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Uneven regulatory playing field and bank transparency abroad

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Abstract

Motivated by international business research on institutional arbitrage and headquarters–subsidiary relationships, we examine the effect of regulatory distance on multinational banks' (MNBs) reporting transparency abroad. Using an international sample of foreign subsidiary banks in 46 host countries from 47 home countries, we find that bank transparency declines when the home countries have tighter activity restrictions than the host countries. We bolster the causal inference using difference-in-differences designs that take advantage of banking reforms and cross-border bank acquisitions. We also find that the result is more pronounced when parent banks have lower capital ratios or when host countries have weaker supervisory power, suggesting that parent banks use opaque reporting to conceal risk-taking abroad. Further analysis finds that less transparent subsidiaries are more likely to fail during financial crises. Overall, our findings suggest that regulatory distance creates negative externalities for bank transparency and stability abroad.

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Keywords: transparency within and among MNEs and national states; agency theory; multinational corporations (MNCs) and enterprises (MNEs); headquarters–subsidiary roles and relations

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INTRODUCTION

Multinational banks (MNBs) play an important role in promoting international business through financing global transactions of multinational corporations and maintaining the stability of the global financial system (Fang, Hasan, Leung, & Wang, 2019; Laeven, 2013). Cross-border banking claims reached more than half of world GDP in 2007, and the vast majority of these claims are held by global systemically important financial institutions (IMF, 2014a). However, bank regulations remain predominantly national and vary widely across countries (Barth, Caprio, & Levine, 2013). While cross-country distance is a core concept in international business research, and the literature suggests that institutional distance generates arbitrage opportunities (Kostova, Beugelsdijk, Scott, Kunst, Chua, & van Essen, 2020), there is little evidence on whether and how institutional arbitrage affects multinationals'

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financial reporting transparency. This study examines the following questions. Do the cross-country differences in bank restrictions affect financial reporting transparency of MNBs' foreign subsidiaries? If so, how? What is the implication of transparency on bank failure during the crisis?

Institutional distance is particularly meaningful in the banking sector because banks are heavily regulated. Our focus is the regulatory restrictions on banks' securities, insurance, and real estate activities (hereafter, activity restrictions), because these are tightly linked to bank risk-taking (Karolyi & Taboada, 2015; Ongena, Popov, & Udell, 2013).¹ Our emphasis on banks' financial reporting transparency stems from its importance to facilitate outside monitoring and discipline (Healy & Palepu, 2001), which in turn mitigate banks' vulnerability to downside risk and enhance financial stability (Beatty & Liao, 2014).

Shareholders of limited-liability banks with leveraged equity have incentives to take risk beyond the level that would be optimal for an "all-equity" bank (Barnea, Haugen, & Senbet, 1985). Foreign subsidiaries enable parent banks to exploit lax host-country regulations and assume greater risk abroad, as they are separately capitalized and subject to host-countries' regulations. Rationally, debtholders and other stakeholders would recognize these incentive effects and price accordingly. Because the cost would be borne by the banks working on behalf of shareholders, it is to the best interests of banks and their shareholders to devise incentive compatible contracts, e.g., management compensation contracts (John, Saunders, & Senbet, 2000). However, the incentive alignment can break down when the mechanism for pricing deposit insurance is inefficient and the financial markets are imperfect with insufficient signals. If regulatory environments are weak, banks can also walk away from their foreign subsidiaries, creating negative externalities. In this case, excess risk-taking via foreign subsidiaries will remain harmful, and MNBs will reduce the transparency of these subsidiaries to inhibit outside monitoring. Thus, our first hypothesis predicts that foreign subsidiaries' transparency declines when their home countries have tighter activity restrictions than their host countries.

Yet, parent banks may prefer consistent and transparent financial reporting throughout their global networks, to facilitate performance evaluation within an MNB and to reduce the cost of capital by reducing information asymmetry (Lambert, Leuz, & Verrecchia, 2007; Roth & O'Donnell,

1996). Parent banks may also take greater risk abroad to explore opportunities forbidden at home countries and to conceal these activities, due to concerns on proprietary costs of disclosure (Verrecchia, 1983).

