank relationships of target firms.*

3.2 Information asymmetries encountered by the acquirer

To investigate several possible reasons for acquirers to alter the mix of bank relationships, we focus on the differences between acquirers in terms of how well informed they are about the country and (local) economy in which the target firm operates. We use the fact that a significant fraction of worldwide acquisitions is done by firms located in countries other than that of the target (Erel et al., 2022) and proxy the degree to which an acquirer is knowledgeable about the target's country by the acquirer's nationality, for simplicity focusing

on the largest source of asymmetry: foreign versus domestic acquirers.[20] A foreign investor might be disadvantaged by higher asymmetric information about the host market (Gordon and Bovenberg, 1996, Brennan and Cao, 1997) and, compared to a domestic acquirer, retain existing banks to benefit from these banks' knowledge of the local economy, knowledge derived from the monitoring of their other clients (Diamond, 1984).[21] On the other hand, the replacement of banks by the acquirer's internal capital market may be more likely if the acquirer is foreign, especially in the case of multinationals, which have an advantage over their local competitors due to tax arbitrage and more favorable access to global capital markets (see Desai et al., 2004, Manova et al., 2015, Jang, 2017). We should then see a stronger reduction in bank relationships after foreign acquisitions than after domestic acquisitions.

At the same time, the globalization of banking has allowed firms to have relationships with domestic and foreign banks, enabling acquirers to choose the nationality of bank relationships. Foreign banks face considerable information barriers to entry (Buch, 2003) and may be imperfect substitutes for domestic banks (Berger et al., 2001, Dell'Ariccia and Marquez, 2004, Mian, 2006, Giannetti and Ongena, 2012, Beck et al., 2018), especially when the domestic credit market of the target firm is informationally opaque. If the foreign acquirers are primarily interested in obtaining information via banks, we would see that foreign acquirers retain existing banks of the target, and add domestic banks. Foreign acquirers may also use foreign banks to alleviate credit market inefficiencies in the host country (Bruno and Hauswald, 2014). If this funding motive drives the replacement of bank relationships, then the change in bank relationships (hypothesized in the previous paragraph) might be more pronounced for domestic bank relationships: such relationships will be displaced by the relationships with foreign banks. We exploit the richness of our dataset and examine how the nationality of the acquirer impacts i) any bank relationships of the target and ii) the relationships with foreign and domestic banks. We conjecture that:

[20] We thus do not attempt to measure information asymmetry directly, which may arise through distance, language, institutional, and cultural differences.

[21] It has long been established in (international) finance literature that asymmetric information is one of the key reasons for international capital market failures. See early evidence for the mutual fund investors in Coval and Moskowitz (2001); Portes and Rey (2005) in the context of bilateral capital flows, and Wei and Wu (2002) for FDI and bank lending.

Hypothesis 2 (H2): *The dynamics and composition of bank relationships depend on the degree of asymmetric information between the acquirer and the target.*

3.3 Information advantage of bank relationships

When firms change bank relationships, they presumably do so to improve banking services. Ideally, we would analyze the full scope of these services, including lending, advisory, currency management, and all other banking services. Unfortunately, we do not directly observe the nature of the firm-bank relationship. But we know the name and nationality of individual banks and, since we work with nationally representative firm database Orbis, we observe the client base of each bank in each country in our sample. We use this data to investigate two distinct characteristics of bank relationships, which we argue reflect the *stock of bank knowledge* accumulated through servicing those other clients.

We first introduce a measure related (but not identical) to the bank's size. Instead of using total bank assets, we focus on the number of corporate clients of a bank (weighted by the firms' assets) and the number of cities the bank operates in. We label these as *general bank knowledge* and *local bank knowledge*, respectively, on the premise that a bank that has relationships with many corporate clients and exposure to larger firms at the country level (or at the more local city level) has more general knowledge about that market. It will be more skillful in screening and assessing the information flow regarding firms' risks. It could facilitate the flow of information between its clients, playing an advisory role or helping clients realize synergies reflected in their performance. Adding knowledgeable banks may also alleviate a firm's financial constraints because such banks can spread risk more widely and thus reduce costs. Still, these more "connected" banks might be more exposed to idiosyncratic risks of larger clients or have difficulty satisfying all of their credit demands and have to ration credit occasionally, making them less attractive to acquirers as the source of funding for the new subsidiaries.

Alternatively, banks may specialize by serving clients in a particular economic sector, resulting in more *specialized knowledge*. Suppose a firm adds a relationship with a bank

which has experience in dealing with firms in the same industry as the firm. In that case, the bank may grant credit more easily and on more favorable terms (Blickle et al., 2023) and provide additional sector-specific services by advising clients, as repeated interactions within a particular industry can enhance a bank's ability to assess the business models (or collateral) of firms operating within that industry (Gopal, 2021, Paravisini et al., 2023). However, specialist banks are not necessarily able to spread risk efficiently and thus may not offer cheaper credit (Winton, 1999, Acharya et al., 2006).

Looking at these distinct characteristics of bank relationships and, as before, differentiating by acquirer nationality, we investigate the information channel more fully. Foreign acquirers may benefit more from improving the general bank knowledge of their new subsidiary because they may lack expertise about the local economy. This differs for a domestic acquirer who is more likely to have stronger ties with the local economy (conditional on the size of the acquirer). It may be the case that a foreign acquirer benefits less from the specialist sector knowledge than a domestic acquirer, at least to the extent that foreign acquirers have easier access to bank credit or possess cutting-edge industry knowledge, as the FDI literature demonstrates. To shed light on the importance of these motivations for changing bank relationships, we test whether the acquisition is associated with changes in the stock of knowledge transferred via banks by formulating the following hypothesis:

Hypothesis 3 (H3): *Acquiring firms supply the target with bank relationships that embody general knowledge about the local economy and/or specialist knowledge about the target's sector.*

4 Empirical specification

4.1 Identification

To test our hypotheses, we would ideally run an experiment randomly assigning the acquisition event to firms. But this is not feasible given our setting of relatively rare acquisitions combined with coverage of various countries. To estimate the effect of acquisitions on bank

relationships, we exploit the panel nature of our data and estimate the following difference-in-difference specification, where we examine how the portfolio of a firm's bank relationships changes over time for firms that were acquired and firms that were not acquired:

$$\Delta \mathbf{BX}_{i,c,t+1} = \mathbf{ACQ}_{i,c,t}\,\beta_1 + \mathbf{X}_{i,c,t-1}\,\beta_2 + \rho_{b,t-1} + \alpha_i + \delta_{s4,t} + \zeta_{i,c,t}\,, \tag{1}$$

where for firm i in country c the $BX_{i,c,t}$ stands for one of the measures of bank relationships and Δ is calculated from t-1 to t+1, where t is the year of acquisition.[22] The $\mathbf{ACQ}_{i,c,t}$ (for "acquisition") is a vector of binary variables reflecting the majority acquisition event of the firms.[23] The dummy is equal to one in the year of acquisition and the following years, and zero in the years before the acquisition. We exclude firms that were sold more than once but retain firms that have never been acquired.

We thus compare the acquired firm to its pre-acquisition period (the first difference) and the baseline group of non-acquired firms in both periods (the second difference). In the main regressions, we do not track changes in ownership shares where these shares are below the 50 percent threshold. Such events are thus also part of the baseline group of firms. For example, consider a hypothetical firm with three owners, each holding a third of shares, one of these owners being foreign. If a domestic owner sold its one-third share to a second (and thus new) foreign owner, we do not consider this a majority acquisition because no single owner gained control of the firm. If, instead, either of the three owners sold its stake to one of the other existing owners, the firm would have two owners in the next period. One of them would have a controlling stake, which we then count as a majority acquisition (by an existing owner). In the robustness tests we drop from the control group all firms where the ownership shares change hands but stay below 50 percent.

[22] We focus on a two-year period in our main results and on more persistent changes because we find a temporary peak in bank relationships in the year of acquisition: these may be (investment) banks involved in the acquisition and hence not the relationships we are interested in.

[23] That is, the variable *acquisition* takes the value of one if in year t the firm was acquired by a shareholder who owned (zero or) less than 50 percent of the target's equity at t-1. In Section 5 we also consider separately acquisitions by firms that owned less than 10% initially. In addition, we differentiate between foreign and domestic acquisitions, defining foreign acquirers as those that have their headquarters in a different country than the target. Data Section 2 provides more details on the definitions of variables.

The identifying assumption is that acquiring firms do not select target firms based on underlying trends in the development of the target's bank relationships over time. The matrix $\mathbf{X}_{i,c,t-1}$, therefore, consists of controls that correlate with changes in bank relationships and the probability of acquisition: lagged levels and growth rates of key firm performance indicators, such as employment, output, and asset size. We also include a control for the existence of a shared bank relationship between a target and an acquirer *before* the acquisition event. This is important, because a smaller degree of asymmetric information between the target and the acquirer may make acquisition more likely in the first place and mechanically reduce the likelihood of a change in bank relationships. We also include the lagged ownership structure, such as foreign-owned firms, joint-ventures, firms without a single controlling owner, and the number of shareholders. We further introduce a set of fixed effects $\rho_{b,t-1}$, one for each number of initial bank relationships at t-1 (separately for foreign and domestic banks), because firms with many existing relationships may be less inclined to add more banks. Because we regress changes in bank relationships on changes in ownership, we exploit the time variation within firms, which absorbs time-invariant firm fixed effects. In addition, we add another set of fixed effects α_i for each firm that captures target-specific linear trends. In other words, we control for all observable and unobservable characteristics of firms that do not change in the space of five years or change linearly. Finally, we control for four-digit sector-year effects $\delta_{s4,t}$ that capture the sector's business-cycle stance, which may be correlated with access to finance and bank relationships and with M&A activity in the sector. Although treatment is at the firm level, we always cluster standard errors at the country×sector×year level, because sectors tend to experience waves of consolidation.

In Online Appendix OA2 we additionally apply a granular matching strategy that also controls for a measure of credit demand (Degryse et al., 2019) and confirm our results in a much smaller sample of matched pairs.

4.2 Measuring characteristics of bank relationships

We consider several measures that characterize the firm's set of bank relationships, matching our hypotheses from Section 3. For the baseline Hypothesis 1 our outcome variable is $\Delta\mathbf{BR}_{i,c,t+1}$, representing the (net) change in the number of bank relationships for firm i in country c from year t-1 to t+1. We also split $\Delta\mathbf{BR}_{i,c,t+1}$ into the number of dropped and added banks. We define the previous changes separately for foreign (relative to the target's country) and domestic banks for Hypothesis 2.

To test Hypothesis 3 we introduce a measure of the degree to which a firm i's banks possess **general knowledge** of the local economy by i) aggregating the assets of each bank's other identified client firms $j \neq i$ in i's **country** c in each year t, and ii) averaging these combined assets across all banks of firm i, to obtain:

$$\mathbf{BKnow}_i = \left(\sum_{b \in i} \text{bank}_{b,i} \times \mathbf{Assets}_b \right) / \mathbf{BR}_i \,, \tag{2}$$

where we omit the subscripts c and t for brevity, $\text{bank}_{b,i}$ is the indicator for whether firm i is a client of bank b in year t, $\mathbf{Assets}_b \equiv \sum_{j \in b, \neq i} \text{Assets}_j$ is the total assets of all bank b's client firms in the country of firm i excluding i itself, and $\mathbf{BR}_i \equiv \sum_{b \in i} \text{bank}_{b,i}$ is the number of bank relationships of firm i[24]. As seen, changes in this measure are driven by the changes in the number of bank relationships $\Delta\mathbf{BR}$ plus the combined economic size of each bank's non-financial clients, which in turn depend on the number and size of the other firms that the bank services. This measure is not the bank's own asset size but reflects its combined client base. We interpret this measure as the bank's general knowledge, because banks that service a larger share of the real economy (as measured by the combined asset size of clients) have an information advantage by having a better grasp on local conditions, broadly defined. We also introduce a measure of the narrower bank geographic knowledge by counting assets of bank client firms at step ii) only within the same **city** as firm i, as opposed to within the same country.

