Integration culture of global banks and the transmission of lending shocks[☆]

Andreas Barth[a], Deyan Radev[b,*]

[a] Saarland University Saarbrücken and Goethe University Frankfurt, Campus Building C3 1, Saarbrücken 66123, Germany
[b] Faculty of Economics and Business Administration, Sofia University, Sofia 1000, Bulgaria

ABSTRACT

We document that a centralization decision-making culture of global banks affects the transmission of shocks from parent banks to their subsidiaries. Using a novel measure of integration culture of multinational banking conglomerates based on the prevalence of a language of power and authority in financial reports, we find that subsidiaries of banks with a relatively more autocratic integration culture cut lending significantly more after solvency shocks to the parent company. Our result is robust to instrumenting integration culture with political and economic factors of the parent bank's home country.

© 2021 Elsevier B.V. All rights reserved.

"[...] For us it is important to work in an organizational structure that is built on clear principles. [...] All divisions, responsible for the organization of the Bank, the distribution of responsibilities, the delegation of competencies [...] should be bundled under one authority. [...] Because in this way we could bring the different dimensions of our organizational matrix in a stronger alignment.
— Karl von Rohr, *Chief Administrative Officer, Deutsche Bank*, in *"Deutsche Bank works on its organizational culture", Börsen-Zeitung, March 25, 2016.*

1. Introduction

Much research in economics and finance has examined the evolution and the potential benefits of financial integration. Especially in the European Union, where an integrated banking sector is a key objective, integration has been the subject of countless articles. However, while there is some evidence that the *financial* structure of global banks might facilitate the cross-border transmission of shocks, little is known about the role of the *organizational* structure of those banks to transmit financial shocks to foreign subsidiaries. This paper aims to fill this gap and analyzes multinational banks' corporate culture and its impact on international spillovers of financial shocks.

We introduce a novel measure of bank integration for large banking conglomerates, defined as decision centralization. This measure distinguishes global banks according to their degree of autocracy and allows to analyze the transmission of lending shocks. The theoretical motivation of our bank integration culture measure is based on the idea that multinational corporate integration is related to the notions of power, authority and control; notions that are also major features of organizational culture. For example, Selmer and de Leon (1996, 2002) argue that a parent company can exercise control by 'teaching' local employees new and common work values – a process that the authors

call organizational acculturation – as this transmission of culture is more cost-effective than directly monitoring foreign subsidiaries. The parent company's corporate culture and management style, as well as its attitude toward centralization and decentralization, influences the autonomy of the subsidiary, as argued by Young and Tavares (2004). In this paper, we apply textual analysis to annual financial reports to extract the parent bank's attitude towards power, authority and control as a measure of the conglomerate's integration culture. More precisely, we use the "Power" category of the Lasswell value dictionary to gauge markers for the prevalence of a language of power, authority and control in the annual financial reports of 83 global banks for the years 1997 to 2012, and generate our *Power Index* as the ratio of words attributed towards power and control in these reports as a percentage of the total words in the report. Assuming that the vocabulary used in annual reports reflects the features of a firm's corporate culture, banks with a relatively higher *Power Index* have a stronger focus on authority and control and, thus, follow a more centralized and more autocratic integration culture.

We test whether our Power Index adequately captures integration culture by comparing it to relevant questions from the *Banking Environment and Performance Survey (BEPS II)* conducted by the European Bank for Reconstruction and Development (EBRD) for 32 EBRD member countries. We observe that banks in countries with the highest EBRD BEPS II Index show a significantly higher *Power Index* than banks headquartered in countries with the lowest EBRD BEPS II Index. Moreover, we find a linear correlation of 0.39 between the EBRD BEPS II Index and the *Power Index*. Since the EBRD data are anonymized and at the subsidiary level, the former index reflects the subsidiary's perception of how controlling its headquarter is, while the *Power Index* captures the parent's perspective. Since the subsidiary's perception may be biased, we believe that the correlation of 0.39 that we find is a lower bound and our *Power Index* is an adequate measure of the integration culture from the parent's perspective, which is the basis of our study.

As our main result, we establish that bank integration culture affects the transmission of solvency shocks: The more integrated a banking conglomerate is, the lower the lending growth of foreign subsidiaries after a solvency shock. Both the level effect of the shock and the interaction effect with the *Power Index* increase in magnitude when we instrument the latter with political and economic factors of the parent bank's home country as well as with the geographical distance between the parent and the subsidiary.

Related literature Our paper builds on four strands of literature. First, it relates to the literature analyzing the performance of different organizational structures. Stein (2002), for example, shows that hierarchical firms perform better when the production of hard information is cheap and can be easily passed along inside a firm. Aghion and Tirole (1997) differentiate formal authority ("the right to decide") from real authority ("the effective control over decisions") and show that formal authority incentivizes agents to collect information about corresponding activities, but comes at a cost of loosing control for the principal. This discussion is also related to the headquarter-subsidiary relationship in international business and the autonomy of subsidiaries, and thus to corporate governance and power. Brooke (1984) puts the foundations of a structured study on this topic and views foreign subsidiaries and their corresponding national governments as competing centers of authority that challenge the supremacy of the headquarters. Much of the focus of this literature is also concentrated on the notions of centralization and decentralization of decisions. Young et al. (1985) find a geographic pattern in the degree of centralization among 152 subsidiaries in the UK, with North American organizations being on average more centralized. Furthermore, acquired subsidiaries tend to be more independent than greenfield subsidiaries. Bloom et al. (2012) provide a theoretical model

showing that trust as a proxy for social capital affects the organization of a firm. They test their model using international data with detailed information on the internal organization of firms and provide evidence that within multinational firms, a higher levels of bilateral trust between the multinational's country of origin and the subsidiary's country of location increases decentralization. Robinson and Stocken (2013) model the assignment of decision rights of multinational firms to foreign subsidiaries and show that the inappropriate allocation of decision rights is associated with poor firm performance. Taggart (1997) identifies four groups of subsidiaries, depending on the degree of autonomy, i.e. partner, collaborator, militant and vassal. In his model, he analyzes each group across several dimensions, such as integration, responsiveness, coordination, configuration, etc., where the different roles given to foreign subsidiaries aim at maximizing the parent's own competitive advantage, as well as the competitive advantage of the subsidiary in terms of bargaining power vis-à-vis the headquarter. Moreover, subsidiary autonomy has been found to depend on subsidiary's place in the overall corporate business strategy (Birkinshaw and Morrison, 1995), on subsidiary's R&D complexity Taggart and Hood (1999), or on subsidiary size (Johnston and Menguc, 2007; Hedlund, 1981; Garnier, 1982). Harzing (2000) divides multinational companies into three groups, depending on which markets the competition takes place in: multidomestic, transnational and global. Multidomestic companies compete on segregated domestic markets, while transnational and global companies compete on the global market. The difference between the latter two is that the global company relies on a more centralized governance structure, while the transnational company has the features of a national and a global company, with subsidiaries in specific markets having distinct roles, such as for instance, serving as "centers of excellence" within the conglomerate.

Second, we add to the literature on the transmission of lending shocks across borders and whether internal capital markets within multinational banks impact credit supply (Houston and James, 1998; De Haas and van Lelyveld, 2006; 2010; Holod and Peek, 2010; Cetorelli and Goldberg, 2012a; 2012b). Cetorelli and Goldberg (2012a) argue that multinational banks manage liquidity at a global level by using internal capital markets to react to local shocks, especially in the period of the global financial crisis between 2007 and 2009. Furthermore, having global exposure protects banks from unexpected changes in monetary policy. Cetorelli and Goldberg (2012b) find that in managing liquidity, U.S. parent companies that are hit by a liquidity shock rely on a locational pecking order, which protects subsidiaries in markets that are strategically important to the multinational bank. De Haas and van Lelyveld (2014) show that, during the financial crisis, multinational bank subsidiaries had to slow down credit growth almost three times as fast as domestic banks. Similarly, Radev (2017) investigates the transmission of both solvency and liquidity shocks from parent companies to foreign subsidiaries and finds evidence for a stronger transmission of solvency shocks; liquidity shocks are only transmitted in cases where the parent heavily relies on wholesale funding. Contrary to the findings made by Cetorelli and Goldberg (2012b) for the U.S., Radev (2017) observes a global-level locational pecking order in the transmission of solvency shocks, rather than of wholesale funding shocks, which highlights the need for a more specific definition of the source of a global bank's liquidity needs.

Third, we build on the literature using textual analysis. The first attempts to scientifically analyze and detect people's intentions originate from Freud (1901) and are later incorporated in the analysis of how people describe inkblots (Rorschach, 1921 and later Holtzman, 1950) and transcripts of recordings of subjects' speech (Gottschalk et al., 1958; Gottschalk and Gleser, 1969). This early work focused on detecting individual's moods, hidden intentions

and psychological disorders. Political scientists have more recently used this approach to analyze political speeches in order to capture general positions, themes, topics and views (see, for instance, Laver et al., 2003 and Lowe, 2008). In the Online C to this paper, we further explain what textual analysis is, how it developed and why it works.

Fourth, we add to the growing number of papers in the finance literature that deal with different aspects of corporate culture. Pan et al. (2017), for example, document that corporate risk culture is formed by the founders' risk attitudes and translates to persistent firm policies due to a selection of leaders with similar preferences. With a focus of the power of women in management teams, Adhikari et al. (2019) document a self-selection of workers in certain firms and the resulting outcome. In particular, female workers choose to work for firms with a lower risk-taking culture and women in the management choose lower-risk policies that invite fewer operating lawsuits. The recent work by Bushman et al. (2018) links CEO materialism to risk controls and culture in banking. While the paper does not find a self-selection of materialistic CEOs into specific firms, the authors show that materialistic CEOs "contaminate" the culture of a bank after a CEO-type switch. Banks with a materialistic CEO suffer more often from bank runs, have weaker risk management functions, and have a significantly higher downside tail risk relative to banks with non-materialistic CEOs. Moreover, the paper documents that non-CEO executives in banks with materialistic CEOs participate in insider trading more aggressively around government interventions during the financial crisis.

The use of textual analysis to capture elements of corporate culture is gaining prominence in finance and accounting as well, with most studies focusing on the effect of corporate culture on economic performance (Antweiler and Frank, 2004; Li, 2008; Loughran and McDonald, 2011; Tetlock, 2007; Tetlock et al., 2008; Guiso et al., 2015; Barth and Mansouri, 2021) and on CEO turnover (Fiordelisi and Ricci, 2014). The sources of the various word-based indicators are usually company 10-K reports[1] (see, e.g., Fiordelisi and Ricci, 2014 and Loughran and McDonald, 2011) or stock message boards (see, e.g., Antweiler and Frank, 2004, Tetlock, 2007 and Tetlock et al., 2008).[2] To our knowledge, we are the first to relate text-based studies to bank integration.

Our paper makes a significant contribution to these strands of literature by extracting a novel measure for bank integration culture based on the corporate language in financial reports of multinational banks and by identifying a new channel for transmitting shocks across borders.

This paper is organized as follows. We present the data sample and the definition of our measure of bank integration culture in Section 2. In Section 3, we presents descriptive statistics, the empirical model and the results on how bank integration culture affects the transmission of solvency and wholesale funding shocks from parent companies to subsidiaries. This section also addresses some exogeneity concerns regarding our *Power Index*. Section 4 concludes.

2. Data sample and power index

2.1. Bank sample: parent companies and subsidiaries

We start the selection of our bank sample with the list of the top 500 commercial banks located in OECD countries in terms of total assets in fiscal year 2011 or 2012 from Bureau van Dijk's Bankscope database. As in most of the literature (see, e.g., Deléchat et al., 2012, Cornett et al., 2011 and Bonner et al., 2014), we concentrate on *commercial banks* to avoid a bias due to different business models of, for instance, investment banks.[3]

We manually search for the first-tier subsidiaries of these banks for the period 1997–2012.[4] We select global subsidiaries of OECD parent companies, where: (1) the ownership share of the parent company is at least 50%; (2) we have a first-level (direct) subsidiary; (3) the subsidiary is ranked by Bureau van Dijk in the list of top 10,000 banks in the world in terms of total assets. This initial filtering leaves us with 114 parent banks and 602 subsidiaries.

We further exclude domestic subsidiaries from the analysis and trim the dataset of banks where financial reports and balance sheet items are not available. Our final regression sample comprises 83 parent banks from 26 countries and 371 subsidiaries located in 98 countries, which corresponds to 2748 subsidiary-year observations matched with 870 parent-year observations. Table A2 provides a list of the parent commercial banks with the respective number of their foreign subsidiaries, and Table A3 and Fig. A1 summarize the subsidiaries per country and depict the geographical distribution of the subsidiaries in our sample, respectively. We use unconsolidated data for both parents and subsidiaries and transform all balance sheet data to million US dollars.