Our second hypothesis predicts that foreign subsidiaries with lower transparency are more likely to fail during the financial crisis. The intuition is that opacity would inhibit market discipline and increase investors' uncertainty about bank fundamentals, thereby amplifying banks' vulnerability to downside risk (Bushman & Williams, 2015). Note, however, that the effect of transparency on bank failure may be weak in our setting, because parent banks can inject internal capital to support financially distressed subsidiaries (Houston, James, & Marcus, 1997).

Our empirical analysis focuses on majority-owned foreign subsidiary banks to ensure that parent banks control foreign subsidiaries' operations and reporting. We measure regulatory distance as the differences in an index of bank activity restrictions between the foreign subsidiaries' home and host countries. This index, obtained from Barth et al. (2013), captures the restrictiveness of bank regulations on nonlending activities, including trading securities, providing insurance, and investing in real estate. We measure bank transparency as the disclosures related to loans and securities, which constitute the majority of bank assets and capture bank risk-taking induced by regulatory distance (Karolyi & Taboada, 2015; Ongena et al., 2013).

Our sample consists of 1617 subsidiary-years (300 subsidiaries) in 46 host countries from 47 home countries during 1995–2009. We test our first hypothesis using the observations from 1995 to 2006 and our second hypothesis using the observations from the 2007–2009 global financial crisis. Consistent with our predictions, we find that, after controlling for bank risk-taking, regulatory distance is negatively associated with foreign subsidiaries' transparency. This result is robust to alternative samples, subperiods, measures of bank transparency, estimation methods, and additional controls on other institutional distances. In addition, foreign subsidiaries with lower transparency prior to the crisis are more likely to fail or experience large deposit withdrawals during the crisis.

Because the interpretation that regulatory distance reduces bank transparency abroad is subject to endogeneity concerns, we use several approaches to strengthen the causal inferences. We include



host country-year fixed effects to control for time-varying host-country characteristics throughout our analyses and implement an instrumental variable (IV) approach as a robustness check. In addition, we use difference-in-differences tests that exploit post-crisis banking reforms and cross-border bank acquisitions. We also use foreign branches from the same home country as the benchmark sample, because they are subject to home-country regulations and therefore do not provide an opportunity for parent banks to exploit regulatory distance (Ongena et al., 2013). Our inferences are unaffected by these alternative approaches. While these analyses may not fully eliminate the endogeneity concerns, cross-sectional tests on the underlying mechanisms further corroborate our inferences that parent banks use opaque reporting to conceal risk-taking abroad. Specifically, we find that our results are primarily driven by foreign subsidiaries controlled by parent banks with low capital ratios or are located in host countries with weak supervisory power, but not by foreign subsidiaries with high profitability.

Our findings contribute to the literature in several ways. First, we add to international business research on institutional distance by examining the consequences of MNBs' regulatory arbitrage on bank transparency abroad. While regulatory arbitrage is a key concern for regulators around the world, studies have yielded mixed conclusions on its consequences. The evidence of Frame, Mihov, & Sanz (2020) and Ongena et al. (2013) is consistent with the value-destructive view of regulatory arbitrage, which argues for a harmful pursuit of excessive risk-taking, leading to a "race to the bottom." In contrast, the evidence of Houston, Lin, and Ma (2012) and Karolyi and Taboada (2015) is more consistent with the benign view, which posits a search for profitable investment opportunities abroad.

Second, we add to the burgeoning line of research on multinationals' subsidiary management (Kostova, Nell, & Hoenen, 2016). Our study advances the theoretical development by integrating debt-equity agency conflicts with subsidiary reporting practices and empirically showing that foreign subsidiaries' transparency decreases in response to stringent home-country regulations. By documenting that this result varies with host-country supervisory power, we also add to research that examines the effects of country-level institutions on corporate transparency (Kanagaretnam, Lim, & Lobo, 2014).

Finally, our paper extends the literature on the relationship between bank transparency and performance (Beatty & Liao, 2014; Bushman & Williams, 2015). To the best of our knowledge, our study is the first to examine the reporting transparency of foreign subsidiary banks and its consequences. Our study complements the work of Ongena et al. (2013), who directly observed loans by foreign subsidiary banks and found that tighter activity restrictions at home are associated with lower lending standards abroad.

We also provide policy implications for regulators worldwide by highlighting the importance of disclosure practices among MNBs' foreign subsidiaries. Given that financial systems are increasingly interconnected across countries, the failure of foreign subsidiaries may amplify risk contagions beyond the local market.