[24]We focus on the non-financial firms' size in terms of assets, as opposed to, for example, employment, because this is closer to the role of banks in providing capital for investment.

Alternatively, we measure bank geographic knowledge by i) counting the number of cities where the bank has clients (in our data) in i's country, and ii) average these city counts across all banks of firm i, as:

$$\mathbf{BKnow}_i^{Geo} = \left(\sum_{i \in b} \text{bank}_{b,i} \times \mathbf{Cities}_b \right) / \mathbf{BR}_i \,, \tag{3}$$

where $\mathbf{Cities}_b \equiv \sum_{j \in b, \neq i} \text{City}_j$ is the count of the number of cities in which each bank b has client-firms. In the regressions, we take the inverse hyperbolic sine transformation of these three measures of knowledge to be able to include observations where a firm has no domestic bank or its bank has no other clients in a country or city (very rarely) or no foreign bank (more commonly).[25]

To measure the degree of **bank specialization** in firm i's main sector of operation, we i) establish in which 2-digit sector a firm's bank has most of its clients within firm i's country (as measured by clients' total assets) and each year t, and ii) count the number of banks that have a relationship with firm i and specialize in the *same* sector in which firm i operates. In symbols:

$$\mathbf{BSpec}_i = \sum_{i \in b} \Big(\text{Spec(s2)}_{b,i} \times \text{s2}_i \Big), \tag{4}$$

where $\text{Spec(s2)}_{b,i}$ is the indicator of whether bank b has the maximum of the client's assets in 2-digit sector $s2$ (the bank "specializes" in sector $s2$) and s2_i is the indicator of whether the 2-digit sector $s2$ is the main sector of operation of firm i according to Orbis . Specialist banks may assess firms' business models better, monitor the firm more effectively, and as a result be willing to fund it on more favorable terms. At the same time, they can serve as a conduit of productivity spillovers between multiple clients in the same sector.

[25] Taking logs would drop these observations, while the inverse hyperbolic sine transformation is defined at zero and very similar to log for positive values, while being potentially less arbitrary than adding ones to zero observations. For a discussion on elasticities in relation to a log transformation, see Bellemare and Wichman (2020). Results are robust to adding 1 before taking logs.

5 Results

5.1 Changes in bank relationships

To test Hypothesis 1, we regress the change in bank relationships on majority acquisition events. Table 2 reports the results from estimating equation (1) for changes in the number of bank relationships from t-1 to t+1, where we condition on controls that reflect the initial ownership structure, controls for lagged bank relationships (an indicator of a shared bank between a target and acquirer and fixed effects for the number of domestic and foreign bank relationships), firm fixed effects, firm-specific linear trends, and sector-year effects to proxy industry demand shocks. The results in column 1 imply that firms that went through a majority acquisition increased the number of bank relationships by 0.037 from the pre- to post-deal year and relative to an average non-acquired firm in the same country and same 4-digit industry-year.[26] Recall from Panel B in Table 1 that these non-acquired firms have been reducing bank relationships by an equal amount of 0.037 on average: acquired firms thus tend to *retain* bank relationships. Looking at control variables, we see that target firms that are initially joint ventures also tend to add more banks. In column 2 we add more firm controls in an attempt to capture the attractiveness of the firm as an acquisition target. These include lagged levels and growth rates of output, employment, and asset size. These each have significant effects on the change in bank relationships, but they do not visibly change the effect of acquisition. This likely suggests that our difference-in-difference approach in combination with a rich set of firm controls and additional fixed effects accounts for the (un)observables that investors take into account when selecting 'good' firms, which in turn may also form bank relationships more easily.[27]

We next divide the net change in bank relationships by the number of banks *added* and banks *dropped*. Appendix A1 provides details of our firm-bank data and how we compute

[26] The results in this table are robust to replacing the simple change in bank relationships by the log-difference and to clustering by country×2-digit-sector×year. We find that an acquisition event increases bank relationships by 1.7%.

[27] In Section 5.5 we repeat the analysis for a sample of matched firm pairs using the granular exact matching technique by Iacus et al. (2012), where we also match on a measure of credit demand (Degryse et al., 2019). Matching results are very similar.

changes in bank relationships for a random Spanish firm observed in our data.[28] In short, the variable *Added* in column 3 is the number of *new* bank relationships that the firm reports having added, where we compare t+1 to t-1. This count includes new relationships that replace existing relationships. The variable *Dropped* in column 4 is, correspondingly, the number of bank relationships abandoned over the chosen period. We find that acquired firms both add banks (column 3) and drop them (column 4), where the former dominates the latter and results in the positive net change observed in columns 1-2. We thus confirm Hypothesis 1, documenting that the net increase in a firm's bank relationships after acquisition is not a coincidence but a result of acquirers actively reshaping bank relationships, by dropping some banks and adding others.

5.2 Nationality of the acquirer and bank relationships

We next split acquisition events according to the nationality of the buyer, to differentiate how well acquirers are potentially informed about the target's country and (local) market. Panel A in Table 3 focuses on all relationships, with results for net changes in column 1, banks added in column 2, and banks dropped in column 3. As before, we control for whether or not targets and acquirers shared a foreign or domestic bank relationship in the year before the acquisition, and we always include the other control variables listed in Table 2, but we suppress the coefficients for brevity. We find that the average effect of 0.037 appears driven by domestic acquirers, who increase the bank relationships in their target by more than foreign acquirers, although a formal F-test of equality of coefficients yields a p-value of 0.23. The latter are, however, rarer events, explaining the somewhat larger relative standard error.[29] The results in columns 2 and 3 reveal substantial churning of target firm bank relationships

[28] As a general example, suppose a firm has banks A and B in year t-1 and B, C, D, E in year t+1. In this example, the firm replaced one bank (A), retained B, and added three new banks (C, D, and E). Then, the number of bank relationships went from 2 to 4, a net change of +2, although *Banks added* equals 3 (C, D, and E). *Banks dropped* is 1, because the relationship with A was terminated.

[29] We also experimented with distinguishing acquisitions according to whether the acquirer had a zero to less than 10% initial minority stake ('New acquisition') or a less than 50% initial minority stake in the target ('Existing acquisition'). However, unreported F-tests by nationality cannot reject equality of the coefficients. We do not differentiate between new and existing acquirers in the rest of the analysis.

after acquisition by domestic firms: they both add more new banks and drop more existing banks relative to similar non-acquired firms, resulting in a net positive change seen in column 1. Moreover, since the added banks almost always have an existing relationship with the acquirer (see Table A2.2), we find that domestic acquirers tend to replace banks with their own bank. Foreign acquirers behave very differently: they drop and add fewer banks, which also results in a (smaller) positive net change. However, they do not actually increase bank relationships in an absolute sense: the positive effect in column 1 is due to foreign acquirers retaining banks relative to the control group.

The evidence so far rejects the notion that foreign acquirers replace banks for internal capital markets. We find that active management of bank relationships is mostly a feature of domestic acquisitions. To further strengthen the case for the information-seeking interpretation of our findings postulated by Hypothesis 2, we investigate the dynamics of relationships split by bank nationality. For example, if a firm in Austria reports a bank relationship with Commerzbank AG, which Bankscope or Orbis Bank Focus lists as a German bank, we designate this relationship as foreign.[30] Panel B from Table 3 focuses on domestic banks, and Panel C on foreign banks (both defined from the perspective of the target firm).

We find that after acquisition by domestic acquirers, firms do not increase the net number of *domestic* bank relationships (column 1, Panel B). In fact, domestic acquirers *replace* domestic banks by both dropping and adding relationships (columns 2 and 3). Foreign acquirers keep domestic banks because they drop fewer banks than similar non-acquired control firms (column 3) and do not add any (column 2), thus, increasing domestic bank relationships relative to the control group on the net. This explains the results reported in column 1. Panel C demonstrates that it is domestic and not foreign acquirers who add *foreign* bank relationships (column 2). Both acquirers, especially foreign ones, do not appear to actively drop these banks either (column 3). These dynamics result in what we observe

[30]Refer again to the example of a firm with banks A and B in year t-1 and B, C, D, E in year t+1. To distinguish banks by foreign status, we first split the banks into two groups (foreign and domestic) and count changes in a similar way within the two groups. For example, if A is foreign and all other banks are domestic, the *Foreign banks added* is 0, the *Foreign banks dropped* is 1, and the *Foreign banks net change* is -1, the *Domestic banks added* is $+3$, the *Domestic banks dropped* is 0, and the *Domestic banks net change* is $+3$.

in column 1. Domestic acquirers add more foreign banks than non-acquired firms. Contrary to common belief, foreign firms *do not* bring foreign banks.

The combined evidence in this table is in line with Hypothesis 2. Foreign acquirers with arguably larger *a priori* information asymmetry than domestic acquirers try to get access to local knowledge provided by domestic banks and do not seek access to foreign banks. We next investigate the reasons for the different active management of bank relationships exhibited by domestic and foreign investors. It may be either for financing purposes (given the addition of foreign banks) or a quest for information and other services (given the active reshuffling of domestic banks).

5.3 Bank knowledge

Table 4 shows the results of testing Hypothesis 3, where we investigate whether acquirers make systematic changes to the level and characteristics of 'bank knowledge' embodied in the set of bank relationships of the target firm. In the leftmost column of all panels, we change the dependent variable to a measure that reflects the corporate client base of the banks added after the acquisition (excluding the acquired firm), within the target firm's country. This measure is not the assets of the bank but the aggregate assets of the bank's *clients*, and we argue that it reflects the *general knowledge* of the bank about the local economy. In the second column we aggregate the assets of bank clients within the city of the target firm. This measure presumably captures much more local knowledge about the firms within the target's city. In the third column we count the number of cities (within the target's country) where the banks have corporate clients. In the last column we measure how many banks have the majority of their other corporate clients in the same two-digit sector as the acquired firm. We argue that having more banks that do a lot of business with the company's peers adds *sector-specific knowledge* to the firm. All measures are computed in a given year.

Panel A (columns 1–4) focuses on all banks. Starting with domestic acquirers, we find that they change bank relationships in such a way as to reduce the number of banks with general knowledge (columns 1–3), and replace them with banks that are specialists in the

target firm's sector (column 4).[31] They are especially less interested in banks with a narrow geographical client network within the target's city, unless they specialize in the target's sector. Domestic acquirers thus choose to substitute banks with a broader client base and potentially better distribution of credit risk for banks that may be better able to judge and finance the target firm's specific activities. Foreign acquirers behave differently: in contrast to domestic acquirers, they seem to value the knowledge of the broader national economy (columns 1 and 3) but not narrow geographic or industry expertise.

To facilitate the interpretation of these results, we compute the changes in the "stock of bank knowledge" accruing through, separately, domestic banks (in Panel B) and foreign banks (in Panel C). Domestic acquirers substitute general knowledge for specialist sector knowledge of domestic banks (column 8).[32] They are only interested in foreign banks which are well established in the country (columns 8 and 11) or the city (column 10). The accumulation of general knowledge following foreign acquisition, seen in column 1, largely focuses on domestic banks, judging from columns 5 and 7. For completeness, Panel C captures the effects for foreign banks. We observe relatively large coefficients due to the fact that many firms have zero foreign banks before acquisition. In such cases, the acquisition mechanically increases the measures of bank knowledge.[33] The broad picture is nevertheless that domestic acquirers, when they add foreign banks, focus on general as opposed to specialized knowledge. Foreign acquirers tend to reduce general knowledge more than specialist knowledge.

In sum, analyzing bank characteristics that plausibly correlate with bank knowledge provides evidence in favor of Hypothesis 3. The difference is in the profile of banks added following domestic or foreign acquisitions. Domestic acquirers appear interested in the in-

[31] For the measures in columns 1–3 we use the inverse hyperbolic sine transformation. In the fourth column we use the simple count. The results are robust to taking simple logs or adding 1 before taking logs of the dependent variables before differencing.

[32] Moreover, in unreported regressions, we find that acquisition has an insignificant zero effect on a more general measure of bank specialization in *any* sector, a Herfindahl index of client assets across two-digit sectors. This suggests that bank specialization in the target firm's sector is what matters to acquirers.