We notice that the distribution of banks across countries in Table A1 does not completely reflect the final parent sample in Fig. 1. There is a number of sample characteristics that drive this outcome: (1) Over 60 parent banks in the top 500 list do not have any subsidiaries; (2) Many banks either do not have foreign subsidiaries or these subsidiaries are not commercial banks; (3) Many subsidiaries are too small to rank in the top 10 000 in the world. Given that the smallest bank in Top 500 has 1.5 Billion Dollar in unconsolidated assets and the average subsidiary is usually less than 10 percent of the size of the parent, searching beyond the Top 10 000 list would yield a number of insignificantly small banks even for emerging countries; (4) Many banks listed in Top 500 are subsidiaries of other banks in the list. For instance, UniCredit Bank Austria AG (number 63 in Top 500) is a subsidiary of UniCredit SpA (number 17 in Top 500); (5) Many banks, especially US banks, enter foreign markets with branches and not with commercial bank subsidiaries. For example, Citibank, with 121 overall subsidiaries recorded in Bankscope (bank and non-bank), ultimately has 10 foreign subsidiaries in Top 10 000 of commercial banks, and even more strikingly, JP Morgan, with 291 recorded subsidiaries, has no foreign commercial bank subsidiaries. Whether banks enter foreign markets with subsidiaries or branches is clearly a strategic decision and is linked to specific factors such as, for example, regulatory restrictions (Ball and Tschoegl, 1982; Fiechter et al., 2012). However, as in De Haas and van Lelyveld (2010), our focus is on internal capital markets, so we are interested only in foreign subsidiaries as legally independent affiliates that require a separate capitalization. Thus, they are less directly affected by the parent's capital shock, and the effect found at the subsidiary level might be seen as a conservative estimate for the shock transmission; (6) Many banks

---

[1] We inspected several financial reports of banks in our sample and concluded that for banks listed on American stock exchanges, the financial reports are usually identical to their 10-K reports.

[2] See Loughran and McDonald (2016) for an overview of textual analysis in finance research.

[3] The distribution across countries of these 500 banks is reported in Table A1. The total number exceeds 500 as we take the ranking for two years 2011 and 2012 into account.

[4] The procedure for an automatic selection of the matching subsidiaries in Bankscope is not suitable for our analysis, since in the case of conglomerates (e.g. Mitsubishi), the conglomerate is listed as a global owner but not the commercial bank in the top 500 list. In case the conglomerate has several independent commercial banks in the top 500 list, it is impossible to distinguish which subsidiary belongs to which commercial bank. Therefore, a manual search was the only possibility to match the first-level subsidiaries to the correct commercial parent bank within the conglomerate.
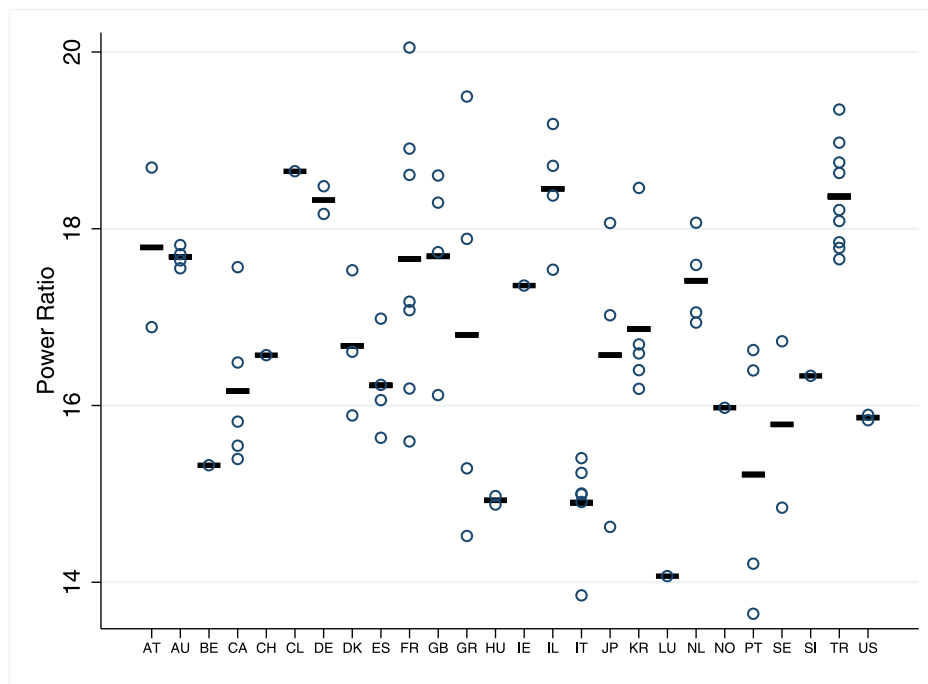
Fig. 1. Cross and Within Country Variation of the *Power Index*. This figure presents a strip plot of the *Power Index* for the 83 OECD parent banks in our sample across 26 countries. The vertical line presents the country mean.

have only domestic subsidiaries, especially Japanese banks, which are tied to an industrial conglomerate.

Taking all that into account, we believe that our parent-subsidiary sample provides a representative picture of the internationally-active commercial banks located in OECD countries and of the banking systems in the home and host countries. We cover 21 of the 30 global systemically important banks (G-SIBs)[5] published by the Financial Stability Board (see FSB, 2020) and in many regions, such as central and eastern Europe and the Baltic region, the subsidiaries in our sample have a market share of above 50% of the total assets of the respective banking system.

2.2. Bank integration culture

Schwartz and Davis (1981) define corporate culture as a beliefs system shared by the members of an organization, which produces rules that guide their behavior. As opposed to corporate climate, which is relatively short-term and susceptible to changes, corporate culture is long-term and strategic. In Baliga and Jaeger (1984), cultural control is regarded as an important type of organizational control that includes shared norms of performance and philosophy of management. Both studies describe the shared language within the organization as an important token of this beliefs system.

Using these theoretical views as a starting point for our empirical analysis, we base our measure of banks' integration culture on the General Inquirer method that originally was used to extract policy opinions from a predefined set of texts. We focus on the parent banks' consolidated financial statements for the years 1997 to 2012, and search for the prevalence of authoritative language by using the word list of the "Power total" Lasswell value dictionary from the Harvard Inquirer Dictionaries.[6] Words

in this category relate to power, control and authority; examples include "abolish", "abortive", "abrupt", "accommodate", "appoint", "confine", "control", "draw", "drive", and "will". For our purposes, it is not important whether these words have a positive or negative connotation in context (e.g. "will" versus "will not"), as the use of the mentioned power words indicates a specific vocabulary that the corporation uses to report to investors.

We consider the language of authority to be an indicator of the integration culture within a bank and calculate the *Power Index* defined as the ratio of power-related words found in the report of bank j in year t to the total number of words found in the report of the parent bank j in that same year:

$$Power\ Index_{j,t} = \frac{Power\ Words_{j,t}}{Total\ Words_{j,t}}. \tag{1}$$

As we assume culture to be a relatively stable concept over time, and in order to reduce the problem of measurement error, we average each bank's annual reports over the sample period 1997 to 2012 to derive a static measure of bank integration culture.[7] Using this approach, we arrive at a *Power Index* value for each parent bank, i. e. a cross-section of 83 *Power Index* values.[8] We assume that a larger ratio of power-related words in the reports (hence, a "stronger" language), relates to a more centralized multinational banking conglomerate with a more autocratic integration culture.[9]

To test whether our *Power Index* is an adequate measure of bank integration culture and corporate governance, we compare it to indicators in the *Banking Environment and Performance Sur-*

---

[5] The missing G-SIBs are either US banks with no foreign commercial bank subsidiaries, Chinese banks that are not part of the OECD or Japanese banks with only domestic subsidiaries.

[6] We choose the Lasswell value dictionary over the earlier Harvard IV-4 dictionary because of its broad focus on many aspects of power and authority.

[7] Previous research shows that larger texts help to derive consistent estimates/conclusions by averaging out measurement errors due to possibly different authors of the documents, see, e.g., Klemmensen et al. (2007).

[8] We present several examples of powerful language used in annual reports in Table A6.

[9] The seminal work by Aghion and Tirole (1997) differentiates between formal and real authority in organizations. Our measure proxies for real authority, i.e. the effective control over decisions that the parent bank aims to hold.

vey (BEPS II) conducted by the European Bank for Reconstruction and Development (EBRD) and introduced comprehensively in Beck et al. (2018). This survey was implemented in 32 countries in Eastern Europe, Central Asia, and the southern and eastern Mediterranean to improve our understanding of the conditions for banking activities in these countries from the perspective of subsidiaries in EBRD member countries. As the unit of observation in the EBRD survey is on the (anonymized) subsidiary level, we cannot aggregate the responses on the parent bank level, i.e. at the unit of observation of our *Power Index*. However, we can aggregate responses to the questionnaire on the subsidiary country level and compare the aggregate survey responses of subsidiaries within one country with the *Power Index* of all parent banks of our sample that operate a subsidiary in this country. We thus end up with a cross-country sample comprising the average responses to the EBRD questionnaire as well as the average *Power Index* of parent banks for all subsidiaries in each country. We focus on five particular questions of the EBRD BEPS II questionnaire – *How important is the influence of your parent bank in shaping the following:* Q50d: "IT systems"; Q50e: "Strategic choice of clients/customer focus"; Q50f: "Corporate governance"; and *Please tell me to what extent you agree with the following statements:* Q51e: "The power of decision-making with regard to risk management lies mostly with the parent bank rather than ourselves" and Q51h: "Our parent bank actively steers the growth of our lending". The answers to the questions vary from 1 ("Very unimportant" in the Q50* questions and "Strongly disagree" in the Q51* questions) to 5 ("Very important" in the Q50* questions and "Strongly agree" in the Q51* questions). We compile an aggregate index of these questions (the EBRD BEPS II Index) and calculate its correlation with the *Power Index*.

We find a linear correlation of 0.39, which is quite high considering the little variation due to the small common sample of 27 host countries between both datasets. Moreover, when comparing the *Power Index* of parent banks operating in countries at the top and bottom of the BEPS II Index distribution, we find a significant higher *Power Index* for those banks operating in countries with a higher BEPS II Index.[10] Note, however, that our measure of bank integration culture evolves at the parent bank level, while the EBRD BEPS II Index captures the *perception* of the parent's impact at the subsidiary level. Thus, while in this paper we are measuring how centralized the parent bank's integration culture is, the survey measures how centralized a subsidiary *perceives* the integration culture of its parent is. This subjective perception may be driven by the reference point that the respondent has, which captures a different perspective of integration culture than we can.[11] We expect that the correlation would be even higher, had both measures been at the parent level. Because our measure captures the parent bank' perspective on corporate governance and control, which is the primary focus of our investigation, we believe that it contains additional information for the integration and corporate governance within a banking conglomerate compared to the BEPS II Index and is better suited for the purpose of our study.

Table 1 presents descriptive statistics from our word search procedure. In total, we find an average *Power Index* of 16.48%. The *Power Index* distribution across all parent banks shows Natixis as the most autocratic bank at 20.05%, while the lowest autocratic integration culture is found for the BANIF - Banco Internacional do

Funchal with a *Power Index* value of 13.64%. Figure A2 presents a histogram of the empirical distribution of the *Power Index*. In addition, Fig. 1 shows a stripplot of the *Power Index* data per parent country, and similar statistics aggregated by legal origin (La Porta et al., 1999) are shown in Fig. 2. We find that parent banks in Luxembourg, Italy and Hungary display a relatively low level of autocratic integration culture, whereas banks with the highest average *Power Index* are from Chile, Israel, Turkey and Germany. Similarly, we find the highest average value of autocratic integration culture for parent banks of countries with a German and English legal origin and the lowest value of *Power Index* for banks in countries with a Socialist legal origin.

Ignoring the fact that some countries are represented in our sample with only one bank, a visual investigation clearly shows that the variation across countries is much larger than within countries. This is confirmed by the results of a oneway ANOVA analysis, presented in Panel A of Table 2: Variation between countries explains more than 60% of the total variation in our index, and the remaining part is explained by the variation within countries. Moreover, we can reject the hypothesis that the between-country means are identical, as shown by the F-statistics in the last column of Table 2. Grouping according to legal origin on a more aggregated level, we do not observe the same pattern (see Fig. 2). The variation among banks within each group is very large and, as the ANOVA analysis in Panel B of Table 2 confirms, most of the variation remains within groups: The F-test cannot reject the hypothesis that the means of the legal origin groups are equal.