The rest of the article is organized as follows. The second section summarizes the literature and develops our hypotheses. The third describes the sample and data. The fourth presents empirical results. The fifth reports difference-in-differences analyses and explores mechanisms. The last section concludes.

THEORETICAL BACKGROUND AND HYPOTHESES

Institutional Arbitrage and Headquarters–Subsidiary Relationships

National contexts and contextual embeddedness of organizations lie at the heart of international business research (Kostova et al., 2020). Since multinationals conduct business through multiple subsidiaries in different countries, research has extensively studied the construct and impact of cross-country contextual distance on organizational outcomes and recognizes that international management is essentially the "management of distance" (Beugelsdijk, Nell, & Ambos, 2017). One notable line of the research identifies strategies of institutional arbitrage; that is, multinationals take advantage of the institutional distance between home and host country to optimize their global investment portfolio.

The literature also suggests that MNBs, by taking advantage of regulatory distance, enjoy more investment opportunities in countries with less restrictive regulations (Ongena et al., 2013).² Despite the interdependence of the global banking system, bank regulations vary widely around the

world (Barth et al., 2013; Čihák, Demirgüç-Kunt, Martínez Pería, & Mohseni-Cheraghrou, 2012). MNBs are key players in the global banking system and can exploit institutional distance through their foreign subsidiaries.³ Subject to host-country regulations, foreign subsidiaries offer MNBs the opportunities to take on risky projects prohibited by home-country regulations. As subsidiaries are legally separate from their parents, MNBs also bear limited exposure when the subsidiaries fail. Under most circumstances, MNBs' losses would be limited to the equity investment in the subsidiaries (Cerutti, Dell'Ariccia, & Martínez Pería, 2007; Fiechter, et al., 2011). Thus, the primary bad outcome for MNBs is the equity investment in foreign subsidiaries and reputational cost.

Regulatory Distance and Foreign Subsidiaries' Transparency

Shareholders of limited-liability banks financed by deposits (whether insured or uninsured) have incentives to push risk beyond the optimal level for an "all equity" bank (John et al., 2000). Debtholder or other stakeholders would rationally recognize these incentives and price-protect themselves against potential losses and monitoring costs. Because banks and their shareholders bear the agency costs, they would design contracts to promote incentive alignment and to curb excessive risk-taking (Barnea et al., 1985; Green, 1984). Pervasive deposit protection, through government guarantee and deposit insurance, transfers risks to governments (Demirgüç-Kunt, Kane, & Laeven, 2015). John et al. (2000) suggest that, by incorporating incentive features of compensation as an input to the price of deposit insurance, the pricing of deposit insurance can become an instrument for bank owners to declare an optimal management compensation structure that produces incentive alignment. However, this incentive alignment may break down in weak institutions, where the mechanism for pricing deposit insurance is inefficient and the financial markets are imperfect with insufficient pricing signals (Cull, Senbet, & Sorge, 2005).

Furthermore, frictions exist in the supervision of international banks. Bank supervisors implement various regulatory mechanisms to constrain risk-taking to protect taxpayers' money, but these mechanisms may not be effective when institutions are weak. In countries with weak regulations or incompetent/corrupt governments, MNBs can walk away from their subsidiaries and impose negative

externalities. While bank supervision should be conducted on a consolidated basis, it is relatively difficult for home-country supervisors to coordinate with host-country supervisors to monitor MNBs' foreign subsidiaries (D'Hulster, 2012).

The regulatory differences across countries provide incentives for MNBs to take more risk through their foreign subsidiaries when they face greater restrictions at home. Studies suggest that MNBs embark on a deliberate strategy of risk-taking abroad to compensate for the inability to take on risk in their home market (Karolyi & Taboada, 2015; Ongena et al., 2013).⁴ If the design of incentives is inefficient in the regulatory space, the risk-taking will remain harmful, and MNBs will decrease their foreign subsidiaries' transparency to prevent outside discipline. This leads to our first hypothesis.

Hypothesis 1: Foreign subsidiaries' transparency declines when their home-country regulations have tighter activity restrictions than their host-country regulations.