[33] When not applying the inverse hyperbolic sine transformation in Panel C, and thus selecting only firms with at least one foreign bank in *both* periods of the difference, the sample drops to fewer than 16,000 observations, rendering most coefficients insignificant.

dustry expertise of the local banks and pursue foreign banks for their broad client base. Considering the earlier observation that most foreign banks added after acquisition are not new to the target's country (see Table A2.2 in the Online Appendix), this latter finding is also consistent with the information acquisition motive. Foreign acquirers seek general expertise in dealing with firms in the country of the domestic banks but not of foreign banks, either because the acquirers are multinationals and possess cutting-edge knowledge themselves or because they prefer "connected" domestic banks as the conduit of knowledge from their other client-firms.

5.4 Extensions

In this section we introduce several interactions with firm, country, and industry characteristics. These interactions serve as mediating factors for our hypotheses about potential explanations for the changes in bank relationships following corporate acquisitions.

Heterogeneity of target firm size

Do smaller firms experience greater or lesser changes in their bank relationships after being acquired? One potential reason for anticipating more significant changes is that smaller firms often encounter more limitations in accessing financing and other banking services due to their typically younger age and smaller asset size. This can result in them being perceived as more opaque and less creditworthy in the eyes of banks (see the earlier work by Fazzari et al. (1988), Petersen and Rajan (1994), and Khwaja and Mian (2008) more recently). Becoming a part of a larger firm could potentially alleviate this problem. Conversely, larger firms may require multiple bank relationships for various purposes, such as borrowing, currency management, and other services, either within a single country or across multiple countries. Additionally, bank knowledge may be more beneficial to smaller firms, as they often have limited resources to generate their own knowledge, potentially resulting in more frequent changes in bank relationships.

We split the sample according to the target firm's size in terms of employment and repeat

the exercise from Tables 2 and 4 for several categories of firm size. Firms with less than 50 employees are "very small" and those with less than 250 are "small" according to the OECD definition. The US Small Business Association (US SBA) classifies firms with fewer than 500 employees as "small" and those with 500 or more employees as "large". We consider both classifications in our empirical analysis.

Table 5 focuses on the count of bank relationships. Within the three definitions of a small firm (columns 1 to 6), we find some evidence that small firms add more bank relationships, this effect being driven by domestic acquirers. However, many more banks are added by the largest firms (columns 7-8) at the behest of either their domestic or foreign buyers. To interpret these non-linear effects, we turn to the results on general bank knowledge reported in Table 6[34] and on specialist bank knowledge from Table 7.

Starting with large firms in the right-most columns of both tables, we see that the increase in bank relationships does not change bank knowledge or specialization. As large firms presumably possess and generate economic and sector knowledge in-house at a lower cost than small firms, the added banks are likely utilized for different purposes, such as lending, currency risk management, and other services. Foreign acquirers' addition of banks to large targets, seen in column 8 of Table 5, also does not affect the stock of bank knowledge of these firms (columns 4, 8, and 12 in Tables 6 and 7).

When we compare Panels A of Tables 6 and 7 to the first row of Table 5, we see a very different picture for small firms. Net increases in the total number of banks conceal substitutions of general bank knowledge for specialist knowledge by domestic acquirers and only additions of general bank knowledge by foreign acquirers. Furthermore, the overall patterns of changes in bank knowledge of small firms in Panels A in both tables are driven by domestic banks (Panels B) and not by foreign banks (Panels C). All these changes in types of banks for small firms fully mimic the results in the sample of *all firms* from Table 4.

The overall evidence is consistent with the knowledge-seeking motive of acquirers dis-

[34]We report the results of an acquisition in terms of the change in general bank knowledge, measured as the difference (of the inverse hyperbolic sine-transformed) average of total assets managed by a firm's banks within the same country and year, as in the left-most column of Table 4.

cussed in the previous section, except for the very large firms. The former effect is most pronounced among the smallest firms, which are likely more opaque and financially constrained and thus benefit more from a larger supply of the specialized knowledge of domestic banks and general knowledge of foreign banks. In contrast, the largest firms do not witness significant shifts in bank knowledge but do end up with an increased number of banks following domestic or foreign acquisitions. Nevertheless, we cannot rule out the possibility of seeking financing (or other services) as the motivation behind these changes.

Heterogeneity of country financial development and sector growth

In Online Appendix OA1 we further investigate the possibility of acquirers altering their targets' bank relationships with the aim of enhancing firm financing. First, we exploit differences in financial market development across countries. Acquirers from financially less developed countries may find that their targets have excess demand for financing, which they are unable to satisfy themselves. Consequently, these acquirers may benefit from maintaining (multiple) bank relationships. In particular, in countries with underdeveloped bank credit markets, acquirers may rely less on domestic banks and turn more to foreign banks (especially in the case of domestic acquisitions in such markets) or their internal capital markets (mostly for foreign acquisitions by well-capitalized multinationals). We estimate triple diff-in-diff regressions by interacting our acquisition dummies with an indicator variable that takes the value of one if the target firm's country lies below the sample median in terms of the ratio of private credit provided by banks and other financial institutions to GDP.

The results presented in Table OA1.1 indicate that in less-financially developed countries, both types of acquirers retain and even expand the number of domestic banks. In contrast, domestic buyers tend to decrease the number of foreign banks. This suggests that local bank relationships are of greater importance in countries with underdeveloped capital markets. These findings run counter to the idea of seeking financing and instead align more closely with the notion of accumulating (banking) knowledge.

Second, we exploit the cross-industry variation in growth rates by interacting the ac-

quisition dummies with an indicator of whether the target company's sector lies below the sample median of the average industry growth rate within the EU-15 sample, weighted by country size. The idea is that slow-growing sectors would need less external funding, including through banks, than fast-growing sectors. We find only weak evidence of this channel for foreign acquirers who marginally reduce foreign bank relationships. The results are more in line with the bank knowledge story we document in the rest of the paper, where foreign acquirers try to add domestic banks in slow-growing sectors, probably to boost their competitiveness by means of local bank knowledge.

5.5 Robustness

Matching estimator

Our rich set of fixed effects and target-firm controls in combination with first differencing and firm-specific trends allows us to control for a host of observed and unobserved factors that both influence the decision of the acquirer to buy the target firm and the characteristics of target firms that determine the ease which they change bank relationships. To further strengthen this approach, we build a sample of *matched* firm pairs where we match on observables, before taking the first differences to absorb firm fixed effects. This approach builds on similar identification strategies in the empirical corporate finance literature (see Roberts and Whited, 2013, for review), except that we apply so-called *coarsened exact matching* (CEM; see Iacus et al. (2011)) in place of propensity-score matching. CEM creates exact matches on all binary and count variables and exact matches within bins of continuous variables. Our matched pairs of firm-years will be equal in all observable characteristics, including the number of bank relationships at $t-1$, and only differ by being 'treated' by the acquisition event or not. The benefits of the CEM approach are automatic balancing on (bins of) matching variables and safeguarding against the model mis-specification. For example, it does not have to assume a probit model as is the case with propensity-score matching.[35]

[35] As the diagnostic of the quality of matching, the CEM method offers a statistic L that measures the sum of the degree of overlap between the areas of multidimensional treated and control histograms, within each matching cell that is created by the multivariate dimensions of continuous-variables bins, dummy, and

We match exactly on count variables, such as the initial number of bank relationships, and on binary variables, such as acquisition status and majority foreign ownership. For continuous variables, we split each variable into bins to build exact matches to the extent that treated and control firms are observed in the same bin. Our matching variables are: a proxy for credit demand (Degryse et al., 2019), captured by year×industry×city×asset-decile bins, seven bins of lagged employment (of 0-10, 11-20, 21-50, 51-150, 151-250, and 251-2,500 workers[36]), percentile-based bins of lagged operating revenue (0-10, 11-25, 26-50, 51-75, 76-90, 91-99.9), ten equally spaced bins of: one and two lags of output growth, one lag of employment growth, exact matches on: the lagged Number of foreign and the Number of domestic bank relationships, lagged Majority foreign ownership, lagged Main owner controls >50% dummy, lagged Joint venture (50-50 split) dummy, lagged Number of shareholders, Shared bank before acquisition dummy. After matching, we verify that all original non-binned continuous control variables are mean-balanced between treated and control groups (See Table OA2.4).[37]

The result of this exercise is presented in Table OA2.5 in the Online Appendix and shows in Panel A, column 1, that the effect of acquisition on changes in bank relationships is very robust, even in this much smaller sample of 7,727 matched firms.[38] Note that we additionally control for the continuous variables, even though we already matched on their binned versions. Alternatively, excluding them from the regression does not change the results (not shown for brevity). Acquisitions no longer significantly affect banks added and dropped in columns 2 and 3. However, we present in Panel B the matched-sample results

count variables. Using this statistic, we find that increasing the number of bins yields a minor reduction in multivariate imbalance at the cost of greatly reducing the number of matches. Note that this statistic takes into account not just the mean but also higher moments of the distributions. In our baseline estimates, $L = 0.78$, which suggests that $100 * (1 - 0.78)\%$ of the area under the two multidimensional histograms overlap.

[36] 2,500 corresponds to the 99th percentile.

[37] Note that we do not match for additional lagged financial variables: doing so further reduces the sample severely and (if persistent) these are less likely to be exogenous to changes in bank relationships. However, we show in Table OA2.4 that matched pairs of firms are nevertheless balanced in terms of lagged growth of total liabilities and long-term debt.

[38] Note that the method allows more than two firms to be matched within the same cell. We apply method-supplied weights to account for cases where a cell contains more than two firms.

where we differentiate domestic and foreign acquisitions and find significant effects for banks added and dropped that canceled each other out on average in Panel A. Similarly to the main analysis, we still find that domestic acquirers are most active in changing bank relationships. The somewhat more noisy effect of foreign acquirers may be due to a combination of a rare event and a much smaller sample. The results for general country-level bank knowledge are no longer significant, but the effect of domestic acquisition on bank specialization survives this stringent methodology and small sample.

Dropping minority ownership changes

Our main treatment variable is a change in ownership such that the acquirer controls more than 50% of the target firm after the acquisition. However, we also observe ownership changes where small stakes change hands in such a way that there is no change in the majority control of the firm, for example, when a 20% stake changes owner but neither owns more than 50% of the firm before or after the transaction. It is possible that such a substantial share is nevertheless influential enough to change bank relationships in the firm. To exclude this channel, we present results in the Online Appendix Table OA3.1 where we drop all such instances: in this sample we only retain firms that do not experience small changes of ownership (of $< 50\%$). The results show that these small changes in ownership do not drive our main findings for domestic acquisitions, although the foreign acquisition results lose significance in this smaller sample.

Bank relationship around the time of acquisition

In Online Appendix OA4 we investigate the dynamics of bank relationships in the year of any domestic/foreign acquisition (relative to the prior year) and compare the results from this specification to our main results. We document a spike in bank relationships in the year of acquisition followed by a decrease, but there is still a net increase relative to the reference sample of non-acquired firms, as we report in the main results. We conjecture that new banks could have been added and the existing banks retained, or the acquirers may have

used additional banks to help them through the acquisition process (as consultants, bridge loan providers, etc.), all of which are mentioned in the annual report of the target firm in the year of acquisition in Orbis. In the subsequent year, the number of banks settles at the level rationalized by the mechanisms we advocate in our paper. Because we focus on the number (and characteristics) of bank relationships triggered by the acquisition event, which is likely to persist, we prefer to consider the specification (1) as the main estimation equation and define the changes in the number of bank relationships from the year before to the year after the acquisition.

6 Conclusions

This paper uses a novel comprehensive dataset of firm-bank relationships, firm-level data, and several bank characteristics from 23 European countries over 2008-2014 to investigate the dynamics of firm-bank relationships after a domestic or foreign corporate acquisition. Conditional on observables and a rich set of fixed effects, we use the majority acquisitions of firms by foreign or domestic acquirers as a shock to firm-bank relationships.