This descriptive analysis suggests that the variation of the *Power Index* is largely driven by country-specific characteristics, followed by differences between the banks within a country, and only a small amount of the variation could be explained by the origin of the legal systems as a more aggregated grouping of banks.

3. Bank integration culture and transmission of shocks

Descriptive statistics

Table 3 presents descriptive statistics of the main variables in our regression analysis. In terms of loan growth, the average rate in the subsidiary sample is more than 4 percentage points higher than in the parent sample. However, the volatility in loan growth is twice as large for subsidiaries as it is for parent banks. Overall, subsidiaries are smaller yet more profitable, better capitalized and possess more liquid assets relative to total assets than their parent companies. Also, foreign subsidiaries allot more funds than parent companies to provisions against bad loans. We notice a similar pattern when we consider internally generated funds: Foreign subsidiaries tend to generate twice as much net income to total loans than their parent companies.

Tables 4 and 5 present an interesting pattern in average growth of subsidiaries after a shock to parent companies at the 25th percentile of the *Power Index* (relatively less autocratic/more liberal integration culture), compared to the 75th percentile of the *Power Index* (relatively more autocratic integration culture). If banking conglomerates are less integrated, there is only a small difference in loan growth between a solvency shock and a non-solvency shock period. If the conglomerates are relatively more centralized (relatively stronger autocratic integration culture), foreign subsidiaries experience a strong decline in loan growth after a solvency shock. This pattern is also visible for domestic subsidiaries, although the growth reduction is smaller. Such a pattern is similarly noticeable after a wholesale funding shock. Table 5 also shows that solvency shocks to controlling parent companies occur at a much lower frequency than wholesale funding shocks. However, as seen in Table 4, the former has a larger impact on subsidiary lending for this group of conglomerates.

---

[10] We compare banks in the top five and bottom five countries of the BEPS Index distribution, and observe that the *Power Index* for banks operating in countries with the highest BEPS II Index is 1.14 percentage points higher than the *Power Index* for banks operating in countries with the lowest BEPS II Index. This difference is significantly larger than zero with a *p*-value of 0.0605.

[11] For example, the influence of the parent in shaping strategic choices of a subsidiary might be perceived very high if the impact somewhat increased in the recent past, although in absolute terms, compared to other parent-subsidiary relations, the impact would still be classified as low.

Table 1
Banks and the Power Index. This table presents the sample of parent banks and their *Power Index.*

#	Bank Name	Power Index
1	ABN AMRO Bank NV	18.0677%
2	Akbank T.A.S.	19.3491%
3	Allied Irish Banks plc	17.3572%
4	Alpha Bank AE	15.2885%
5	Australia and New Zealand Banking Group	17.8161%
6	BANIF - Banco Internacional do Funchal, SA	13.6426%
7	BNP Paribas	17.0788%
8	Banca Mediolanum SpA	15.4042%
9	Banca Monte dei Paschi di Siena SpA	14.9103%
10	Banco Bilbao Vizcaya Argentaria SA	15.6359%
11	Banco Comercial Português, SA-Millennium bcp	16.6269%
12	Banco Desio - Banco di Desio e della Brianza SpA	13.8536%
13	Banco Espirito Santo SA	16.3982%
14	Banco Santander SA	16.2331%
15	Banco de Sabadell SA	16.9820%
16	Bank Hapoalim BM	18.3766%
17	Bank Leumi Le Israel BM	17.5378%
18	Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse Aktiengesellschaft-BAWAG PSK Group	18.6923%
19	Bank of Montreal-Banque de Montreal	15.5446%
20	Bank of Nova Scotia (The) - SCOTIABANK	17.5655%
21	Bank of Tokyo - Mitsubishi UFJ Ltd (The)-Kabushiki Kaisha Mitsubishi Tokyo UFJ Ginko	14.6252%
22	Bankia, SA	16.0624%
23	Banque Fédérative du Crédit Mutuel	16.1932%
24	Banque Internationale á Luxembourg SA	14.0687%
25	Barclays Bank Plc	18.6015%
26	Caixa Geral de Depositos	14.2094%
27	Canadian Imperial Bank of Commerce CIBC	15.3930%
28	Citibank NA	15.8339%
29	Commerzbank AG	18.4805%
30	Commonwealth Bank of Australia	17.7146%
31	CorpBanca	18.6503%
32	Credit Agricole Corporate and Investment Bank-Credit Agricole CIB	18.6106%
33	Credit Europe Bank N.V.	17.5922%
34	Credito Emiliano SpA-CREDEM	15.0061%
35	DNB Bank ASA	15.9749%
36	Danske Bank A/S	17.5318%
37	Denizbank A.S.	18.9740%
38	Deutsche Bank AG	18.1698%
39	Dexia Crédit Local SA	17.1761%
40	East West Bank	15.8927%
41	Eurobank Ergasias SA	19.4957%
42	First International Bank of Israel	18.7118%
43	HSBC Bank plc	16.1187%
44	Hana Bank	18.4621%
45	ING Bank NV	17.0534%
46	Industrial Bank of Korea	16.1885%
47	Intesa Sanpaolo	14.9939%
48	Investec Bank Plc	17.7351%
49	Israel Discount Bank Ltd.	19.1872%
50	Jyske Bank A/S	15.8865%
51	KB Kookmin Bank	16.6911%
52	KBC Bank NV	15.3239%
53	MKB Bank Zrt	14.9751%
54	Mizuho Bank Ltd	18.0633%
55	NLB dd-Nova Ljubljanska Banka d.d.	16.3351%
56	National Australia Bank Limited	17.6427%
57	National Bank of Greece SA	14.5252%
58	Natixis	20.0508%
59	Nordea Bank Danmark Group-Nordea Bank Danmark A/S	16.6090%
60	OTP Bank Plc	14.8786%
61	Piraeus Bank SA	17.8879%
62	RCI Banque	15.5953%
63	Raiffeisen Bank International AG	16.8854%
64	Royal Bank of Canada RBC	15.8164%
65	Royal Bank of Scotland NV (The)-RBS NV	16.9378%
66	Shinhan Bank	16.5898%
67	Skandinaviska Enskilda Banken AB	16.7279%
68	Société Générale	18.9084%
69	Standard Chartered Bank	18.2966%
70	Sumitomo Mitsui Banking Corporation	17.0219%
71	Svenska Handelsbanken	14.8435%
72	T.C. Ziraat Bankasi A.S.	17.7817%
73	Toronto Dominion Bank	16.4866%
74	Turk Ekonomi Bankasi A.S.	18.0874%

(*continued on next page*)

Table 1 (*continued*)

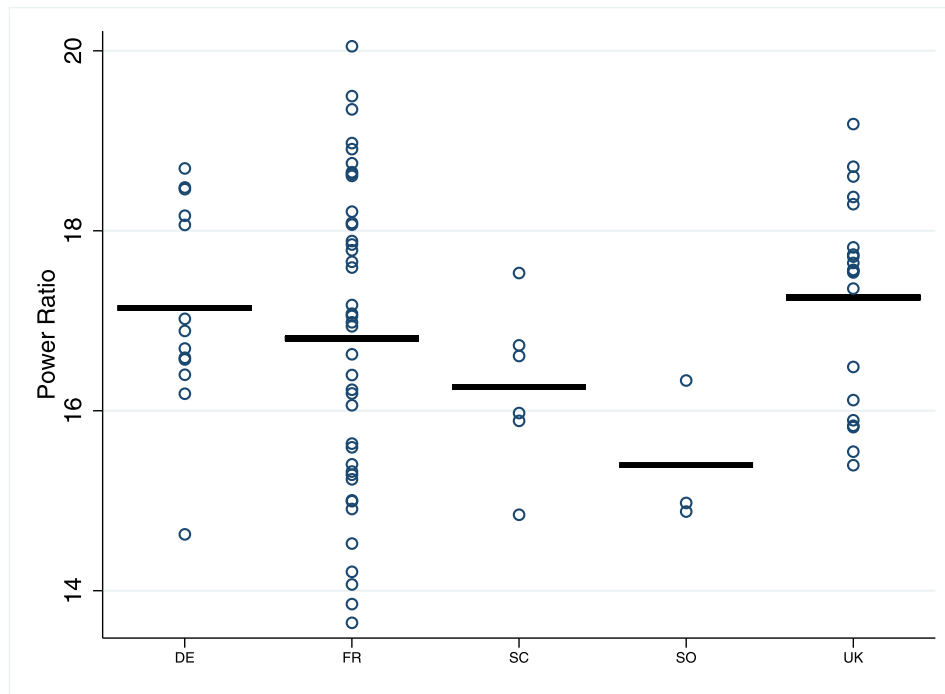| #	Bank Name	Power Index
75	Turkiye Garanti Bankasi A.S.	18.2117%
76	Turkiye Halk Bankasi A.S.	17.6543%
77	Turkiye Vakiflar Bankasi TAO	18.7487%
78	Turkiye is Bankasi A.S. - ISBANK	18.6325%
79	UBS AG	16.5694%
80	UniCredit SpA	15.2376%
81	Westpac Banking Corporation	17.5541%
82	Woori Bank	16.4021%
83	Yapi Ve Kredi Bankasi A.S.	17.8472%
	Average	**16.4797%**

Fig. 2. Cross and Within Legal Origin Variation of the *Power Index*. This figure presents a strip plot of the *Power Index* for the 83 OECD parent banks in our sample across English, French, German, Scandinavian and Socialist legal origin. The vertical line presents the mean value for the respective legal origin.

Table 2
Power Index: Variance Decomposition. This table presents the variance decomposition of the *Power Index* into between and within country (Panel A) and legal origin (Panel B) variation.

Analysis of Variance					
Panel A: Country Variation					
Source	SS	df	MS	F	Prob > F
Between groups	112.3914	25	4.4957	3.8400	0.0000
Within groups	66.6600	57	1.1695		
Total	**179.0515**	**82**	**2.1836**		
Panel B: Legal Origin Variation					
Source	SS	df	MS	F	Prob > F
Between groups	12.8913	4	3.2228	1.5100	0.2066
Within groups	166.1601	78	2.1303		
Total	**179.0515**	**82**	**2.1836**		

Empirical model We investigate the effect of parent bank's integration culture on the transmission of shocks from the parent bank to its foreign subsidiaries. To this end, we model the loan growth of subsidiary i of parent j in subsidiary country k at time t as fol-

lows:

$$
\begin{aligned}
growth&(Loans)_{i,j,k,t} \\
&= \alpha_0 + \beta_1 \cdot Solvency\ Shock_{j,t-1} \\
&\quad + \beta_2 \cdot Wholesale\ Shock_{j,t-1} \\
&\quad + \beta_3 \cdot Power\ Index_{j(,t-1)} \\
&\quad + \beta_4 \cdot Power\ Index_{j(,t-1)} \times Solvency\ Shock_{j,t-1} \\
&\quad + \beta_5 \cdot Power\ Index_{j(,t-1)} \times Wholesale\ Shock_{j,t-1} \\
&\quad + \beta_6 \cdot Bank\ Controls_{i,j,k,t-1} \\
&\quad + \beta_7 \cdot Macro\ Variables_{i,j,k,t} \\
&\quad + \gamma_t + \gamma_i + \epsilon_{i,j,k,t},
\end{aligned}
\tag{2}
$$

where *Solvency Shock*$_{i,j,t-1}$ and *Wholesale Shock*$_{i,j,t-1}$ are solvency and wholesale funding shocks on parent j at time *t-1*, respectively. We define the solvency and liquidity shock as a large decline in the capital of the parent bank (solvency shock), or as a sudden dry-up in its wholesale funding (liquidity shock). In order to identify exogenous solvency and wholesale funding shocks, we apply and extend the procedure by DeYoung et al. (2018). The exact methodology is explained in more detail in Online Appendix C.2. *Power Index*$_j$ is the value of the *Power Index* for parent j. *Bank Controls*$_{i,j,k,t-1}$ is a vector of individual bank-related indicators of subsidiary i of parent j in country k at time $t-1$ and con-

Table 3

Descriptive Statistics. This table presents descriptive statistics of the dependent variable and the bank control variables in our regression analysis. The sample comprises 371 foreign subsidiaries of 83 OECD parent banks in the period 1997–2012.