After acquisition by another firm, target firms tend to increase bank relationships relative to control firms. This increase is driven by new parents actively changing and churning bank relationships by dropping some banks and adding others. Furthermore, the nationality of the acquiring entity matters: domestic acquirers add as well as drop banks, whereas foreign acquirers with arguably larger *a priori* information asymmetry than domestic acquirers aim to tap into local expertise by retaining domestic banks without actively pursuing foreign banks.

Domestic and foreign parents also seek different types of banks for their new subsidiaries. This preference is captured by general or specialist knowledge embodied in the client base of the banks they choose to retain, add, or drop. In the process of actively reshaping bank relationships of target firms, domestic acquirers substitute general knowledge about the economy for specialist industry expertise of the local banks. In contrast, foreign acquirers seek general expertise in dealing with firms in the country of the domestic banks while showing less interest in similar knowledge of foreign banks. This behavior may be attributed

to the multinational nature of foreign acquirers, which allows them to possess cutting-edge knowledge, or to their preference for "connected" domestic banks as conduits of knowledge from their other client firms.

Our results underscore the importance of managing bank relationships as a part of the broader firm financing strategy. The evidence that the channels by which new banks affect firms differ depending on bank nationality, client and geographic networks, and bank specialization invites more work to understand the role of these and other bank attributes for corporate outcomes.

References

Acharya, V.V., Hasan, I., Saunders, A., 2006. Should banks be diversified? Evidence from individual bank loan portfolios. Journal of Business 79, 1355–1412.

Adrian, T., Colla, P., Shin, H.S., 2012. Which financial frictions? Parsing the evidence from the financial crisis of 2007 to 2009.

Aitken, B., Harrison, A., 1999. Do domestic firms benefit from direct foreign investment?. American Economic Review 89, 605–618.

Allen, F., Carletti, E., 2015. The roles of banks in financial systems, in: Berger, A., Molyneux, P., Wilson, J. (Eds.), The Oxford Handbook of Banking. Oxford University Press, pp. 292–311.

Amiti, M., Weinstein, D.E., 2018. How much do idiosyncratic bank shocks affect investment? Evidence from matched bank-firm loan data. Journal of Political Economy 126, 525–587.

Andrade, G., Mitchell, M., Stafford, E., 2001. New evidence and perspectives on mergers. Journal of Economic Perspectives 15, 103–120.

Arnold, J.M., Javorcik, B.S., 2009. Gifted kids or pushy parents? Foreign direct investment and plant productivity in Indonesia. Journal of International Economics 79, 42–53.

Beck, T., Ioannidou, V., Schafer, L., 2018. Foreigners vs. natives: Bank lending technologies and loan pricing. Management Science 64, 3792–3820.

Bellemare, M.F., Wichman, C.J., 2020. Elasticities and the inverse hyperbolic sine transformation. Oxford Bulletin of Economics and Statistics 82, 50–61.

Bena, J., Li, K., 2014. Corporate innovations and mergers and acquisitions. Journal of Finance 69, 1923–1960.

Berger, A.N., Klapper, L.F., Udell, G.F., 2001. The ability of banks to lend to informationally opaque small businesses. Journal of Banking and Finance 25, 2127–2167.

Berger, A.N., Udell, G.F., 2002. Small business credit availability and relationship lending: The importance of bank organisational structure. The Economic Journal 112, F32–F53.

Betton, S., Eckbo, B.E., Thorburn, K.S., 2008. Chapter 15 - Corporate Takeovers, in: Eckbo, B.E. (Ed.), Handbook of Empirical Corporate Finance. Elsevier, San Diego. Handbooks in Finance, pp. 291 – 429.

Blickle, K., Parlatore, C., Saunders, A., 2023. Specialization in banking. Working Paper 31077. National Bureau of Economic Research.

Bloom, N., Sadun, R., Van Reenen, J., 2012. The organization of firms across countries. The Quarterly Journal of Economics 127, 1663–1705.

Bond, P., 2004. Bank and nonbank financial intermediation. The Journal of Finance 59, 2489–2529.

Boot, A.W., 2000. Relationship banking: What do we know? Journal of Financial Intermediation 9, 7–25.

Brennan, M.J., Cao, H.H., 1997. International portfolio investment flows. The Journal of Finance 52, 1851–1880.

Bruno, V., Hauswald, R., 2014. The real effects of foreign banks. Review of Finance 18, 1683–1716.

Buch, C.M., 2003. Information or regulation: What drives the international activities of commercial banks? Journal of Money, Credit, and Banking 35, 851–869.

Buch, C.M., Goldberg, L.S., 2020. Global banking: Toward an assessment of benefits and costs. Annual Review of Financial Economics 12, 141–175.

Cetorelli, N., Goldberg, L.S., 2012. Banking globalization and monetary transmission. The Journal of Finance 67, 1811–1843.

Claessens, S., 2017. Global banking: Recent developments and insights from research. Review of Finance 21, 1513–1555.

Coval, J.D., Moskowitz, T.J., 2001. The geography of investment: Informed trading and asset prices. Journal of Political Economy 109, 811–841.

Degryse, H., De Jonghe, O., Jakovljevic, S., Mulier, K., Schepens, G., 2019. Identifying credit supply shocks with bank-firm data: Methods and applications. Journal of Financial Intermediation 40, 100813.

Degryse, H., Ongena, S., 2001. Bank relationships and firm profitability. Financial Management 30, 9–34.

Dell'Ariccia, G., Marquez, R., 2004. Information and bank credit allocation. Journal of Financial Economics 72, 185–214.

Desai, M.A., Foley, C.F., Hines Jr., J.R., 2004. A multinational perspective on capital structure choice and internal capital markets. The Journal of Finance 59, 2451–2487.

Detragiache, E., Garella, P.G., Guiso, L., 2000. Multiple vs single banking relationships: Theory and evidence. Journal of Finance 55, 1133–1161.

Diamond, D.W., 1984. Financial intermediation and delegated monitoring. Review of Economic Studies 51, 393–414.

Diamond, D.W., 1991. Monitoring and reputation: The choice between bank loans and directly placed debt. Journal of Political Economy 99, 689–721.

Eckbo, B.E., 2014. Corporate takeovers and economic efficiency. Annual Review of Financial Economics 6, 51–74.

Erel, I., Jang, Y., Weisbach, M.S., 2022. Cross-border mergers and acquisitions. Working Paper 30597. National Bureau of Economic Research.

Fazzari, S.M., Hubbard, R.G., Petersen, B.C., 1988. Financing constraints and corporate investment. Brookings Papers on Economic Activity 19, 141–206.

Fee, C., Thomas, S., 2004. Sources of gains in horizontal mergers: Evidence from customer, supplier, and rival firms. Journal of Financial Economics 74, 423 – 460.

Ferrando, A., Popov, A., Udell, G.F., 2019. Do SMEs benefit from unconventional monetary policy and how? Microevidence from the Eurozone. Journal of Money, Credit and Banking 51, 895–928.

Fons-Rosen, C., Kalemli-Ozcan, S., Sorensen, B.E., Villegas-Sanchez, C., Volosovych, V., 2021. Quantifying productivity gains from foreign investment. Journal of International Economics 131, 103456.

Gertner, R.H., Scharfstein, D.S., Stein, J.C., 1994. Internal versus external capital markets. The Quarterly Journal of Economics 109, 1211–1230.

Giannetti, M., Laeven, L., 2012. The flight home effect: Evidence from the syndicated loan market during financial crises. Journal of Financial Economics 104, 23–43.

Giannetti, M., Ongena, S., 2012. Lending by example: Direct and indirect effects of foreign banks in emerging markets. Journal of International Economics 86, 167 – 180.

Gopal, M., 2021. How Collateral Affects Small Business Lending: The Role of Lender Specialization. Working Papers 21-22. Center for Economic Studies, U.S. Census Bureau.

Gopalan, R., Nanda, V., Seru, A., 2007. Affiliated firms and financial support: Evidence from indian business groups. Journal of Financial Economics 86, 759–795.

Gopalan, R., Udell, G.F., Yerramilli, V., 2011. Why do firms form new banking relationships? Journal of Financial and Quantitative Analysis 46, 1335–1365.

Gordon, R.H., Bovenberg, A.L., 1996. Why is capital so immobile internationally? Possible explanations and implications for capital income taxation. The American Economic Review 86, 1057–1075.

Guadalupe, M., Kuzmina, O., Thomas, C., 2012. Innovation and foreign ownership. American Economic Review 102, 3594–3627.

Hale, G., Santos, J.A., 2009. Do banks price their informational monopoly? Journal of Financial Economics 93, 185–206.

Hellwig, M.F., 2000. Financial intermediation with risk sversion. The Review of Economic Studies 67, 719–742.

Hoberg, G., Phillips, G., 2010. Product market synergies and competition in mergers and acquisitions: A text-based analysis. Review of Financial Studies 23, 3773–3811.

Hubbard, R., Kuttner, K.N., Palia, D.N., 2002. Are there bank effects in borrowers' costs of funds? Evidence from a matched sample of borrowers and banks. Journal of Business 75, 559–581.

Iacus, S.M., King, G., Porro, G., 2011. Multivariate matching methods that are monotonic imbalance bounding. Journal of the American Statistical Association 106, 345–361.

Iacus, S.M., King, G., Porro, G., 2012. Causal inference without balance checking: Coarsened Exact Matching. Political Analysis 20, 1–24.

Ioannidou, V., Ongena, S., 2010. Time for a change: Loan conditions and bank behavior when firms switch banks. The Journal of Finance 65, 1847–1877.

Jang, Y., 2017. International corporate diversification and financial flexibility. The Review of Financial Studies 30, 4133–4178.

Javorcik, B., Poelhekke, S., 2017. Former foreign affiliates: Cast out and outperformed? Journal of the European Economic Association 15, 501–539.

Javorcik, B.S., 2004. Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. American Economic Review 94, 605–627.

Kalemli-Ozcan, S., Laeven, L., Moreno, D., 2019. Debt overhang, rollover risk, and corporate investment: Evidence from the European crisis. Working Paper Series 2241. European Central Bank.

Kalemli-Ozcan, S., Sorensen, B., Villegas-Sanchez, C., Volosovych, V., Yesiltas, S., 2023. How to construct nationally representative firm level data from the orbis global database: New facts on smes and aggregate implications for industry concentration. American Economic Journal: Macroeconomics , forthcoming.

Kalemli-Ozcan, S., Sorensen, B., Volosovych, V., 2014. Deep financial integration and volatility. Journal of the European Economic Association 12, 1558–1585.

Kashyap, A.K., Stein, J.C., Wilcox, D.W., 1993. Monetary policy and credit conditions: Evidence from the composition of external finance. American Economic Review 83, 78–98.

Khwaja, A.I., Mian, A., 2008. Tracing the impact of bank liquidity shocks: Evidence from an emerging market. American Economic Review 98, 1413–42.

Krasa, S., Villamil, A.P., 1992. Monitoring the monitor: An incentive structure for a financial intermediary. Journal of Economic Theory 57, 197–221.

Kroszner, R.S., Laeven, L., Klingebiel, D., 2007. Banking crises, financial dependence, and growth. Journal of Financial Economics 84, 187–228.

Kysucky, V., Norden, L., 2016. The benefits of relationship lending in a cross-country context: A meta-analysis. Management Science 62, 90–110.

La Porta, R., de Silanes, F.L., Shleifer, A., 1999. Corporate ownership around the world. The Journal of Finance 54, 471–517.

Leland, H.E., Pyle, D.H., 1977. Informational asymmetries, financial structure, and financial intermediation. The Journal of Finance 32, 371–387.

Liberti, J.M., Petersen, M.A., 2018. Information: Hard and soft. The Review of Corporate Finance Studies 8, 1–41.

Manova, K., Wei, S.J., Zhang, Z., 2015. Firm exports and multinational activity under credit constraints. Review of Economics and Statistics 97, 574–588.

Martinez Peria, M.S., Mody, A., 2004. How foreign participation and market concentration impact bank spreads: Evidence from Latin America. Journal of Money, Credit and Banking 36, 511–537.

Matvos, G., Seru, A., 2014. Resource allocation within firms and financial market dislocation: Evidence from diversified conglomerates. The Review of Financial Studies 27, 1143–1189.

Mian, A., 2006. Distance constraints: The limits of foreign lending in poor economies. Journal of Finance 61, 1465–1505.

Myers, S.C., 1984. The capital structure puzzle. The Journal of Finance 39, 574–592.

Myers, S.C., Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13, 187–221.

Ongena, S., Smith, D.C., 2000a. Bank relationships: A review, in: Harker, P., Zenios, S. (Eds.), Performance of Financial Institutions: Efficiency, Innovation, Regulations. Cambridge University Press.

Ongena, S., Smith, D.C., 2000b. What determines the number of bank relationships? Cross-country evidence. Journal of Financial Intermediation 9, 26–56.

Paravisini, D., Rappoport, V., Schnabl, P., 2023. Specialization in bank lending: Evidence from exporting firms. Journal of Finance 78, 2049 – 2085.

Petersen, M.A., Rajan, R.G., 1994. The benefits of lending relationships: Evidence from small business data. Journal of Finance 49, 3–37.

Portes, R., Rey, H., 2005. The determinants of cross-border equity flows. Journal of International Economics 65, 269–296.

Rajan, R., 1992. Insiders and outsiders: The choice between informed and arm's length debt. Journal of Finance 47, 1367–1400.

Rajan, R.G., Zingales, L., 1998. Financial dependence and growth. The American Economic Review 88, 559–586.

Ramakrishnan, R.T.S., Thakor, A.V., 1984. Information reliability and a theory of financial intermediation. The Review of Economic Studies 51, 415–432.

Roberts, M.R., Whited, T.M., 2013. Endogeneity in empirical corporate finance, Elsevier. volume 2 of *Handbook of the Economics of Finance*, pp. 493 – 572.

Rosenfeld, C.M., 2014. The effect of banking relationships on the future of financially distressed firms. Journal of Corporate Finance 25, 403–418.

Santioni, R., Schiantarelli, F., Strahan, P.E., 2019. Internal capital markets in times of crisis: The benefit of group affiliation. Review of Finance 24, 773–811.

Schäfer, L., 2018. "Forgive but Not Forget": The Behavior of Relationship Banks When Firms Are in Distress. Review of Finance 23, 1079–1114.

Sharpe, S.A., 1990. Asymmetric information, bank lending, and implicit contracts: A stylized model of customer relationships. The Journal of Finance 45, 1069–1087.

Shleifer, A., Vishny, R.W., 1986. Large shareholders and corporate control. Journal of Political Economy 94, 461–488.

Stein, J.C., 1997. Internal capital markets and the competition for corporate resources. Journal of Finance 52, 111–133.

Wei, S.J., Wu, Y., 2002. Negative alchemy? Corruption, composition of capital flows, and currency crises, in: Preventing Currency Crises in Emerging Markets. National Bureau of Economic Research, Inc. NBER Chapters, pp. 461–506.

Williamson, S.D., 1986. Costly monitoring, financial intermediation, and equilibrium credit rationing. Journal of Monetary Economics 18, 159–179.

Winton, A., 1999. Don't put all your eggs in one basket? Diversification and specialization in lending. Center for Financial Institutions Working Papers. Wharton School Center for Financial Institutions, University of Pennsylvania.

Yildirim, A., 2020. The effect of relationship banking on firm efficiency and default risk. Journal of Corporate Finance 65, 101500.

Tables

Table 1: Bank relationships: Descriptive statistics

	(1)	(2)	(3)	(4)	(5)	(6)
	Group 1		Group 2		Group 3	
	Never ownership change (0%)		Ever minority ownership change ($< 50\%$)		Ever majority acquisition ($\geq 50\%$)	
Variable	mean	N	mean	N	mean	N
Panel A Number of bank relationships						
All banks	1.610	421,007	1.634	625,109	1.698	64,259
Domestic banks	1.552	410,672	1.576	609,759	1.641	62,494
Foreign banks	0.057	22,935	0.058	34,687	0.057	3,485
Panel B Change in number of banks relationships, t-1 to t+1						
All banks	-0.037	55,916	-0.028	84,289	0.013	9,788
Domestic banks	-0.054	58,767	-0.043	88,421	-0.005	10,287
Foreign banks	0.016	18,438	0.015	27,828	0.018	2,762
Panel C Number of banks added and dropped, t-1 to t+1						
All banks added	0.231	73,427	0.239	110,975	0.289	12,732
Domestic banks added	0.197	65,445	0.205	99,672	0.255	11,700
Foreign banks added	0.034	14,057	0.034	20,534	0.034	2,106
All banks dropped	0.276	79,836	0.275	119,456	0.285	12,747
Domestic banks dropped	0.257	76,821	0.256	114,423	0.270	12,302
Foreign banks dropped	0.018	7,404	0.019	11,343	0.016	963

Note: This table shows summary statistics for firm-year observations where we can track bank relationships for at least five years and two-period changes in bank relationships (from t-1 to t+1) for at least three observations per firm. In columns 2, 4, and 6 the events statistics do not add up because we do not observe the nationality of each bank. Also note that the change in bank relationships (Panel B) is the sum of changes in foreign, domestic, and missing nationality bank relationships.

Table 2: Acquisitions and change in bank relationships

Dependent variable →	Change in number of bank relationships, t-1 to t+1			
	Net change ...of which →		Added	Dropped
	(1)	(2)	(3)	(4)
Majority acquisition	0.037***	0.037***	0.099***	0.068***
	(0.012)	(0.012)	(0.017)	(0.015)
Majority foreign owned (>50%), t-1	-0.011	-0.011	-0.079***	-0.068***
	(0.017)	(0.017)	(0.025)	(0.023)
Main owner controls >50%, t-1	0.001	0.002	0.008	0.008
	(0.015)	(0.015)	(0.023)	(0.020)
Joint venture (50-50 split), t-1	0.052***	0.052***	0.061***	0.021
	(0.015)	(0.015)	(0.019)	(0.018)
Number of shareholders, t-1	0.008	0.008	0.109***	0.102***
	(0.008)	(0.008)	(0.012)	(0.011)
Shared bank, t-1	-0.018	-0.019	0.049	0.067
	(0.027)	(0.027)	(0.043)	(0.042)
log output, t-1		0.018***	-0.018*	-0.032***
		(0.004)	(0.009)	(0.009)
log employment, t-1		-0.013**	0.078***	0.088***
		(0.006)	(0.015)	(0.014)
log total assets, t-1		0.018***	0.085***	0.068***
		(0.003)	(0.010)	(0.009)
Δlog output, t-1		-0.010***	-0.017**	-0.009
		(0.003)	(0.008)	(0.008)
Δlog employment, t-1		0.017***	-0.069***	-0.083***
		(0.005)	(0.009)	(0.009)
Δlog assets, t-1		-0.009***	-0.065***	-0.056***
		(0.002)	(0.006)	(0.005)
Δlog output, t-2		-0.004**	-0.025***	-0.022***
		(0.002)	(0.005)	(0.005)
Observations	423,947	423,947	423,947	423,947
R-squared	0.787	0.787	0.581	0.683
Firm & Industry-Year FE	✓	✓	✓	✓
№ initial for./dom. BRs FE	✓	✓	✓	✓

Note: This table shows difference-in-difference OLS regressions of the effect of acquisition on changes in the number of bank relationships. Columns 1 to 4 comprise a sample of firm-years in which at most one direct investment event happens. *t* refers to the acquisition year, *t-1* is the year before the acquisition, and *t+1* is the year following the acquisition. *№ initial for./dom. BRs FE* are fixed effects for the number of initial foreign and/or domestic bank relationships in t-1. Robust standard errors (clustered by country-sector-year) in parenthesis: *** p < 0.01, ** p < 0.05, * p < 0.10. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources.

Table 3: Nationality of acquirers and banks

Panel A

Dependent variable →	Δ number of **All** bank relationships		
	Net change ...of which→	Added	Dropped
	(1)	(2)	(3)
Domestic acquisition	0.042***	0.166***	0.131***
	(0.013)	(0.020)	(0.018)
Foreign acquisition	0.026*	-0.051**	-0.074***
	(0.013)	(0.022)	(0.020)
Observations	423,947	423,947	423,947
R-squared	0.787	0.581	0.683
Standard controls & FEs	✓	✓	✓

Panel B

Dependent variable →	Δ number of **Domestic** bank relationships		
	Net change ...of which→	Added	Dropped
	(4)	(5)	(6)
Domestic acquisition	0.003	0.121***	0.126***
	(0.014)	(0.017)	(0.018)
Foreign acquisition	0.049***	-0.025	-0.071***
	(0.014)	(0.019)	(0.019)
Observations	423,947	423,947	423,947
R-squared	0.782	0.616	0.678
Standard controls & FEs	✓	✓	✓

Panel C

Dependent variable →	Δ number of **Foreign** bank relationships		
	Net change ...of which→	Added	Dropped
	(7)	(8)	(9)
Domestic acquisition	0.039***	0.045***	0.005**
	(0.006)	(0.006)	(0.002)
Foreign acquisition	-0.023***	-0.026***	-0.004
	(0.006)	(0.007)	(0.004)
Observations	423,947	423,947	423,947
R-squared	0.748	0.587	0.782
Standard controls & FEs	✓	✓	✓

Note: This table shows OLS regressions of the effect of acquisition on the composition of bank relationships, by type of bank, from the year before the acquisition t-1 to the year following the acquisition t+1. A foreign bank is defined as a bank with headquarters outside the target's own country. Standard controls, listed in Table 2, column 2, are included, but the coefficients are not reported for space considerations. Standard fixed effects include firm and sector-year fixed effects and fixed effects for the number of initial foreign and/or domestic bank relationships in t-1. Robust standard errors (clustered by country-sector-year) in parenthesis: *** p < 0.01, ** p < 0.05, * p < 0.10. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources.

Table 4: Bank knowledge

Panel A

Dependent variable →	Δihs **All** bank client assets within ↓		Δihs nr. of cities served by **All** banks within	Δ nr. of **All** banks specialized in firm's 2-digit sector
	Country	City	Country	
	(1)	(2)	(3)	(4)
Domestic acquisition	-0.048*	-0.189**	-0.031**	0.023**
	(0.026)	(0.076)	(0.015)	(0.010)
Foreign acquisition	0.081***	-0.155	0.052**	0.008
	(0.031)	(0.102)	(0.021)	(0.010)
Observations	414,569	414,569	423,899	423,947
R-squared	0.592	0.525	0.617	0.436
Standard controls & FEs	✓	✓	✓	✓

Panel B

Dependent variable →	Δihs **Domestic** bank client assets within ↓		Δihs nr. of cities served by **Domestic** banks within	Δ nr. of **Domestic** banks specialized in firm's 2-digit sector
	Country	City	Country	
	(5)	(6)	(7)	(8)
Domestic acquisition	-0.151**	-0.302***	-0.071***	0.021**
	(0.061)	(0.088)	(0.022)	(0.010)
Foreign acquisition	0.243***	-0.077	0.083***	0.004
	(0.063)	(0.112)	(0.025)	(0.010)
Observations	414,606	414,606	423,894	423,947
R-squared	0.777	0.623	0.726	0.436
Standard controls & FEs	✓	✓	✓	✓

Panel C

Dependent variable →	Δihs **Foreign** bank client assets within ↓		Δihs nr. of cities served by **Foreign** banks within	Δ nr. of **Foreign** banks specialized in firm's 2-digit sector
	Country	City	Country	
	(9)	(10)	(11)	(12)
Domestic acquisition	1.039***	0.763***	0.325***	0.002
	(0.161)	(0.122)	(0.048)	(0.002)
Foreign acquisition	-0.623***	-0.392***	-0.182***	0.005
	(0.148)	(0.118)	(0.044)	(0.003)
Observations	422,856	422,856	423,899	423,947
R-squared	0.687	0.630	0.625	0.400
Standard controls & FEs	✓	✓	✓	✓

Note: This table shows OLS regressions of the effect of acquisition on the composition of bank relationships, by type of bank, from the year before the acquisition t-1 to the year following the acquisition t+1. A foreign bank is defined as a bank with headquarters outside the target's own country. *ihs* is the inverse hyperbolic sine transformation. Standard controls, listed in Table 2, column 2, are included but the coefficients are not reported for space considerations. Standard fixed effects include firm and sector-year fixed effects and fixed effects for the number of initial foreign and/or domestic bank relationships in t-1. Robust standard errors (clustered by country-sector-year) in parenthesis: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources.