Variable		Parents	Subsidiaries
Loan Growth Rate	Mean	14.33%	18.80%
	Standard Deviation	24.25%	45.07%
	Observations	870	2748
Size	Mean	11.77	7.74
	Standard Deviation	1.49	1.89
	Observations	870	2748
Profitability (Profit/Total	Mean	0.91%	1.54%
Earning Assets)	Standard Deviation	1.27%	2.50%
	Observations	860	2748
Riskiness (LLP/Loans)	Mean	0.89%	1.36%
	Standard Deviation	1.11%	2.48%
	Observations	843	2748
Capitalization (Equity/Total	Mean	6.36%	12.57%
Assets)	Standard Deviation	3.03%	9.76%
	Observations	870	2748
Liquidity (Liquid	Mean	22.10%	27.62%
Assets/Total Assets)	Standard Deviation	12.96%	20.52%
	Observations	870	2748
Internally Generated Funds	Mean	1.80%	3.48%
(Net Income$_t$)/Loans$_{t-1}$)	Standard Deviation	3.37%	7.55%
	Observations	860	2748

Table 4

Relationship between the Power Index, Shocks to Parent Companies and Subsidiary Growth. This table presents the descriptive statistics of the dependent variable in our regression analysis, conditioned on different values of the shock variables and the *Power Index*. To provide a complete picture, we also present data for domestic subsidiaries. The time period of the sample is 1997 to 2012.

Condition on Shocks	Power Index	Mean Subsidiary Loan Growth		
		Overall	Domestic	Foreign
SolvencyShock$_{t-1}$ = 1	below 25%-ile	13.49%	7.84%	14.20%
SolvencyShock$_{t-1}$ = 1	above 75%-ile	1.77%	−3.77%	2.90%
SolvencyShock$_{t-1}$ = 0	below 25%-ile	18.89%	8.24%	20.03%
SolvencyShock$_{t-1}$ = 0	above 75%-ile	16.99%	7.10%	20.93%
WholesaleShock$_{t-1}$ = 1	below 25%-ile	15.69%	13.64%	15.88%
WholesaleShock$_{t-1}$ = 1	above 75%-ile	10.83%	4.66%	13.59%
WholesaleShock$_{t-1}$ = 0	below 25%-ile	18.71%	7.25%	20.00%
WholesaleShock$_{t-1}$ = 0	above 75%-ile	16.76%	7.17%	20.51%

Table 5

Relationship between the Power Index and the Shocks to Parent Companies. This table presents the descriptive statistics of the mean of the shock variables used in our regression analysis, conditioned on different values of the *Power Index*. To provide a complete picture, we also present data for domestic subsidiaries. The time period of the sample is 1997 to 2012.

#	Condition on Shocks	Power Index	Mean of Shock Variable		
			Overall	Domestic	Foreign
1	*SolvencyShock$_t$ = 1*	below 25%-ile	14.27%	16.67%	14.01%
2	*SolvencyShock$_t$ = 1*	above 75%-ile	6.93%	4.18%	8.01%
3	*WholesaleShock$_t$ = 1*	below 25%-ile	18.44%	20.00%	18.27%
4	*WholesaleShock$_t$ = 1*	above 75%-ile	20.56%	22.03%	19.97%

trols for subsidiary characteristics affecting subsidiary autonomy. This vector includes measures for the size, profitability, riskiness, capitalization, liquidity and the internally generated funds of the subsidiary i; *Macro Variables$_{i,j,k,t}$* is a vector of characteristics for the host country k of the respective subsidiary and includes the unemployment rate, the inflation rate and the GDP growth in year t, as well as a market indicator for stress in the subsidiary country proxied by the yield on a 10 year government bond in year

$t - 1$;[12] γ_t is a time fixed effect for period t; γ_i is an entity fixed effect for subsidiary i. As described above, we use in our baseline specification the average *Power Index* over all sample years. However, as a robustness test, we make use of the annual variation of the *Power Index*. See Table A5 for a more detailed description of all variables.

Results Table 6 shows the effect of bank centralization on the transmission of solvency and wholesale funding shocks across borders. In Models (1) and (2), we find that solvency shocks to parent companies are more important than wholesale funding shocks for the lending decisions of subsidiaries in subsequent periods. In Model (3), we add an interaction term of the two shocks with our bank *Power Index*.[13] We find that a solvency shock to a parent bank with an average *Power Index* leads to a significantly lower loan growth of its subsidiaries. This negative transmission is even more pronounced for banks with a higher *Power Index*, as indicated by the significant interaction term: We find that the loan growth of subsidiaries is lower when the integration culture of the parent bank is more autocratic. The effect, while statistically significant, is economically of moderate size: Moving from the minimum to the maximum *Power Index* reduces loan growth by 0.3 percentage points following a solvency shock at the parent bank, which accounts for 1.6 percent of average loan growth (see Table 3). As loan growth is determined by various micro- and macroeconomic factors, we believe that this magnitude is of reasonable order. Note that in all regressions, we control for several subsidiary characteristics in order to absorb factors impacting subsidiary autonomy.[14] The effect of lagged wholesale funding shocks is not present in our parent-subsidiary sample.[15]

All our results hold true (i) if we further control for the yields on 10-year government bonds of the respective country as a market measure of stress in the subsidiary (host) country, (ii) if we exclude the crisis years 2008 and 2009, (iii) if we exclude those countries of the sample with only one parent bank, or (iv) if we exclude parent banks with merger-related growth proxied by a non-persistent asset growth of more than 30 percent from one year to another (Table A4).

To illustrate our main finding further, Figs. 3 and 4 depict the total marginal effect of both solvency and wholesale funding shocks on subsidiary loan growth at varying levels of bank integration culture based on the results in column (3). For solvency shocks (Fig. 3), we notice a clear negative effect of controlling integration culture, which exacerbates the effect that parent shocks have on foreign subsidiaries. Considering the 95% confidence intervals, the total effect becomes negative at a *Power Index* level of approximately 16.3. On the other hand, the total effect of wholesale funding shocks is not significantly different from zero at any value of the *Power Index*.

Model (5) modifies the definition our *Power Index*: We flag banks with a high *Power Index* with a dummy value that takes the

---

[12] We do not observe government bond yields for all countries and thus, end up with a smaller sample once we control for government bond yields.

[13] Since the *Power Index* does not vary over time in our baseline specification, the subsidiary fixed effects completely explain its cross-sectional variation. Therefore, the current set up cannot effectively measure the level effect of bank centralization. Instead, it focuses on the additional effect of centralization on the transmission of shocks.

[14] Ideally, we would also like to control for the *Power Index* of the subsidiary. However, annual reports of subsidiaries are hardly available. We deal with this issue by employing the Power Distance measure by Geert Hofstede in Table 8.

[15] Previous literature observes a reduction in lending in a short window around funding shocks (Schnabl, 2012; Cetorelli and Goldberg, 2012b). In untabulated results, we as well observe a negative coefficient for contemporaneous wholesale funding shocks. However, the coefficient of the interaction of the contemporaneous wholesale shock with culture is not significant in that specification. This is not surprising, as culture is a more stable concept that may affect the transmission only if shocks are longer-lived.

Table 6

Bank Integration Culture and the Transmission of Shocks. This table reports the results from the estimation of Eq. (2) at the subsidiary bank level. The sample comprises 371 foreign subsidiaries of 83 OECD parent banks in the period 1997–2012. The dependent variable is the growth rate of subsidiary loans. "Solvency Shock$_j$" and "Wholesale Shock$_j$" are dummy variables that take the value of 1 if a parent bank j is hit by a solvency and wholesale funding shock, respectively, and 0 otherwise. The bank controls ("Size", "Profitability", "Riskiness", "Capitalization", "Liquidity" and "Internally Generated Funds") are at the subsidiary i level. They are lagged with one period. The "Macro Variables" vector contains Gross Domestic Product growth, inflation, unemployment and 10-year government bond yields in the host country k of the respective subsidiary. All variables are defined in Table A5 and in the main text. The country fixed effects are at the host country level. The bank fixed effects are at the subsidiary level. Note that, as no subsidiary switches parents in the sample period, the subsidiary fixed effects incorporate the parent-level unobserved time-invariant heterogeneity as for example the level effect of the average *Power Index* or the PI Dummy. The numbers in parentheses are *p*-values. All standard errors are clustered at the parent level. Statistical significance at the 1%, 5% and 10% levels is denoted by ***, **, and *, respectively.

	(1)	(2)	Average PI (3)	Average PI (4)	PI Dummy (5)	PI Dummy (6)	Annual PI (7)	Annual PI (8)
Solvency Shock$_{j,t-1}$	−0.0654**	−0.0580**	−0.0726***	−0.0752**	−0.0478*	0.0058	−0.0674***	−0.0762***
	(0.022)	(0.014)	(0.000)	(0.010)	(0.059)	(0.912)	(0.003)	(0.009)
Wholesale Shock$_{j,t-1}$	−0.0217	0.0170	0.0179	0.0086	0.0212	−0.0216	0.0166	0.0068
	(0.327)	(0.540)	(0.515)	(0.834)	(0.491)	(0.622)	(0.548)	(0.869)
Power Index$_{i,t-1}$			-	-			0.0006	0.0066
							(0.925)	(0.474)
Power Index$_j$ * Solvency Shock$_{j,t-1}$			−0.0509***	−0.0498***			−0.0213**	−0.0196
			(0.001)	(0.009)			(0.047)	(0.102)
Power Index$_j$* Wholesale Shock$_{j,t-1}$			−0.0029	−0.0148			−0.0077	−0.0190
			(0.875)	(0.595)			(0.548)	(0.234)
PI_Dummy$_j$					-	-		
PI_Dummy$_j$ * Solvency Shock$_{j,t-1}$					−0.1235*	−0.1784*		
					(0.098)	(0.058)		
PI_Dummy$_j$ * Wholesale Shock$_{j,t-1}$					−0.0090	0.0203		
					(0.872)	(0.782)		
Size$_{i,t-1}$	−0.1266***	−0.1981***	−0.1976***	−0.1563***	−0.1984***	−0.2259***	−0.1977***	−0.1573***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Profitability$_{i,t-1}$	−1.8954*	−1.6744*	−1.6792*	−0.9436	−1.6793*	−0.4926	−1.6519*	−0.9042
	(0.064)	(0.073)	(0.070)	(0.525)	(0.072)	(0.764)	(0.075)	(0.543)
Riskiness$_{i,t-1}$	−2.2563***	−1.9146***	−1.9250***	−1.2852	−1.9130***	−1.7857**	−1.9071***	−1.2370
	(0.000)	(0.004)	(0.004)	(0.345)	(0.004)	(0.010)	(0.004)	(0.359)
Capitalization$_{i,t-1}$	0.6722**	0.4495	0.4786	0.4411	0.4537	0.3065	0.4604	0.4232
	(0.034)	(0.172)	(0.150)	(0.221)	(0.171)	(0.572)	(0.163)	(0.234)
Liquidity$_{i,t-1}$	0.6835***	0.7005***	0.7053***	0.5743***	0.7017***	0.5051**	0.7010***	0.5713***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.041)	(0.000)	(0.001)
Internally Generated Funds$_{i,t-1}$	0.9100***	0.8165***	0.8175***	0.5929	0.8157***	0.3245	0.8203***	0.5960
	(0.002)	(0.006)	(0.005)	(0.141)	(0.006)	(0.494)	(0.005)	(0.140)
Subsidiary FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demeaned Power Index/PI_Dummy	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10-Year Gov. Yields	No	No	No	Yes	No	No	No	Yes
Observations	2748	2748	2748	1712	2748	1266	2748	1712
R-squared	0.159	0.201	0.203	0.150	0.201	0.220	0.202	0.1489

value of 1 if the continuous *Power Index* is above the median value and zero otherwise. The coefficient of the interaction term is still negative although at a lower significance level. Model (6) runs the same regression, but only for the upper and lower quartiles of the *Power Index* (and hence the reduced sample size). The level effect of the solvency shock disappears, but the interaction term is again statistically significant. These results reinforce the notion that there is a continuous relationship between bank centralization and shock transmission: The more centralized a bank is, the larger the (negative) effect that parent solvency shocks have on foreign subsidiary lending.

While in our baseline specification we measure the *Power Index* of parent banks with the average value of the annual *Power Index* for all sample years, we use the variation of the *Power Index* over time in Model (7) and Model (8). All results are robust to this specification.

Overall, our results show that in an adverse shock to more centralized parent companies affects negatively the lending decisions of their foreign subsidiaries. This comes despite the fact that, nominally, the latter are independently incorporated banks in their respective host country. These results have important implications for crisis transmission and crisis management: Host-country regulators should consider the cultural (and centralization) aspects of the multinational conglomerate's home country, as more controlling societies spur more controlling corporate structures, which

have a greater potential for transmitting negative shocks across borders. This constitutes a new channel of international shock transmission through the social organization in the home country of foreign investors.