Table 5: Acquisitions and change in bank relationships: Small versus large firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable →	Change in number of bank relationships, t-1 to t+1							
Firm employees →	< 50		< 250		< 500		≥ 500	
Majority acquisition	0.031*		0.022*		0.027**		0.116***	
	(0.016)		(0.013)		(0.012)		(0.041)	
Domestic acquisition		0.037**		0.026*		0.030**		0.133***
		(0.018)		(0.014)		(0.013)		(0.048)
Foreign acquisition		0.011		0.011		0.019		0.098**
		(0.021)		(0.014)		(0.014)		(0.049)
Observations	231,988	231,988	366,057	366,057	393,457	393,457	22,447	22,447
R-squared	0.748	0.748	0.782	0.782	0.784	0.784	0.847	0.847

Note: This table shows difference-in-difference OLS regressions of the effect of acquisition on changes in the number of bank relationships. t refers to the acquisition year, t-1 is the year before the acquisition, and t+1 is the year following the acquisition. Firms with < 50 employees are very small; firms with < 250 are small according to the OECD; firms with < 500 are small according to the US SBA; firms with ≥ 500 are large. *№ initial for./dom. BRs FE* are fixed effects for the number of initial foreign and/or domestic bank relationships in t-1. Robust standard errors (clustered by country-sector-year) in parenthesis: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources.

Table 6: Banks' general knowledge: Small versus large target firms

Dependent variable →	Change in general bank knowledge (= Δ ihs average of ∑assets managed by a firm's banks within same country and year, t-1 to t+1)			
Firm employees →	< 50	< 250	< 500	≥ 500
Panel A: **All** banks' general knowledge				
	(1)	(2)	(3)	(4)
Domestic acquisition	-0.082**	-0.079***	-0.069***	0.211
	(0.033)	(0.027)	(0.026)	(0.131)
Foreign acquisition	0.067	0.102***	0.090***	0.040
	(0.050)	(0.035)	(0.032)	(0.105)
Observations	227,065	357,771	384,625	22,039
R-squared	0.567	0.590	0.593	0.645
Panel B: **Domestic** banks' general knowledge				
	(5)	(6)	(7)	(8)
Domestic acquisition	-0.243***	-0.233***	-0.196***	0.253
	(0.092)	(0.069)	(0.065)	(0.161)
Foreign acquisition	0.260**	0.245***	0.234***	0.146
	(0.120)	(0.075)	(0.070)	(0.122)
Observations	227,082	357,799	384,653	22,042
R-squared	0.716	0.774	0.779	0.854
Panel C: **Foreign** banks' general knowledge				
	(9)	(10)	(11)	(12)
Domestic acquisition	1.506***	1.375***	1.188***	-0.338
	(0.242)	(0.186)	(0.174)	(0.235)
Foreign acquisition	-0.629**	-0.503***	-0.547***	-0.340
	(0.255)	(0.167)	(0.159)	(0.373)
Observations	231,542	365,147	392,468	22,363
R-squared	0.624	0.675	0.682	0.850
Standard controls	✓	✓	✓	✓
Firm & 4 dgt Industry-Year FE	✓	✓	✓	✓
№ initial for./dom. BRs FE	✓	✓	✓	✓

Note: This table shows OLS regressions of the effect of acquisition on changes in general bank knowledge, by type of bank (foreign or domestic), from the year before the acquisition t-1 to the year following the acquisition t+1. A foreign bank is defined as the bank with headquarters outside the target's own country. Firms with < 50 employees are very small; firms with < 250 are small according to the OECD; firms with < 500 are small according to the US SBA; firms with ≥ 500 are large. Standard controls, listed in Table 2, column 2, are included, but the coefficients are not reported for space considerations. *ihs* is the inverse hyperbolic sine transformation. *№ initial for./dom. BRs FE* are fixed effects for the number of initial foreign and/or domestic bank relationships in t-1. Robust standard errors (clustered by country-sector-year) in parenthesis: *** p < 0.01, ** p < 0.05, * p < 0.10. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources.

Table 7: Banks' specialist knowledge: Small versus large target firms

Dependent variable →	Change in number of banks specialized in firm's 2-digit sector, t-1 to t+1			
Firm employees →	< 50	< 250	< 500	≥ 500
Panel A: **All** specialized banks				
	(1)	(2)	(3)	(4)
Domestic acquisition	0.042***	0.033***	0.030***	-0.037
	(0.014)	(0.011)	(0.011)	(0.038)
Foreign acquisition	-0.004	0.009	0.009	0.028
	(0.015)	(0.011)	(0.011)	(0.043)
Observations	231,988	366,060	393,460	22,447
R-squared	0.411	0.429	0.431	0.545
Panel B: **Domestic** specialized banks				
	(5)	(6)	(7)	(8)
Domestic acquisition	0.041***	0.032***	0.029***	-0.057
	(0.014)	(0.011)	(0.011)	(0.035)
Foreign acquisition	-0.007	0.004	0.003	0.012
	(0.015)	(0.011)	(0.010)	(0.040)
Observations	231,988	366,060	393,460	22,447
R-squared	0.409	0.429	0.432	0.544
Panel C: **Foreign** specialized banks				
	(9)	(10)	(11)	(12)
Domestic acquisition	0.001	0.001	0.001	0.019
	(0.002)	(0.001)	(0.001)	(0.013)
Foreign acquisition	0.003	0.004	0.006*	0.016
	(0.003)	(0.003)	(0.003)	(0.015)
Observations	231,988	366,060	393,460	22,447
R-squared	0.391	0.384	0.388	0.529
Standard controls	✓	✓	✓	✓
Firm & 4 dgt Industry-Year FE	✓	✓	✓	✓
№ initial for./dom. BRs FE	✓	✓	✓	✓

Note: This table shows OLS regressions of the effect of acquisition on changes in the number of bank relationships that specialize in a firm's sector, by type of bank (foreign or domestic), from the year before the acquisition t-1 to the year following the acquisition t+1. A foreign bank is defined as the bank with headquarters outside the target's own country. Firms with < 50 employees are very small; firms with < 250 are small according to the OECD; firms with < 500 are small according to the US SBA; firms with ≥ 500 are large. Standard controls, listed in Table 2, column 2, are included but the coefficients are not reported for space considerations. *№ initial for./dom. BRs FE* are fixed effects for the number of initial foreign and/or domestic bank relationships in t-1. Robust standard errors (clustered by country-sector-year) in parenthesis: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources.

Appendix

A1 Example firm

Table A1.1: Example firm ES000207064: Bank names

Year	Bank Name	Code	Event	Foreign Owner	Country
2009	Banco Mare Nostrum	502			
2009	Cajamar Caja Rural	1432			
2009	Caixabank	1574			
2010	Banco Mare Nostrum	502	dropped		
2010	Cajamar Caja Rural	1432			
2010	Caixabank	1574			
2011	Cajamar Caja Rural	1432	dropped		
2011	Caixabank	1574			
2012	Caixabank	1574	dropped		
2012	Cajas Rurales Unidas	1659	added		
2013	Banco Caixa General	462	added	Caixa Geral de Depositos	Portugal
2013	Banco Mare Nostrum	502	added		
2013	Cajas Rurales Unidas	1659			

Note: *ES000207064* denotes a Spanish (target) firm. *Dropped* is an event where the bank is no longer a relationship next year. It is counted as having been dropped in the next year in Table A1.2. *Added* is an event where the bank was not yet a relationship in the previous year. *Foreign Owner* lists the ultimate owner bank of the bank in the third column, and *Country* that ultimate owner's home country.

Table A1.2: Example firm ES000207064: Bank relationships and acquisitions

Year	Bank relationships			Domestic Bank relationships			Foreign Bank relationships			Acquisition	
	Total	+	-	Total	+	-	Total	+	-	Foreign	Domestic
2009	3			3			0			0	1
2010	3	0	0	3	0	0	0	0	0	0	0
2011	2	0	1	2	0	1	0	0	0	0	0
2012	2	1	1	2	1	1	0	0	0	0	0
2013	3	2	1	2	1	1	1	1	0	0	0

Note: *ES000207064* denotes a Spanish (target) firm. + denotes an addition, while − denotes a bank that is dropped, both relative to the previous year. *Foreign* stands for a majority acquisition event where the buyer was a foreign firm, and *Domestic* stands for a majority acquisition event where the buyer was a domestic firm, both from the perspective of the target firm.

A2 Summary statistics

Table A2.1: Summary statistics: Regression sample for Table 2

Variable	N	mean	s.d.	min	max
Number of bank relationships	442,927	1.71	1.04	1.00	22.00
Change in number of bank relationships (t-1 to t)	442,927	-0.02	0.45	-15.00	16.00
Change in number of domestic bank relationships (t-1 to t)	442,927	-0.02	0.45	-14.00	13.00
Change in number of foreign bank relationships (t-1 to t)	442,927	-0.00	0.16	-3.00	4.00
Change in number of bank relationships (t-1 to t+1)	442,927	-0.04	0.63	-15.00	20.00
Change in number of domestic bank relationships (t-1 to t+1)	442,927	-0.06	0.64	-14.00	17.00
Change in number of foreign bank relationships (t-1 to t+1)	442,927	0.02	0.26	-3.00	4.00
Majority acquisition	442,927	0.02	0.13	0.00	1.00
New Domestic acquisition	442,927	0.01	0.08	0.00	1.00
Existing Domestic acquisition	442,927	0.01	0.08	0.00	1.00
New Foreign acquisition	442,927	0.00	0.06	0.00	1.00
Existing Foreign acquisition	442,927	0.00	0.04	0.00	1.00
Majority foreign owned (>50%), t-1	442,927	0.22	0.41	0.00	1.00
Main owner controls >50%, t-1	442,927	0.63	0.48	0.00	1.00
Joint venture (50-50 split), t-1	442,927	0.13	0.34	0.00	1.00
Number of shareholders, t-1	442,927	1.62	1.01	0.00	10.00
Shared bank, t-1	442,927	0.00	0.03	0.00	1.00
Shared foreign bank, t-1	442,927	0.00	0.00	0.00	1.00
Number of domestic bank relationships, t-1	442,927	1.66	1.01	0.00	19.00
Number of foreign bank relationships, t-1	442,927	0.07	0.27	0.00	6.00
Number of banks added (t-1 to t+1)	442,927	0.30	0.68	0.00	20.00
Number of domestic banks added (t-1 to t+1)	442,927	0.26	0.61	0.00	17.00
Number of foreign banks added (t-1 to t+1)	442,927	0.05	0.22	0.00	4.00
log output, t-1	442,927	15.06	1.91	-0.22	25.67
log employment, t-1	442,927	3.81	1.42	0.00	12.93
log total assets, t-1	442,927	14.82	2.04	1.06	26.42
Δlog output, t-1	442,927	-0.05	0.49	-11.63	11.94
Δlog employment, t-1	442,927	0.01	0.28	-9.23	9.36
Δlog assets, t-1	442,927	-0.00	0.33	-7.34	8.56
Δlog output, t-2	442,927	-0.03	0.53	-11.63	17.39
Change in mean of firm's bank's assets managed by country and t (t-1 to t)	440,675	-0.01	1.00	-12.23	14.44
Change in Dom. mean of firm's bank's assets managed by country and t (t-1 to t)	424,785	-0.01	0.99	-12.23	14.44
Change in For. mean of firm's bank's assets managed by country and t (t-1 to t)	20,232	0.11	0.92	-8.58	10.84
Change in mean of firm's bank's assets managed by city and t (t-1 to t)	434,877	0.03	1.06	-11.23	16.09
Change in Dom. mean of firm's bank's assets managed by city and t (t-1 to t)	419,202	0.03	1.05	-11.25	16.09
Change in For. mean of firm's bank's assets managed by city and t (t-1 to t)	19,959	0.04	1.07	-8.25	10.76
Change in № banks that are max specialized in firm's 2-digit sector (t-1 to t)	442,927	-0.00	0.31	-5.00	6.00
Change in Dom. № banks that are max specialized in firm's 2-digit sector (t-1 to t)	442,927	-0.00	0.30	-5.00	6.00
Change in For. № banks that are max specialized in firm's 2-digit sector (t-1 to t)	442,927	0.00	0.08	-2.00	4.00

Note: This table shows summary statistics for firm-year observations where we can track bank relationships for at least five years and two-period changes in bank relationships (from t-1 to t+1) for at least three observations per firm. The sample corresponds to Table 2. "Δ" is the simple difference over the stated time period. № is short for "number of". Bank relationships are in number of individual unique banks. All financial variables are in constant US dollars with the base being 2005.