Instrumental variables estimation

One concern regarding enhanced shock propagation from parent banks with a more autocratic integration culture may arise from the (potential) correlation between the language used in banks' annual reports and the loan growth of their subsidiaries. More precisely, banks might use powerful, autonomous language if their subsidiaries exhibit poor loan opportunities.[16] A second concern regarding this approach could be that the annual report of a parent bank also contains information relevant for the subsidiaries, which would engender an endogeneity problem. Moreover, a third source of endogeneity problem arises from the usage of the *Power Index* as a proxy of bank integration culture and the resulting measurement error, in particular as we derive the *Power Index* from a textual analysis. To deal with these concerns, we rerun our regression using an instrumental variable approach.

---

[16] The *Power Index* is an average over several annual reports, which mitigates this problem. However, the concern is still valid if we would assume that parent banks choose specific language in anticipation of their subsidiaries' future loan growth opportunities.
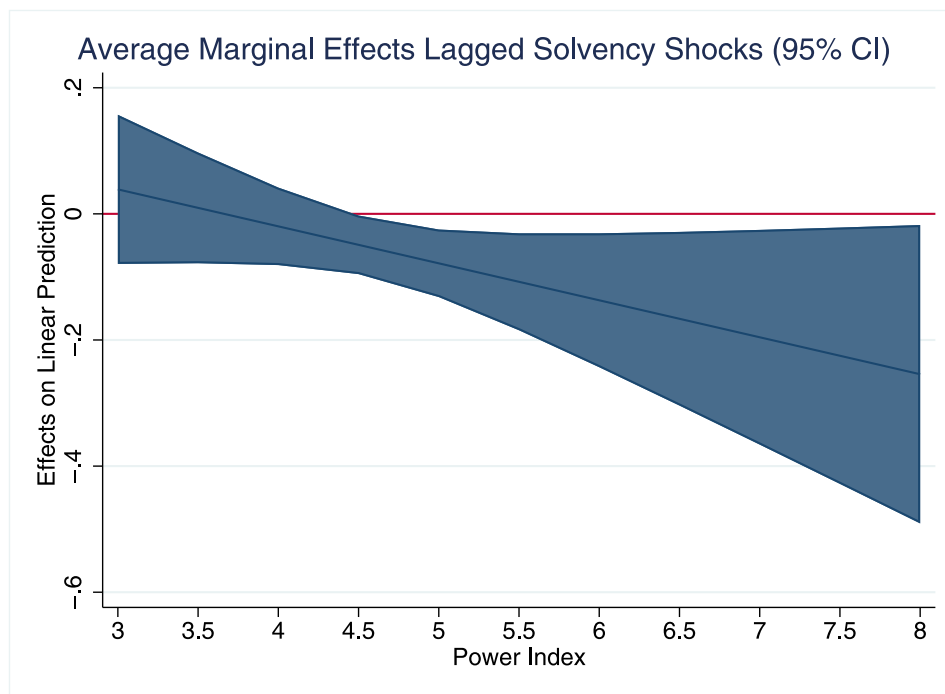
Fig. 3. Average Marginal Effect of Solvency Shocks. This figure presents the average marginal effect of solvency shocks for different levels of the *Power Index*.

Fig. 4. Average Marginal Effect of Wholesale Funding Shocks. This figure presents the average marginal effect of wholesale funding shocks for different levels of the *Power Index*.

We instrument our *Power Index* using initial socio-economic and political factors of the parent bank's home country. These instruments should be highly exogenous, as there is no direct relationship between these characteristics of the parent bank's home country prior to 1997 and a foreign subsidiary's loan growth in the post-1997 period. In particular, we use *(German) legal origin*, a measure that identifies the basis of a country's corporate law and commercial code, *ethnicity*, a score that measures the variety of ethnicities represented in a country, *political rights*, measuring the political freedom in a given country, and *catholicism*, capturing the percentage of the population of each country that belonged to Catholic religion.[17] Moreover, in the spirit of Bernile et al. (2018),

---

[17] German legal origin is the strongest instrument from all combinations of the legal origin dummies, and using the full set of legal origin dummies results in several weak instruments. Therefore, we use only the German legal origin dummy from

Table 7

Instrumental Variables Estimation. This table reports the results from the IV estimation based on Eq. (2) at the subsidiary bank level. The sample comprises 371 foreign subsidiaries of 83 OECD parent banks in the period 1997–2012. The dependent variable is the growth rate of subsidiary loans. "Solvency Shock$_j$" and "Wholesale Shock$_j$" are dummy variables that take the value of 1 if a parent bank j is hit by a solvency and wholesale funding shock, respectively, and 0 otherwise. The bank controls ("Size", "Profitability", "Riskiness", "Capitalization", "Liquidity" and "Internally Generated Funds") are at the subsidiary i level. They are lagged with one period. The "Instrumental Variables" vector contains "German Legal Origin", "Ethnic Dispersion", "Political Rights", logarithm of the distance between the headquarters of parents and subsidiaries, share of catholics in the country, and their interactions with the shocks. The "Macro Variables" vector contains Gross Domestic Product growth, inflation, unemployment and 10-year government bond yields in the host country k of the respective subsidiary. All variables are defined in Table A5 and in the main text. The country fixed effects are at the host country level. The bank fixed effects are at the subsidiary level. The numbers in parentheses are p-values. All standard errors are clustered at the parent level. Statistical significance at the 1%, 5% and 10% levels is denoted by ***, **, and *, respectively.

	Average PI (1)	Average PI (2)	Average PI (3)	Average PI (4)	Annual PI (5)	Annual PI (6)
Solvency Shock$_{j,t-1}$	−0.0808***	−0.0806***	−0.0820**	−0.1332**	−0.0924***	−0.0935***
	(0.000)	(0.000)	(0.024)	(0.011)	(0.000)	(0.001)
Wholesale Shock$_{j,t-1}$	0.0200	0.0191	0.0096	−0.0363	0.0048	−0.0027
	(0.458)	(0.476)	(0.810)	(0.583)	(0.894)	(0.947)
Power Index$_j$ * Solvency Shock$_{j,t-1}$	−0.0780**	−0.0783*	−0.1218***	−0.1332**	−0.0789**	−0.0806*
	(0.016)	(0.069)	(0.010)	(0.011)	(0.029)	(0.066)
Power Index$_j$* Wholesale Shock$_{j,t-1}$	0.0090	0.0011	−0.0286	−0.0363	−0.0118	−0.0164
	(0.846)	(0.984)	(0.609)	(0.583)	(0.732)	(0.705)
Size$_{i,t-1}$	−0.1977***	−0.1975***	−0.1925***	−0.1544***	−0.1945***	−0.1925***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Profitability$_{i,t-1}$	−1.7018*	−1.6901*	−1.9514*	−0.9298	−1.8354*	−1.9514*
	(0.057)	(0.059)	(0.061)	(0.514)	(0.063)	(0.061)
Riskiness$_{i,t-1}$	−1.9182***	−1.9255***	−2.4161***	−1.3755	−2.1998***	−2.4161***
	(0.003)	(0.003)	(0.002)	(0.305)	(0.003)	(0.002)
Capitalization$_{i,t-1}$	0.4911	0.4930	0.4785	0.4916	0.4834	0.4785
	(0.139)	(0.136)	(0.160)	(0.174)	(0.145)	(0.160)
Liquidity$_{i,t-1}$	0.7094***	0.7085***	0.7209***	0.5756***	0.7148***	0.7209***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Internally Generated Funds$_{i,t-1}$	0.8159***	0.8172***	0.7404**	0.5978	0.7767***	0.7404**
	(0.004)	(0.004)	(0.018)	(0.130)	(0.008)	(0.018)
Subsidiary FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes
10-Year Gov. Yields	No	No	Yes	Yes	No	No
Instruments (All)	Yes	No	Yes	No	Yes	No
Instrumental Variables (No Legal Origin)	No	Yes	No	Yes	No	Yes
Number of instruments	10	8	10	8	10	8
F-Statistic (1st Stage)	36.662	41.485	28.685	29.577	2.266	2.154
J-Statistic (2nd Stage)	11.353	9.735	8.700	5.686	10.318	6.678
p-value (J-Statistic)	0.183	0.136	0.368	0.459	0.171	0.246
Observations	2724	2724	1701	1701	2724	2724

we calculate the distance in kilometers from the headquarter of the parent bank to the headquarter of each subsidiary and employ the natural logarithm of this measure as an additional instrument.[18] The distance, too, should be exogenous and affect subsidiary's loan growth only through the intensity of control that can be exercised by the parent on the subsidiary.

The results of the IV estimation are displayed in Table 7.[19] We present the IV estimation for our baseline setting with a time-constant (average) *Power Index$_j$* in column (1) and column (2), for the reduced sample controlling for government bond yields in columns (3) and (4), and using the time-varying (annual) *Power Index$_{jt}$* in column (5) and column (6).

When using the average *Power Index*, our instruments have a strong explanatory power for integration culture, which is demonstrated by a first-stage F-statistic of about 36.[20] Moreover, the test

for overidentifying restrictions reveals a Hansen J statistic of 11.35 and a *p*-value of 0.1825. Thus, assuming that we have one valid instrument, we cannot reject the null hypothesis that the instruments are exogenous.

We observe a stronger impact of a solvency shock to a parent bank on the loan growth of its subsidiaries for a bank that displays an average degree of centralization. Moreover, the magnitude of the interaction effect increases substantially, which underscores our previous finding that a solvency shock at the parent bank level translates to a larger drop in loan growth the more autocratic the banking conglomerate's integration culture is. The strong increase in the level of the coefficient of the interaction with the *Power Index* suggests that solvency shocks are primarily transmitted through this channel. As in the OLS regression, we find no effect for wholesale funding shocks to banks with an average *Power Index*, and hence no evidence that the transmission of wholesale funding shocks is affected by bank integration culture.

Parent country heterogeneity and subsidiary location We further analyze whether the observed effect of a stronger loan decline for subsidiaries with autocratic parent companies is driven by the parent bank's home country characteristics or by different loadings and nuances of words in different non-English speaking countries. To this end, we control for unobservable heterogeneity across parent bank's home countries and exploit the lending behavior of similar subsidiaries with parent companies from the same country that differ in their *Power Index*. The results are shown in the

---

the set of legal origin dummies. See also Table A5 for a detailed description of all instruments.

[18] We source the information regarding the distance between locations from Here Technologies through their Application Programming Interface (API) at https://developer.here.com.

[19] While legal origin is one of the strongest instruments, one might worry that it does not satisfy the exclusion restriction, as the legal origin of banks may affect their policies in many different ways which may in turn affect how solvency shocks are transmitted from the parent its subsidiaries. We therefore present results for the IV estimation also for a set of instruments excluding legal origin, see even columns of Table 7.

[20] Note that with the annual *Power Index*, we only have weak instruments. All coefficients, however, hardly change.

Table 8

Parent Country Heterogeneity and Subsidiary Location. This table reports the results from the estimation of Eq. (2) at the subsidiary bank level. The sample comprises 304 subsidiaries (in column 1), 76 domestic subsidiaries (in columns 2), 129 foreign subsidiaries in countries with a Hofstede Power Distance Index below median (column 3) and 99 foreign subsidiaries in countries with a Hofstede Power Distance Index above median (column 4) of 83 OECD parent banks in the period 1997–2012. The dependent variable is the growth rate of subsidiary loans. "Solvency Shock$_j$" and "Wholesale Shock$_j$" are dummy variables that take the value of 1 if a parent bank j is hit by a solvency and wholesale funding shock, respectively, and 0 otherwise. The bank controls ("Size", "Profitability", "Riskiness", "Capitalization", "Liquidity" and "Internally Generated Funds") are at the subsidiary i level. They are lagged with one period. The "Macro Variables" vector contains Gross Domestic Product growth, inflation, unemployment and 10-year government bond yields in the host country k of the respective subsidiary. All variables are defined in Table A5 and in the main text. The bank fixed effects are at the subsidiary level. The numbers in parentheses are p-values. All standard errors are clustered at the parent level. Statistical significance at the 1%, 5% and 10% levels is denoted by ***, **, and *, respectively.

	Within		Subsidiary Home Country	
	Parent	Domestic	Power Distance Index	
	Country	Subsidiaries	Below Median	Above Median
	(1)	(2)	(3)	(4)
Solvency Shock$_{j,t-1}$	−0.0770***	−0.0669	−0.0898**	−0.0003
	(0.002)	(0.229)	(0.041)	(0.994)
Wholesale Shock$_{j,t-1}$	0.0237	0.0405	0.0035	0.0418
	(0.462)	(0.207)	(0.944)	(0.353)
Power Index$_{i,t-1}$	-	-	-	-
Power Index$_j$ * Solvency Shock$_{j,t-1}$	−0.0441***	−0.0192	−0.0785**	0.0123
	(0.001)	(0.420)	(0.013)	(0.658)
Power Index$_j$* Wholesale Shock$_{j,t-1}$	−0.0052	−0.0034	−0.0376	0.0221
	(0.725)	(0.767)	(0.310)	(0.124)
Size$_{i,t-1}$	−0.1524***	−0.1157	−0.1134***	−0.3404***
	(0.000)	(0.206)	(0.009)	(0.000)
Profitability$_{i,t-1}$	−1.1117	−1.7049	−1.4256	−0.1331
	(0.390)	(0.326)	(0.378)	(0.959)
Riskiness$_{i,t-1}$	−1.4792	−3.1522	−0.4688	−3.4987**
	(0.185)	(0.162)	(0.799)	(0.019)
Capitalization$_{i,t-1}$	0.4799	0.2181	0.4930	0.4137
	(0.169)	(0.892)	(0.175)	(0.593)
Liquidity$_{i,t-1}$	0.3494**	−0.4140	0.5423**	0.7557***
	(0.036)	(0.240)	(0.027)	(0.000)
Internally Generated Funds$_{i,t-1}$	0.3296	−0.5383	0.7272	0.1274
	(0.414)	(0.366)	(0.120)	(0.779)
Subsidiary FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Parent Country FE	Yes	No	No	No
Demeaned Power Index	Yes	Yes	Yes	Yes
Macro Variables and 10-Year Gov. Yields	Yes	Yes	Yes	Yes
Observations	2322	610	1101	611
R-squared	0.1220	0.1485	0.1081	0.3756

first column of Table 8, where we pool all subsidiaries and use parent bank country fixed effects to explore only the variation of integration cultural within a country. As in our main specification, we find a significant negative coefficient for the interaction term of the *Power Index* and the *Solvency Shock*, highlighting the effect of bank-specific integration culture.

Second, we investigate whether the effect differs for domestic versus foreign subsidiaries. To this end, we rerun the analysis from column (3) of Table 6, but include domestic subsidiaries in the sample rather than foreign subsidiaries. Column (2) of Table 8 presents the results of this exercise. We do not observe any effect on loan growth of domestic subsidiaries in response to a solvency shock of the parent bank. This result points towards a heterogeneous effect that depends on the differences in the level of autocratic cultures between the parent and the subsidiary.

Finally, we analyze whether the average effect of a stronger loan decline for subsidiaries with autocratic parent companies differs along the degree of centralization of organizations within the subsidiary home country. To this end, we collect data on the *Power Distance Index*, derived by Geert Hofstede, available at hofstede-insights.com. This measure indicates on a country level the extent to which the less powerful members of organizations and institutions accept that power is distributed unequally. Thus, a high Hofstede Power Distance Index is associated with more centralized organizations and more complex hierarchies. We rerun the regression outlined in column (3) of Table 6, but split the sam-

ple at the median of the Power Distance Index of subsidiaries' home countries. We thus analyze whether the lower loan growth of subsidiaries with more autocratic integration culture of the parent bank is stronger for subsidiaries in less centralized countries. As columns (3) and (4) of Table 8 demonstrate, the effect is much stronger for subsidiaries in countries with a low Hofstede Power Distance Index, while we find no significant effect for subsidiaries in countries with a high Hofstede Power Distance Index. This result is in line with our expectation: In countries where people are at ease with an unequal distribution of power, banks are typically used as an instrument to exercise power over the population. Subsidiary banks in such authoritarian societies might behave in a similar fashion towards their foreign parent companies so that the parents are less able to interfere with the subsidiary's lending behavior. A second explanation for the more pronounced negative effect of a centralized bank culture on subsidiary lending in a less autocratic culture may be higher financial integration that overrides the in-built social norms in the host countries through enforceable contracts that allow free movement of funds across borders.

To summarize, we find that the observed transmission of shocks is indeed a parent-bank-specific effect rather than driven solely by country culture. Additionally, we observe no transmission of shocks to domestic subsidiaries through the power culture channel and that the transmission through this channel across borders is mainly to banks with low resistance to parent company control.

4. Conclusion

In this paper, we present a novel approach for measuring bank integration culture, based on the language in global banks' financial reports. The *Power Index* that we introduce reflects the prevalence of language that communicates power, authority and control. The management literature identifies this type of language as an indication of tighter integration within a global corporation.

Our results show a novel and important channel of international shock transmission that has not yet been investigated in the literature: Bank integration culture plays a major role in the transmission of negative shocks across borders – if a more centralized parent bank is hit by a solvency shock, its subsidiaries reduce lending by more. This transmission of shocks across borders through a power-culture channel is mainly attributed to banks with low resistance to parent company control. The effect is even more pronounced once we use the purely exogenous variation in the *Power Index*, applying an instrumental variable approach.

Our study has important policy implications and enhances our understanding of the transmission of negative shocks across borders and how it is affected by corporate and country culture. Our findings suggest that in analyzing and forecasting the impact of external shocks on a country's economy, host country supervisors and regulators should consider the social and cultural structure of their foreign banks' home countries.

Declaration of Competing Interest

None.
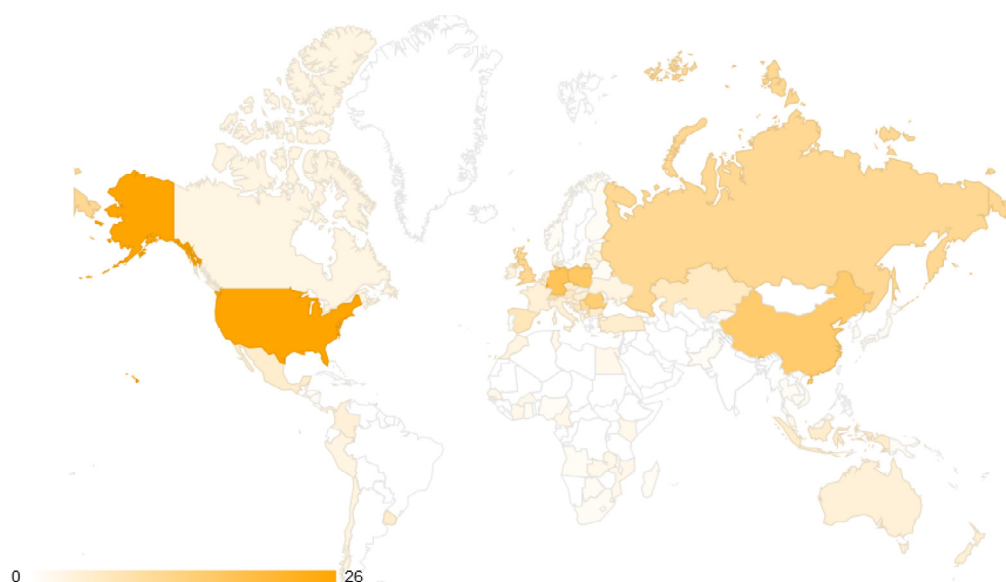
Appendix A. Main Figures and Tables

Fig. A1. Geographical Distribution of Subsidiaries. This figure presents the geographical distribution of the 371 subsidiaries of the 83 OECD parent banks in our sample.
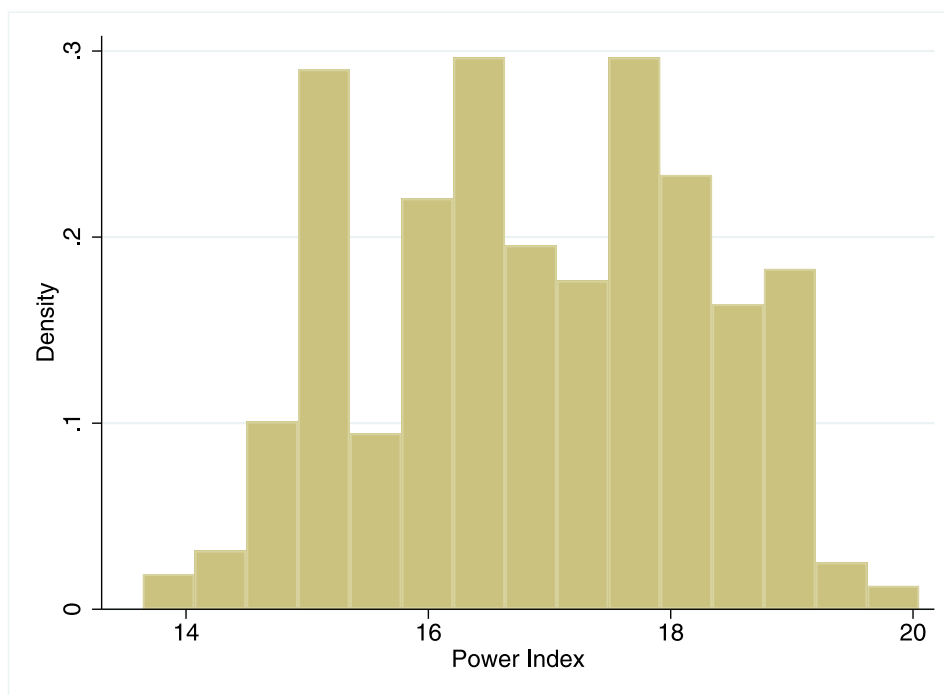
Fig. A2. Histogram of the *Power Index* of the 83 OECD parent banks in our sample.

Table A1
Countries of Initial Sample of Banks. This table presents the distribution across countries of the initial sample of Top 500 banks. These banks are used to identify the main sample of parent banks. The ranking is by total assets reported in Bankscope. The total number is larger than 500 because the rankings for both 2011 and 2012 were taken into account.

#	Country	# Banks	#	Country	# Banks
1	AUSTRALIA	13	17	ITALY	32
2	AUSTRIA	10	18	JAPAN	112
3	BELGIUM	9	19	LUXEMBOURG	16
4	CANADA	15	20	MEXICO	8
5	CHILE	8	21	NETHERLANDS	15
6	CHINA	9	22	NEW ZEALAND	8
7	CZECH REPUBLIC	5	23	NORWAY	2
8	DENMARK	7	24	POLAND	10
9	ESTONIA	1	25	PORTUGAL	4
10	FINLAND	4	26	REPUBLIC OF KOREA	14
11	FRANCE	26	27	SLOVAKIA	2
12	GERMANY	20	28	SLOVENIA	1
13	GREECE	4	29	SPAIN	15
14	HUNGARY	5	30	SWEDEN	4
15	IRELAND	8	31	TURKEY	12
16	ISRAEL	6	32	UNITED KINGDOM	30
			33	UNITED STATES OF AMERICA	98
				Total	**533**

Table A2
Parent Banks and Subsidiaries. This table presents the 83 parent commercial banks in our sample and the overall number of subsidiaries per bank.