Table A2.2: Decomposing added banks

Panel A: Majority acquisitions (Group 3)	...where 1 or more bank was added	missing
Nr Domestic banks added, t-1 to t+1	1,415	0
... of which: new to acquirer, t-1 to t+1	52	657
Nr Foreign banks added, t-1 to t+1	490	0
... of which: new to country, t-1 to t+1	2	0
... of which: new to acquirer, t-1 to t+1	8	1
Panel B: Minority ownership change (Group 2)	**...where 1 or more bank was added**	**missing**
Nr Foreign banks added, t-1 to t+1	20,002	0
... of which: new to country, t-1 to t+1	238	0
... of which: new to acquirer, t-1 to t+1	6	28

Note: The second column counts the number of observations where one or more banks were added of the type listed in the first column. *Missing data* implies that we do not have sufficient information, such as when the nationality of the bank is unknown, or if we do not know the bank of the acquirer, such as when the acquirer is an individual.

the Internet Appendix (not for publication)

for Corporate Acquisitions and Bank Relationships

October 28, 2023

This Appendix contains additional results, figures, and tables referred to but not included in the main text.

OA1 Heterogeneity by financial market development and industry growth

Our results are consistent with the idea that foreign buyers seek local knowledge and services of domestic banks rather than access to foreign capital through foreign banks, while domestic acquirers actively reshuffle the portfolio of banks, choosing the banks that specialize in servicing clients in the sector of the acquired firms. In this Appendix we introduce two checks of the robustness of this finding against the possibility that acquirers change bank relationships with the purpose of improving firm financing. We estimate triple diff-in-diff regressions with the mediator variables, which are measured at the macro-level relative to a given target company but correlate to the potential financing needs of these companies.

Heterogeneity by financial market development

If changing banks for the purpose of financing is important for acquirers, adding new relationships with foreign banks should be more pronounced for countries with relatively *less* developed domestic financial markets, because, on average, the firm financial constraints there are stronger. Thus, the added value of having more foreign banks (in terms of increasing the availability and cost of external finance) is likely to be larger. We split the sample of countries by the median level of financial development, as measured by private credit over GDP, and interact the binary variable taking the value of one if the firm's country is below the median (the Low FD Country) with our acquisition dummies. Table OA1.1 reports the results, where columns 1 and 3 replicate, correspondingly, columns 7 and 4 from Table 3 for comparison.

An average domestic acquisition is associated with adding more foreign banks relative to non-acquired firms (column 1). But this is reversed in the weak local financial markets, where the overall effect is negative (the sum of the coefficients 0.059-0.091 is negative and exactly equal to the coefficient of Domestic acquisition in column 1 with the sign reversed). A foreign acquisition is associated with a reduction in the number of foreign banks, and this average effect does not depend on the level of financial development, because the coefficient

of the interaction in column 2 is statistically insignificant.

The finding that *any* acquisition in a less financially developed country is followed by the reduction of foreign bank relationships, although surprising, does not necessarily mean that foreign banks do not provide access to financing in these countries. The explanation may be structural because these countries may have few foreign banks available; recall that almost all foreign banks are *already* present in the target country, and that added banks almost always have a relationship with the buyer already (Table A2.2). We conjecture that targets of foreign acquisition may receive financing through internal capital markets, since foreign buyers have easier access to financing outside of financially under-developed markets.[39] Recall the result that domestic acquirers prefer foreign banks which have lots of local clients (which we interpret as general knowledge). It is plausible that shallow financial markets do not have such "universal" foreign banks. Domestic acquirers may simply try to optimize the relationships by focusing on fewer core foreign banks.

In column 4 of Table OA1.1 we repeat the exercise for changes in domestic banks. Both types of buyers retain and add domestic banks when an acquisition takes place in a less financially developed country. Hence, domestic bank relationships tend to be retained and built up where bank relationships are harder to form, access to local capital is more difficult to obtain, and local knowledge counts more heavily. The overall effect of domestic acquisition in such markets is also positive but much more muted in terms of magnitude.

While we cannot rule out that acquirers may seek extra financing via domestic banks, the results concerning the type of banks added in Section 5.3 together with triple diff-in-diff regressions in this table are more consistent with the accumulation of knowledge by firm acquirers, primarily via domestic banks, than with gaining extra bank financing.

[39] Consistent with the latter argument, Kalemli-Ozcan et al. (2014) show that international ownership diversification explains the positive correlation between foreign direct ownership of firms and firm- and region-level output volatility using Orbis data for European countries. The underlying mechanism is that firms owned by foreign entities take on riskier but potentially more profitable projects.

Heterogeneity by industry growth

In Table OA1.2, we exploit the target's sector heterogeneity in terms of possible financing needs. We build on the firm-level pecking-order theory of leverage by Myers and Majluf (1984) and Myers (1984) and the widely cited industry-level empirical analysis by Rajan and Zingales (1998). The idea is that fast-growing firms or, by extension, sectors, would on average rely more on external finance, for example, from banks. With the financing motive dominant, we would expect more than average reduction of bank relationships following the acquisitions in slow-growing sectors. We interact the acquisition dummies with the slow-growth sector indicator, taking the value of one if in the given year the target firm's industry lies below the sample median in terms of the average industry growth rate within the EU-15 sample, weighted by country size. We do not see any differences between sectors following domestic acquisitions. After foreign acquisition there is marginally significant evidence of a financing motive via foreign banks in column 1. However, column 2 implies that foreign investors prefer to grow the number of domestic banks disproportionally more in slow-growth sectors than in other sectors, which is at odds with the pecking-order theory or evidence of Rajan and Zingales.

Table OA1.1: Acquisitions and change in bank relationships in less financially developed countries

	(1)	(2)	(3)	(4)
Dependent variable	Change in bank relationships, t-1 to t+1			
Type of banks →	Foreign banks		Domestic banks	
Domestic acquisition	0.039***	0.079***	0.003	-0.061***
	(0.006)	(0.009)	(0.014)	(0.017)
Domestic acq. × Low FD country		-0.102***		0.161***
		(0.011)		(0.021)
Foreign acquisition	-0.023***	-0.014*	0.049***	0.006
	(0.006)	(0.008)	(0.014)	(0.019)
Foreign acq. × Low FD country		-0.012		0.079***
		(0.009)		(0.022)
Observations	423,947	423,947	423,947	423,947
R-squared	0.748	0.748	0.782	0.782
Standard controls	✓	✓	✓	✓
Firm and 4 dgt Industry-Year FE	✓	✓	✓	✓
№ initial for./dom. bank relationships FE	✓	✓	✓	✓
non-zero events	26,633	26,633	79,416	79,416

Note: This table shows OLS regressions of the effect of acquisition on bank relationships. "Low FD country" is the indicator variable taking the value of one if the target company's country lies below the sample median in terms of the private credit provided by banks and other financial institutions over GDP. Standard controls, listed in Table 2, are included, but the coefficients are not reported for space considerations. *№ initial for./dom. BRs FE* are fixed effects for the number of initial foreign and/or domestic bank relationships in $t-1$. Robust standard errors (clustered by country-sector-year) in parenthesis: *** p < 0.01, ** p < 0.05, * p < 0.10. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources.

Table OA1.2: Acquisitions and change in bank relationships in slow-growth sectors

	(1)	(2)
Dependent variable	Change in bank relationships, t-1 to t+1	
Type of banks →	Foreign banks	Domestic banks
Domestic acquisition	0.033***	-0.013
	(0.009)	(0.022)
Domestic acq. × Slow growth sector	0.014	0.030
	(0.010)	(0.023)
Foreign acquisition	-0.008	0.004
	(0.010)	(0.020)
Foreign acq. × Slow growth sector	-0.022*	0.065***
	(0.012)	(0.022)
Observations	318,570	318,570
R-squared	0.725	0.760
Standard controls included	✓	✓
Firm and 4 digit Industry-year FE	✓	✓
№ initial for./dom. bank relationships FE	✓	✓
non-zero events	20,329	59,062

Note: This table shows OLS regressions of the effect of acquisition on bank relationships. "Slow growth sector" is the indicator variable taking the value of one if the target company's industry lies below the sample median in terms of the average industry growth rate within the EU-15 sample, weighted by country size. Standard controls, listed in Table 2, are included but the coefficients are not reported for space considerations. *№ initial for./dom. BRs FE* are fixed effects for the number of initial foreign and/or domestic bank relationships in $t-1$. Robust standard errors (clustered by country-sector-year) in parenthesis: *** p < 0.01, ** p < 0.05, * p < 0.10. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources.

OA2 Matching

Table OA2.3: Summary statistics: Regression sample for Table OA2.5.

Variable	N	mean	s.d.	min	max
Number of bank relationships	7,730	1.42	0.93	1.00	13.00
Change in number of bank relationships (t-1 to t)	7,730	0.02	0.36	-3.00	5.00
Change in number of domestic bank relationships (t-1 to t)	7,730	0.03	0.35	-3.00	5.00
Change in number of foreign bank relationships (t-1 to t)	7,730	-0.00	0.10	-2.00	1.00
Change in number of bank relationships (t-1 to t+1)	7,730	0.02	0.43	-3.00	5.00
Change in number of domestic bank relationships (t-1 to t+1)	7,730	-0.00	0.44	-4.00	5.00
Change in number of foreign bank relationships (t-1 to t+1)	7,730	0.03	0.20	-2.00	1.00
Majority acquisition	7,730	0.21	0.41	0.00	1.00
New Domestic acquisition	7,730	0.07	0.25	0.00	1.00
Existing Domestic acquisition	7,730	0.07	0.25	0.00	1.00
New Foreign acquisition	7,730	0.05	0.22	0.00	1.00
Existing Foreign acquisition	7,730	0.02	0.14	0.00	1.00
Majority foreign owned (>50%), t-1	7,730	0.25	0.44	0.00	1.00
Main owner controls >50%, t-1	7,730	0.53	0.50	0.00	1.00
Joint venture (50-50 split), t-1	7,730	0.11	0.31	0.00	1.00
Number of shareholders, t-1	7,730	1.35	1.05	0.00	9.00
Shared bank, t-1	7,730	0.01	0.11	0.00	1.00
Shared foreign bank, t-1	7,730	0.00	0.00	0.00	0.00
Number of domestic bank relationships, t-1	7,730	1.32	0.87	0.00	12.00
Number of foreign bank relationships, t-1	7,730	0.07	0.27	0.00	3.00
Number of banks added (t-1 to t+1)	7,730	0.18	0.54	0.00	6.00
Number of domestic banks added (t-1 to t+1)	7,730	0.15	0.47	0.00	5.00
Number of foreign banks added (t-1 to t+1)	7,730	0.04	0.19	0.00	1.00
log output, t-1	7,730	14.89	2.54	7.18	25.67
log employment, t-1	7,730	3.88	1.52	0.00	11.68
log total assets, t-1	7,730	14.45	2.85	6.18	25.85
Δlog output, t-1	7,730	-0.05	0.31	-2.73	2.56
Δlog employment, t-1	7,730	0.03	0.19	-0.97	1.10
Δlog assets, t-1	7,728	-0.04	0.37	-6.77	7.41
Δlog output, t-2	7,730	-0.03	0.36	-5.00	3.86
Change in mean of firm's Bank's assets managed by country and t (t-1 to t+1)	7,720	0.06	0.59	-6.48	8.89
Change in Dom. mean of firm's Bank's assets managed by country and t (t-1 to t+1)	7,319	0.04	0.59	-6.48	8.89
Change in For. mean of firm's Bank's assets managed by country and t (t-1 to t+1)	465	0.07	0.64	-7.08	6.15
Change in mean of firm's Bank's assets managed by city and t (t-1 to t+1)	7,695	0.06	0.64	-10.61	9.02
Change in Dom. mean of firm's Bank's assets managed by city and t (t-1 to t+1)	7,295	0.04	0.66	-10.61	9.02
Change in For. mean of firm's Bank's assets managed by city and t (t-1 to t+1)	461	0.08	0.64	-4.43	5.30
Change in № banks that are max specialized in firm's 2-digit sector (t-1 to t+1)	7,730	0.01	0.33	-3.00	4.00
Change in Dom. № banks that are max specialized in firm's 2-digit sector (t-1 to t+1)	7,730	0.01	0.31	-3.00	4.00
Change in For. № banks that are max specialized in firm's 2-digit sector (t-1 to t+1)	7,730	-0.00	0.10	-1.00	1.00

Note: This table shows summary statistics for firm-year observations in the matched sample of Table OA2.5. "Δ" is the simple difference over the stated time period. № is short for "number of". Bank relationships are in number of individual unique banks. All financial variables are in constant US dollars with the base being 2005.