	Parent Name	Parent Country	# Subs
1	ABN AMRO Bank NV	NETHERLANDS	2
2	Akbank T.A.S.	TURKEY	1
3	Allied Irish Banks plc	IRELAND	1
4	Alpha Bank AE	GREECE	5
5	Australia and New Zealand Banking Group	AUSTRALIA	6
6	Banca Mediolanum SpA	ITALY	1
7	Banca Monte dei Paschi di Siena SpA	ITALY	2
8	Banco Bilbao Vizcaya Argentaria SA	SPAIN	7
9	Banco Comercial Português, SA-Millennium bcp	PORTUGAL	3

(continued on next page)

Table A2 (*continued*)

	Parent Name	Parent Country	# Subs
10	Banco de Sabadell SA	SPAIN	2
11	Banco Desio - Banco di Desio e della Brianza SpA	ITALY	1
12	Banco Espirito Santo SA	SPAIN	2
13	Banco Santander SA	SPAIN	18
14	BANIF - Banco Internacional do Funchal, SA	PORTUGAL	1
15	Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse Aktiengesellschaft-BAWAG PSK Group	AUSTRIA	1
16	Bank Hapoalim BM	ISRAEL	2
17	Bank Leumi Le Israel BM	ISRAEL	5
18	Bank of Montreal-Banque de Montreal	CANADA	2
19	Bank of Nova Scotia (The) - SCOTIABANK	CANADA	13
20	Bank of Tokyo - Mitsubishi UFJ Ltd (The)-Kabushiki Kaisha Mitsubishi Tokyo UFJ Ginko	JAPAN	1
21	Bankia, SA	SPAIN	1
22	Banque Fédérative du Crédit Mutuel	FRANCE	1
23	Banque Internationale à Luxembourg SA	LUXEMBOURG	1
24	Barclays Bank Plc	UNITED KINGDOM	7
25	BNP Paribas	FRANCE	25
26	Caixa Geral de Depositos	PORTUGAL	5
27	Canadian Imperial Bank of Commerce CIBC	CANADA	4
28	Citibank NA	UNITED STATES OF AMERICA	10
29	Commerzbank AG	GERMANY	6
30	Commonwealth Bank of Australia	AUSTRALIA	1
31	CorpBanca	CHILE	3
32	Credit Agricole Corporate and Investment Bank-Credit Agricole CIB	FRANCE	1
33	Credit Europe Bank N.V.	NETHERLANDS	2
34	Credito Emiliano SpA-CREDEM	ITALY	1
35	Danske Bank A/S	NORWAY	3
36	Denizbank A.S.	TURKEY	1
37	Deutsche Bank AG	GERMANY	18
38	Dexia Crédit Local SA	FRANCE	2
39	DNB Bank ASA	NORWAY	5
40	East West Bank	UNITED STATES OF AMERICA	1
41	Eurobank Ergasias SA	GREECE	3
42	First International Bank of Israel	ISRAEL	2
43	Hana Bank	REPUBLIC OF KOREA	1
44	HSBC Bank plc	UNITED KINGDOM	5
45	Industrial Bank of Korea	REPUBLIC OF KOREA	1
46	ING Bank NV	NETHERLANDS	6
47	Intesa Sanpaolo	ITALY	10
48	Investec Bank Plc	UNITED KINGDOM	1
49	Israel Discount Bank Ltd.	ISRAEL	2
50	Jyske Bank A/S	DENMARK	1
51	KB Kookmin Bank	REPUBLIC OF KOREA	2
52	KBC Bank NV	BELGIUM	5
53	Mizuho Bank Ltd	JAPAN	6
54	MKB Bank Zrt	HUNGARY	1
55	National Australia Bank Limited	AUSTRALIA	2
56	National Bank of Greece SA	GREECE	6
57	Natixis	FRANCE	2
58	NLB dd-Nova Ljubljanska Banka d.d.	SLOVENIA	5
59	Nordea Bank Danmark Group-Nordea Bank Danmark A/S	DENMARK	1
60	OTP Bank Plc	HUNGARY	5
61	Piraeus Bank SA	GREECE	6
62	Raiffeisen Bank International AG	AUSTRIA	7
63	RCI Banque	FRANCE	1
64	Royal Bank of Canada RBC	CANADA	10
65	Royal Bank of Scotland NV (The)-RBS NV	NETHERLANDS	6
66	Shinhan Bank	REPUBLIC OF KOREA	7
67	Skandinaviska Enskilda Banken AB	SWEDEN	6
68	Société Générale	FRANCE	26
69	Standard Chartered Bank	UNITED KINGDOM	8
70	Sumitomo Mitsui Banking Corporation	JAPAN	2
71	Svenska Handelsbanken	SWEDEN	2
72	T.C. Ziraat Bankasi A.S.	TURKEY	2
73	Toronto Dominion Bank	CANADA	3
74	Turk Ekonomi Bankasi A.S.	TURKEY	1
75	Turkiye Garanti Bankasi A.S.	TURKEY	2
76	Turkiye Halk Bankasi A.S.	TURKEY	1
77	Turkiye is Bankasi A.S. - ISBANK	TURKEY	2
78	Turkiye Vakiflar Bankasi TAO	TURKEY	1
79	UBS AG	SWITZERLAND	5
80	UniCredit SpA	ITALY	24
81	Westpac Banking Corporation	AUSTRALIA	3
82	Woori Bank	REPUBLIC OF KOREA	3
83	Yapi Ve Kredi Bankasi A.S.	TURKEY	2
		Total	**371**

Table A3
Subsidiary Countries. This table presents the distribution of the 371 subsidiaries across countries. For a graphical representation, see Fig. A1.

	Subsidiary Country	# Subs		Subsidiary Country	# Subs
1	ALBANIA	3	50	LATVIA	3
2	ANDORRA	1	51	LITHUANIA	2
3	ANGOLA	1	52	LUXEMBOURG	24
4	ARUBA	1	53	MACAO	2
5	AUSTRALIA	4	54	MACEDONIA (FYROM)	5
6	AUSTRIA	6	55	MADAGASCAR	1
7	BAHAMAS	3	56	MALAYSIA	2
8	BARBADOS	2	57	MALTA	3
9	BELARUS	1	58	MEXICO	5
10	BELGIUM	6	59	MONTENEGRO	3
11	BELIZE	1	60	MOROCCO	3
12	BOSNIA AND HERZEGOVINA	6	61	MOZAMBIQUE	2
13	BOTSWANA	1	62	NETHERLANDS	5
14	BULGARIA	5	63	NEW ZEALAND	4
15	BURKINA FASO	2	64	NICARAGUA	1
16	CAMBODIA	1	65	NIGERIA	1
17	CAMEROON	1	66	NORWAY	1
18	CANADA	2	67	PAKISTAN	1
19	CAPE VERDE	3	68	PANAMA	3
20	CHILE	3	69	PAPUA NEW GUINEA	1
21	CHINA	14	70	PERU	3
22	COLOMBIA	4	71	POLAND	16
23	COTE D'IVOIRE	2	72	PORTUGAL	1
24	CROATIA	4	73	REPUBLIC OF KOREA	1
25	CURACAO	1	74	REPUBLIC OF MOLDOVA	1
26	CYPRUS	3	75	ROMANIA	14
27	CZECH REPUBLIC	5	76	RUSSIAN FEDERATION	11
28	DENMARK	2	77	SAMOA	2
29	EGYPT	2	78	SENEGAL	2
30	EL SALVADOR	1	79	SERBIA	10
31	ESTONIA	1	80	SEYCHELLES	1
32	FINLAND	1	81	SINGAPORE	1
33	FRANCE	4	82	SLOVAKIA	3
34	GEORGIA	1	83	SLOVENIA	4
35	GERMANY	16	84	SOUTH AFRICA	1
36	GHANA	1	85	SPAIN	7
37	GRENADA	1	86	SWITZERLAND	9
38	HAITI	1	87	THAILAND	1
39	HONDURAS	1	88	TONGA	1
40	HONG KONG	4	89	TRINIDAD AND TOBAGO	4
41	HUNGARY	4	90	TUNISIA	2
42	INDONESIA	4	91	TURKEY	5
43	IRELAND	3	92	UKRAINE	3
44	ITALY	4	93	UNITED KINGDOM	11
45	JAMAICA	3	94	UNITED STATES OF AMERICA	26
46	JAPAN	1	95	URUGUAY	5
47	KAZAKHSTAN	6	96	VANUATU	1
48	KENYA	2	97	VIET NAM	1
49	KYRGYZSTAN	1	98	ZAMBIA	2
				Total:	**371**

Table A4

Additional Robustness: Excluding the Financial Crisis, Countries with only one Parent Bank, and Parent Banks with high asset growth. This table reports the results from the estimation of Eq. (2) at the subsidiary bank level. The sample excludes the crisis years 2008 and 2009 (column 1 and column 2), those countries with only one parent bank in the original sample in columns 3 and 4 (Belgium, Chile, Ireland, Luxembourg, Norway, Slovenia, Switzerland), and parent banks with high asset growth from one year to another (asset growth exceeding 30%) in columns 5 and 6. The dependent variable is the growth rate of subsidiary loans. "Solvency Shock$_j$" and "Wholesale Shock$_j$" are dummy variables that take the value of 1 if a parent bank j is hit by a solvency and wholesale funding shock, respectively, and 0 otherwise. The bank controls ("Size", "Profitability", "Riskiness", "Capitalization", "Liquidity" and "Internally Generated Funds") are at the subsidiary i level. They are lagged with one period. The "Macro Variables" vector contains Gross Domestic Product growth, inflation, unemployment and 10-year government bond yields in the host country k of the respective subsidiary. All variables are defined in Table A5 and in the main text. The country fixed effects are at the host country level. The bank fixed effects are at the subsidiary level. Note that, as no subsidiary switches parents in the sample period, the subsidiary fixed effects incorporate the parent-level unobserved time-invariant heterogeneity as for example the level effect of the average *Power Index*. The numbers in parentheses are p-values. All standard errors are clustered at the parent level. Statistical significance at the 1%, 5% and 10% levels is denoted by ***, **, and *, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Solvency Shock$_{j,t-1}$	−0.0861***	−0.0840**	−0.0680***	−0.0715**	−0.0761***	−0.0867***
	(0.001)	(0.028)	(0.003)	(0.028)	(0.001)	(0.006)
Wholesale Shock$_{j,t-1}$	0.0254	0.0138	0.0070	−0.0135	0.0217	0.0136
	(0.387)	(0.746)	(0.771)	(0.717)	(0.474)	(0.752)
Power Index$_{i,t-1}$	-	-	-	-	-	-
Power Index$_j$ * Solvency Shock$_{j,t-1}$	−0.0549***	−0.0548**	−0.0499***	−0.0461**	−0.0477***	−0.0457**
	(0.007)	(0.020)	(0.002)	(0.029)	(0.004)	(0.016)
Power Index$_j$* Wholesale Shock$_{j,t-1}$	−0.0039	−0.0164	−0.0056	−0.0179	−0.0000	−0.0132
	(0.862)	(0.609)	(0.781)	(0.567)	(0.999)	(0.589)
Size$_{i,t-1}$	−0.1935***	−0.1485***	−0.2038***	−0.1708***	−0.1777***	−0.1241**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.013)
Profitability$_{i,t-1}$	−1.1158	−0.8315	−1.7804*	−1.0939	−1.4648	−0.3658
	(0.236)	(0.576)	(0.068)	(0.485)	(0.130)	(0.810)
Riskiness$_{i,t-1}$	−2.0031***	−1.8428	−1.8985***	−1.2052	−1.9600***	−1.0677
	(0.004)	(0.161)	(0.009)	(0.398)	(0.001)	(0.404)
Capitalization$_{i,t-1}$	0.3419	0.1383	0.4464	0.3763	0.4715	0.4763
	(0.336)	(0.741)	(0.201)	(0.321)	(0.183)	(0.179)
Liquidity$_{i,t-1}$	0.5592***	0.3859**	0.7526***	0.6400***	0.6512***	0.5302***
	(0.000)	(0.031)	(0.000)	(0.002)	(0.000)	(0.003)
Internally Generated Funds$_{i,t-1}$	0.7253***	0.5335**	0.8603***	0.6729	0.9986***	0.7214
	(0.000)	(0.045)	(0.005)	(0.113)	(0.001)	(0.117)
Subsidiary FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes
10-Year Gov. Yields	No	Yes	No	Yes	No	Yes
Observations	2226	1370	2561	1588	2370	1474
R-squared	0.1709	0.1208	0.2039	0.1514	0.2047	0.1363

Table A5
Variable Description. This table presents a description of the variables and data sources. All relevant balance sheet variables are converted to U.S. dollars for an easier interpretation of the results.

Variable name	Description	Data source
Loan Growth Rate	Growth of total subsidiary USD-denominated loans	Bankscope
Size	Natural logarithm of total subsidiary USD-denominated assets	Bankscope
Profitability	Ratio of subsidiary profits to total earning assets	Bankscope
Riskiness	Ratio of subsidiary loan-loss provisions to total loans	Bankscope
Capitalization	Ratio of subsidiary equity to total assets	Bankscope
Liquidity	Ratio of subsidiary liquid assets to total assets	Bankscope
Internally Generated Funds	Ratio of subsidiary net income at time t to total loans at time $t-1$	Bankscope
Power Index	Ratio of words related to power, control and authority to total amount of words in banks financial reports	Own calculations from individual banks financial reports
Gross Domestic Product Growth	Annual GDP growth in subsidiary country	Datastream, World Bank's World Development Indicators
Inflation	Annual inflation in subsidiary country	Datastream, World Bank's World Development Indicators
Unemployment	End-of-year unemployment in subsidiary country	Datastream, World Bank's World Development Indicators
Power Distance Index (at the country level for the sample split in Table 8)	Index that reflects the degree to which the less powerful members of a society accept and expect that power is distributed unequally	www.hofstede-insights.com
Government Bond Yield	Yield on 10 year government bonds.	IMF International Financial Statistics (IFS)
	Instrumental Variables	
Legal origin	Identifies the legal origin of the Company Law or Commercial Code of each country. There are five possible origins: (1) English Common Law; (2) French Commercial Code; (3) German Commercial Code;(4) Scandinavian Commercial Code; and (5) Socialist/Communist laws. We use only the strongest instrument, German legal origin dummy, as the full set of legal origin dummies results in several weak instruments.	La Porta et al. (1999)
Political Rights Index	Index of political rights. Higher ratings indicate countries that come closer to the ideals suggested by the checklist questions of: (1) free and fair elections; (2) those elected rule; (3) there are competitive parties or other competitive political groupings; (4) the opposition has an important role and power; and (5) the entities have self-determination or an extremely high degree of autonomy.	La Porta et al. (1999)
Ethnicity	Measure for ethnic fractionalization, based on the share of ethnicities within a country. Varies from 0 (least fractionalized) to 1 (most fractionalized).	Alesina et al. (2003)
Religion	Measure for religious fractionalization, based on the shares of different religions within a country. Varies from 0 (least fractionalized) to 1 (most fractionalized).	Alesina et al. (2003)
Distance	Natural logarithm of the distance between parent and subsidiary headquarters in kilometers.	Own calculations based on information from https://developer.here.com/

Table A6

Examples. This table presents examples of powerful language in our sample of annual reports. Column "PowerRatio" presents the ratio of power words to total words in the cited text.