Table OA2.4: Balancing test in matched sample

Variable	Means of variables		Standardiz.	t-test equality of means	
	Treated	Controls	% bias	t-stats	p-value
log Employment, t-1	39.328	39.305	0.1	0.05	0.960
log Output, t-1	15.494	15.495	-0.0	-0.02	0.984
Δlog Employment, t-1	0.013	0.012	0.5	0.19	0.848
Δlog Output, t-1	-0.027	-0.026	-0.5	-0.17	0.864
Δlog Output, t-2	-0.003	-0.012	2.6	0.97	0.333
log Assets, t-1	15.142	15.127	0.6	0.23	0.818
Δlog Assets, t-1	-0.015	-0.027	3.3	1.19	0.233
Δlog Total Liabilities, t-1	-0.044	-0.056	2.1	0.80	0.423
Δlog Long-Term Debt, t-1	-0.127	-0.119	-0.7	-0.16	0.873

Notes: The table reports the means of the companies that experienced a change in the number of bank relationships (treated) and companies without such change (controls) in the matched sample. Growth rates of x_t are computed as log-difference. The "standardized % bias" is the difference of the sample means in the treated and controls in matched sample as a percentage of the square root of the average of the sample variances in the treated and control groups. The t-tests for equality of means are based on a regression of the variable on a treatment indicator; the regression is weighted using the importance weight estimated by the coarsened exact matching (CEM) methodology described in Iacus et al. (2011). The details of the CEM methodology are described in Section 5.5.

Table OA2.5: Matched sample: Acquisitions and change in all bank relationships

Panel A

Dependent variable →	Change in number of bank relationships, t-1 to t+1			Δ ihs bank general knowledge = ∑assets managed within ↓		Δ number of banks specialized in firm's 2-digit sector
	Net change (of which→)	Added	Dropped	Country and year	City and year	
	(1)	(2)	(3)	(4)	(5)	(6)
Majority acquisition	0.036**	0.016	-0.007	0.023	0.109**	0.009
	(0.017)	(0.021)	(0.020)	(0.026)	(0.048)	(0.012)
Observations	7,727	7,727	7,727	7,656	7,656	7,727
R-squared	0.002	0.027	0.035	0.004	0.003	0.002
Additional controls	✓	✓	✓	✓	✓	✓

Panel B

Dependent variable →	Change in number of bank relationships, t-1 to t+1			Δ ihs bank general knowledge = ∑assets managed within ↓		Δ number of banks specialized in firm's 2-digit sector
	Net change (of which→)	Added	Dropped	Country and year	City and year	
	(1)	(2)	(3)	(4)	(5)	(6)
Domestic acquisition	0.044**	0.073***	0.044*	0.030	0.096*	0.025*
	(0.022)	(0.026)	(0.023)	(0.036)	(0.053)	(0.014)
Foreign acquisition	0.020	-0.088***	-0.100***	0.010	0.134**	-0.021
	(0.020)	(0.025)	(0.026)	(0.029)	(0.066)	(0.017)
Observations	7,727	7,727	7,727	7,656	7,656	7,727
R-squared	0.003	0.030	0.037	0.004	0.004	0.002
Additional controls	✓	✓	✓	✓	✓	✓

Note: This table shows OLS regressions of the effect of acquisition on the composition of bank relationships, from the year before the acquisition $t-1$ to the year following the acquisition $t+1$. A foreign bank is defined as a bank with headquarters outside the target's own country. *ihs* is the inverse hyperbolic sine transformation. Additional controls are lagged levels and lagged growth rates of output, employment, and assets. *№ initial BRs FE* are fixed effects for the number of initial foreign and/or domestic bank relationships in $t-1$. Robust standard errors (clustered by country-sector-year) in parenthesis: *** p < 0.01, ** p < 0.05, * p < 0.10. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources.

OA3 Additional tables and figures

Table OA3.1: Acquisitions and the composition of bank relationships: sample without minority shareholder change

Dependent variable →	Δ number of **All** bank relationships			Δ ihs **All** bank general knowledge = ∑assets managed within ↓		Δ number of **All** banks specialized in firm's 2-digit sector
	Net change of which →	Added	Dropped	Country and year	City and year	
	(1)	(2)	(3)	(4)	(5)	(6)
Domestic acquisition	0.033**	0.240***	0.212***	-0.083***	-0.101***	0.031**
	(0.016)	(0.024)	(0.021)	(0.027)	(0.028)	(0.012)
Foreign acquisition	0.018	0.030	0.013	0.063*	-0.037	0.017
	(0.017)	(0.024)	(0.022)	(0.033)	(0.035)	(0.013)
Observations	293,830	293,830	293,830	292,008	287,462	293,830
R-squared	0.809	0.581	0.701	0.594	0.595	0.440
Standard controls	✓	✓	✓	✓	✓	✓
Firm & Sector-Year FE	✓	✓	✓	✓	✓	✓
№ initial BRs FE	✓	✓	✓	✓	✓	✓

Note: This table replicates Table **??** but in the control sample we also exclude minority shareholder change. This table shows OLS regressions of the effect of acquisition on the composition of bank relationships, from the year before the acquisition t-1 to the year following the acquisition t+1. A foreign bank is defined as a bank with headquarters outside the target's own country. *ihs* is the inverse hyperbolic sine transformation. Standard controls, listed in Table **??**, column 4, are included but the coefficients are not reported for space considerations. *№ initial for./dom. BRs FE* are fixed effects for the number of initial foreign and/or domestic bank relationships in t-1. Robust standard errors (clustered by country-sector-year) in parenthesis: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. See Section 3 for variable definitions and sources.

OA4 Bank relationships at various time horizons

To further explore our data, we estimate several regressions where we correlate the *changes* of and the *count* of bank relationships at various time horizons with contemporaneous acquisition status:

$$\Delta BR_{i,c,t+k} = \mathbf{ACQ}_{i,c,t}\,\gamma_1 + \mathbf{X}_{i,c,t}\,\gamma_2 + \alpha_i + \delta_{s4,t} + \zeta_{i,c,t} \tag{5}$$

$$BR_{i,c,t+k} = \mathbf{ACQ}_{i,c,t}\,\beta_1 + \mathbf{X}_{i,c,t}\,\beta_2 + \alpha_i + \delta_{s4,t} + \epsilon_{i,c,t} \tag{6}$$

where the α_i is firm fixed effect, the $\delta_{s4,t}$ sector-year effects, k takes the value of 0 (the year of acquisition) and 1 (the year following the acquisition year) and ΔBR is defined from the year before acquisition $t-1$ to period $t+k$. As in the rest of the paper, we condition on some controls reflecting ownership structure but suppress the coefficients γ_2 (β_2) for brevity. Table OA4.1 reports the results.

In Panel A we use changes in banking relationships up to the year of acquisition t and the following year $t+1$. Comparing columns 1 and 2, we see a spike in bank relationships in the year of acquisition followed by a decrease the year after. The column 2 result is the replication of the regression from Table 2 in the main text and shows the increase in the number of bank relationships relative to non-acquired (control) firms—just not as large as in the year of acquisition. The latter change is robust to conditioning on whether the acquirer and target had a shared bank at the year of acquisition in column 3. The positive and significant coefficient of this variable suggests that acquirers are likely to add their own banks to targets. In the rest of Panel A we split the acquisition dummy between domestic and foreign acquisitions and confirm these temporal patterns.

In Panel B the dependent variable is the number of bank relationships. It tells the same story that the year of acquisition t coincides with a jump in the number of the target's banks, with some moderation one year later following the acquisition. We conjecture that new banks could have been added and the existing banks retained, or the acquirers may have used additional banks to help them through the acquisition process (as consultants,

bridge loan providers, etc.), all of which were mentioned in the annual report of the target firm in the year of acquisition. In the subsequent year the true number of bank relationships associated with the M&A shocks is observed.

The results from this table rationalize our choice of specification (1) as the main estimation equation, where we define the changes in the number of banking relationships $\Delta BR_{i,c,t+1}$ from $t-1$ to $t+1$.

Table OA4.1: Acquisitions and bank relationships at various time horizons

Panel A
Dependent variable: Changes in Number of bank relationships

Dependent variable timing:	t-1 to t	t-1 to t+1	t-1 to t+1	t-1 to t	t-1 to t+1	t-1 to t+1
	(1)	(2)†	(3)	(4)	(5)†	(6)
Majority acquisition	0.096***	0.037***	0.036***			
	(0.012)	(0.012)	(0.012)			
Domestic acquisition				0.106***	0.042***	0.041***
				(0.013)	(0.013)	(0.013)
Foreign acquisition				0.074***	0.026*	0.026*
				(0.017)	(0.013)	(0.013)
Shared bank, t			0.360*			
			(0.195)			
Shared bank, domestic acquirer, t						0.355*
						(0.195)
Shared bank, foreign acquirer, t						-
Observations	423,947	423,947	423,947	423,947	423,947	423,947
R-squared	0.533	0.787	0.787	0.533	0.787	0.787
4-digit Industry-year FE	✓	✓	✓	✓	✓	✓
№ initial for./dom. BRs FE	✓	✓	✓	✓	✓	✓

Panel B
Dependent variable: Number of bank relationships

Dependent variable timing:	t	t+1	t+1	t	t+1	t+1
	(7)	(8)	(9)	(10)	(11)	(12)
Majority acquisition	0.110***	0.035***	0.034***			
	(0.014)	(0.012)	(0.012)			
Domestic acquisition				0.136***	0.037***	0.035***
				(0.015)	(0.013)	(0.013)
Foreign acquisition				0.052***	0.031**	0.031**
				(0.020)	(0.014)	(0.014)
Shared bank, t			0.370*			
			(0.195)			
Shared bank, domestic acquirer, t						0.369*
						(0.195)
Shared bank, foreign acquirer, t						-
Observations	423,948	423,948	423,948	423,948	423,948	423,948
R-squared	0.904	0.922	0.922	0.904	0.922	0.922
4-digit Industry-year FE	✓	✓	✓	✓	✓	✓

Note: This table shows OLS regressions of the effect of acquisition on the changes in number (in Panel A) and number (in Panel B) of bank relationships at various time intervals relative to acquisition year. t refers to the acquisition year, $t-1$ is the year before the acquisition, and $t+1$ is the year following the acquisition. Standard controls, listed in Table 2, are included, but the coefficients are not reported for space considerations. *№ initial for./dom. BRs FE* are fixed effects for the number of initial foreign and/or domestic bank relationships in $t-1$. Robust standard errors (clustered by country-sector-year) in parenthesis: *** p < 0.01, ** p < 0.05, * p < 0.10. Table A2.1 contains summary statistics. See Section 3 for variable definitions and sources. †specifications used in the main text.