Annual Report Text	PowerRatio	Power Words
power to govern the financial and operating policies of the entity under the by-laws or an agreement power to appoint or remove the majority of the members of the board of directors or equivalent governing body power to assemble the majority of voting rights at meetings of the board of directors or an equivalent governing body	15/56	power, govern, under, agreement, power, appoint, remove, majority, board, body, power, assemble, majority, board, body
significant influence is the power to participate in the financial and operating policy decisions of an economic activity but is not control or joint control over those policies	7/28	influence, power, participate, policy, control, joint, control
the iccc is not intended to replace the different group risk management committees but to enhance their effectiveness within the overall system guarantees the consistency of the internal control system and its compliance with regulations seeks to promote the use of internal control tools as widely as possible within the group enhances the consistency of annual reports on internal control and control of investor services prepared by the permanent control and periodic control functions as required under their charter of responsibilities and of the report of the chairman of the board of directors on internal control procedures prepared in accordance with article 1	19/103	different, group, system, control, system, compliance, control, group, control, control, control, control, under, charter, chairman, board, control, accordance, article
greek government influence pursuant to the banks participation in the support plan for the liquidity of the greek economy as per law 3723/2008 the greek government has the right to participate in the board through the appointment of a representative who will have veto power on strategic decisions or decisions resulting to a significant change in legal or financial position of the bank and for which the shareholders approval is required	15/71	government, influence, pursuant, participation, support, law, government, participate, board, appointment, representative, will, power, legal, position
together with the increasing importance of legal compliance risk and in parallel with international standards the compliance officers team and the compliance controls division that worked within the internal control unit were subordinated to a new department under the name of compliance department with the aim of coordinating compliance activities in the bank	14/53	together, legal, compliance, international, compliance, team, compliance, division, control, department, under, compliance, department, compliance
permanent control bodies the head of the permanent control department who reports to the company secretary is responsible for ongoing control within the meaning of article 6a of crbf regulation 97-02 as well as for compliance control within the meaning of article 11 of the decree of 31 march 2005 amending the crbf regulation	14/54	control, head, control, department, secretary, control, article, regulation, compliance, control, article, decree, march, regulation

Supplementary Figures and Tables

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jbankfin.2021.106338.

CRediT authorship contribution statement

Andreas Barth: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Deyan Radev:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

References

Adhikari, B.K., Agrawal, A., Malm, J., 2019. Do women managers keep firms out of trouble? Evidence from corporate litigation and policies. J. Account. Econ. 67 (1), 202–225.

Aghion, P., Tirole, J., 1997. Formal and real authority in organizations. J. Polit. Economy 105 (1), 1–29.

Antweiler, W., Frank, M., 2004. Is all that talk just noise? The information content of internet stock message boards. J. Finance 59 (3), 1259–1293.

Baliga, B., Jaeger, A., 1984. Multinational corporations. control systems and delegation issues. J. Int. Bus. Stud. 15 (2), 25–40.

Ball, C.A., Tschoegl, A.E., 1982. The decision to establish a foreign bank branch or subsidiary: an application of binary classification procedures. J. Financ. Quant. Anal. 17 (3), 411–424. doi:10.2307/2330837.

Barth, A., Mansouri, S., 2021. Corporate culture and banking. J. Econ. Behav. Organ. 186, 46–75.

Beck, T., Degryse, H., De Haas, R., van Horen, N., 2018. When arm's length is too far: relationship banking over the credit cycle. J. Financ. Econ. 127 (1), 174–196.

Bernile, G., Bhagwat, V., Yonker, S., 2018. Board diversity, firm risk, and corporate policies. J. Financ. Econ. 127 (3), 588–612.

Birkinshaw, J., Morrison, A., 1995. Configurations of strategy and structure in subsidiaries of multinational corporations. J. Int. Bus. Stud. 26 (4), 729–753.

Bloom, N., Sadun, R., Van Reenen, J., 2012. The organization of firms across countries. Q. J. Econ. 127 (4), 1663–1705.

Bonner, C., van Lelyfeld, I., Zymek, R., 2014. Bank's liquidity buffers and the role of liquidity regulation. J. Financ. Serv. Res. 1–24.

Brooke, M., 1984. Centralization and Autonomy: A Study in Organization Behaviour. Holt, Rinehart and Winston., London and New York.

Bushman, R.M., Davidson, R.H., Dey, A., Smith, A., 2018. Bank CEO materialism: risk controls, culture and tail risk. J. Account. Econ. 65 (1), 191–220.

Cetorelli, N., Goldberg, L., 2012. Banking globalization and monetary transmission. J. Finance 67 (5), 1811–1843.

Cetorelli, N., Goldberg, L., 2012. Liquidity management of U.S. global banks: internal capital markets in the great recession. J. Int. Econ. 88 (2), 299–311.

Cornett, M., McNutt, J., Strahan, P., Tehranian, H., 2011. Liquidity risk management and credit supply in the financial crisis. J. Financ. Econ. 101, 297–312.

De Haas, R., van Lelyveld, I., 2006. Foreign banks and credit stability in Central and Eastern Europe. a panel data analysis. J. Bank. Finance 30 (7), 1927–1952.

De Haas, R., van Lelyveld, I., 2010. Internal capital markets and lending by multinational bank subsidiaries. J. Financ. Intermediation 19 (1), 1–25.

De Haas, R., van Lelyveld, I., 2014. Multinational banks and the global financial crisis: weathering the perfect storm? J. Money Credit Bank. 46 (1), 333–364.

Deléchat, C., Henao, C., Muthoora, P., Vtyurina, S., 2012. The Determinants of Banks' Liquidity Buffers in Central America. IMF Working Paper WP/12/301. International Monetary Fund.

DeYoung, R., Distinguin, I., Tarazi, A., 2018. The joint regulation of bank liquidity and bank capital. J. Financ. Intermediation 34, 32–46. doi:10.1016/j.jfi.2018.01.006.

Fiechter, J., İnci Ötker Robe, Ilyina, A., Hsu, M., Santos, A., Surti, J., 2012. Chapter 11: Subsidiaries or Branches: Does One Size Fit All?. International Monetary Fund, USA.

Fiordelisi, F., Ricci, O., 2014. Corporate culture and CEO turnover. J. Corp. Finance 28, 66–82.

Freud, S., 1901. Psychopathology of Everyday Life. Basic Books, New York.

FSB, 2020. 2020 List of Global Systemically Important Banks (G-SIBs). Technical Report. Financial Stability Board.

Garnier, G.H., 1982. Context and decision making autonomy in the foreign affiliates of U.S. multinational corporations. Acad. Manage. J. 25 (4), 893–908.

Gottschalk, L., Gleser, G., 1969. The Measurement of Psychological States Through the Content Analysis of Verbal Behavior. University of California Press, Berkeley.

Gottschalk, L., Gleser, G., Daniels, R., Block, S., 1958. The speech patterns of schizophrenic patients: a method of assessing relative degree of personal disorganization and social alienation. J. Nerv. Mental Dis. 127, 153–166.

Guiso, L., Sapienza, P., Zingales, L., 2015. The value of corporate culture. J. Financ. Econ. 117, 60–76.

Harzing, A., 2000. An empirical analysis and extension of the Bartlett and Ghoshal typology of multinational. J. Int. Bus. Stud. 31 (1), 101–120.

Hedlund, G., 1981. Autonomy of subsidiaries and formalization of headquarters-subsidiary relationships in Swedish MNCs. In: Otterbeck, L. (Ed.), The Management of Headquarters-Subsidiary Relationships in Multinational Corporations. St. Martin's Press., New York.

Holod, D., Peek, J., 2010. Capital constraints, asymmetric information, and internal capital markets in banking: new evidence. J. Money Credit Bank. 42, 879–906.

Holtzman, W., 1950. Validation studies of the Rorschach test: shyness and gregariousness in the normal superior adult. J. Clin. Psychol. 6, 343–347.

Houston, J., James, C., 1998. Do internal capital markets promote lending? J. Bank. Finance 22, 899–918.

Johnston, S., Menguc, B., 2007. Subsidiary size and the level of subsidiary autonomy in multinational corporations: a quadratic model investigation of Australian subsidiaries. J. Int. Bus. Stud. 38 (5), 787–801.

Klemmensen, R., Hobolt, S., Hansen, M., 2007. Estimating policy positions using political texts: an evaluation of the Wordscores approach. Elect. Stud. 26, 746–755.

La Porta, R., de Silanes, F.L., Shleifer, A., Vishny, R., 1999. The quality of government. J. Law Econ. Organ. 15, 222–279.

Laver, M., Benoit, K., Garry, J., 2003. Extracting policy positions from political texts using words as data. Am. Polit. Sci. Rev. 97, 311–331.

Li, F., 2008. Annual report readability, current earnings, and earnings persistence. J. Account. Econ. 45, 221–247.

Loughran, T., McDonald, B., 2011. When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. J. Finance 66, 35–65.

Loughran, T., McDonald, B., 2016. Textual analysis in accounting and finance: asurvey. J. Account. Res. 54 (4), 1187–1230.

Lowe, W., 2008. Understanding wordscores. Polit. Anal. 16, 356–371.

Pan, Y., Siegel, S., Wang, T.Y., 2017. Corporate risk culture. J. Financ. Quant. Anal. 52 (6), 2327–2367.

Radev, D., 2017. International Banking Conglomerates and the Transmission of Lending Shocks across Borders. Working paper. Goethe University Frankfurt and Bonn University.

Robinson, L.A., Stocken, P.C., 2013. Location of decision rights within multinational firms. J. Account. Res. 51 (5), 1261–1297.

Rorschach, H., 1921. Psychodiagnostik. Ernst Bircher Verlag, Leipzig, Germany.

Schnabl, P., 2012. The international transmission of bank liquidity shocks: evidence from an emerging market. J. Finance 67 (3), 897–932.

Schwartz, H., Davis, S., 1981. Matching corporate culture and business strategy. Organ. Dyn. 10 (1), 30–48.

Selmer, J., de Leon, C., 1996. Parent cultural control through organizational acculturation: HCN employees learning new work values in foreign business subsidiaries. J. Organ. Behav. 17, 557–572.

Selmer, J., de Leon, C., 2002. Parent cultural control of foreign subsidiaries through organizational acculturation: a longitudinal study. Int. J. Hum. Resour. Manage. 13 (8), 1147–1165.

Stein, J.C., 2002. Information production and capital allocation: decentralized versus hierarchical firms. J. Finance 57 (5), 1891–1921.

Taggart, J., 1997. Autonomy and procedural justice: a framework for evaluating subsidiary strategy. J. Int. Bus. Stud. 28 (1), 51–76.

Taggart, J., Hood, N., 1999. Determinants of autonomy in multinational corporation subsidiaries. Eur. Manage. J. 17 (2), 226–236.

Tetlock, P., 2007. Giving content to investor sentiment: the role of media in the stock market. J. Finance 62 (3), 1139–1168.

Tetlock, P., Saar-Tsechansky, M., Macskassy, S., 2008. More than words: quantifying language to measure firms' fundamentals. J. Finance 63 (3), 1437–1467.

Young, S., Hood, N., Hamill, J., 1985. Decision-making in Foreign-owned Multinational Subsidiaries in the United Kingdom. International Labour Office, Geneva.

Young, S., Tavares, A., 2004. Centralization and autonomy: back to the future. Int. Bus. Rev. 13, 215–237.