There are, however, countervailing arguments for why restrictive home-country regulations do not impair transparency abroad. Parent banks may aim to hold a consistent reporting approach across their subsidiaries. A consistent set of reporting practices within a global network would yield various benefits, including improved comparability and performance evaluation (Roth & O'Donnell, 1996). Moreover, parent banks may choose transparent reporting to attract external financing. Studies suggest that transparency reduces information asymmetry that in turn decreases the cost of capital (Lambert et al., 2007). Finally, parent banks may reduce the financial reporting transparency of their foreign subsidiaries, due to proprietary cost considerations. Because information revealed through disclosures can deprive banks of their competitive advantage, banks may decrease disclosures to maintain their competitive advantage and deter the entrance of potential competitors (Verrecchia, 1983).

Foreign Subsidiaries' Transparency and Bank Failure

Our second hypothesis predicts that foreign subsidiaries' lower transparency increases the likelihood of failure during the crisis. One reason is that lower transparency increases investors' uncertainty about bank fundamentals and thus amplifies the financing frictions during the crisis (Bushman &



Williams, 2015). Another reason is that opacity hinders the ability of market participants to promptly pressure regulators to intervene in troubled banks. This leads to our second hypothesis.

Hypothesis 2: Foreign subsidiaries with lower transparency are more likely to fail during the financial crisis.

Note, however, that prior results may not be generalizable to our setting, because parent banks can inject capital to support their financially distressed subsidiaries (Houston et al., 1997).

DATA AND VARIABLES

Data and Sample Selection

We obtain foreign subsidiaries' financial statement data on an unconsolidated basis from Bankscope, a database commonly used in international banking research (Fang et al., 2019; Frame et al., 2020). We use 1995–2006 for our first hypothesis test and 2007–2009 for our second hypothesis test. We focus on foreign subsidiaries, because they are separately capitalized and subject to host-country regulations, allowing parent banks to arbitrage regulations. We restrict our analysis to majority-owned foreign subsidiaries, because their operations and reporting are under parent banks' direct control.

Our initial sample consists of 2814 majority-owned subsidiary banks in the Bankscope parent–subsidiary link table.⁵ We impose the following criteria. First, for subsidiaries with multiple ownership observations, we drop the observations that lack a direct link to ensure a unique parent–subsidiary link for each subsidiary (281 subsidiaries).⁶ Second, because Bankscope only retains the most recent ownership data, we drop all the subsidiary-years that belong to M&A targets in cross-border majority control acquisitions during our sample period (147 subsidiaries). Third, we delete domestic subsidiaries (i.e., subsidiaries located in the same country where parent banks are headquartered, 968 subsidiaries). Finally, we drop subsidiaries that do not have financial statement data (646 subsidiaries) or country-level bank regulation indexes (22 subsidiaries). We also drop the subsidiaries that do not have necessary data for our analysis, represent the only subsidiary in the host country-year, or do not have loans or securities on balance sheets (450 subsidiaries). Our final sample consists of 300 majority-owned foreign subsidiaries (1617 subsidiary-year observations) in

46 host countries from 1995 to 2009. These subsidiaries are owned by 190 parent banks from 47 home countries. This sample structure, with multiple home and host countries, enables us to isolate regulatory distance from institutional profile effects of the host countries.

Table 1, Panel A, reports the sample selection procedure. Panel B compares the characteristics between the final sample (300 subsidiaries) and the foreign subsidiaries that are dropped but have basic financial data (472 = 772–300 subsidiaries). We find that the geographic distributions between these two groups differ slightly. The final sample also contains larger subsidiaries with lower profitability and capital ratios, on average. While we control for these characteristics throughout our analyses, we acknowledge that the external validity of our findings is restricted to our sample banks.

Table 1, Panel C, reports the sample distribution by year.⁷ Panel D reports the sample distribution by home country (i.e., the country where the parent bank is headquartered). We find that banks from France have the highest number of foreign subsidiaries (29), followed by Germany and the UK (26) and Japan (21).⁸ This is not surprising because these countries are home to large MNBs, such as BNP Paribas (France), Deutsche Bank (Germany), Nomura Holdings (Japan), and Standard Chartered (the UK). Panel E presents the sample distribution by host country (i.e., the country where the subsidiary is located). We find that Switzerland has the most foreign subsidiaries (41), followed by Luxembourg (37), and Germany and the UK (21). While these four countries are generally considered to have high-quality regulation, their approach to bank supervision varies. Based on the median of country-level supervisory power (11.00), Luxembourg (12.25) and Switzerland (13.00) grant bank supervisors high power to intervene in bank operations and to correct problems, while Germany (9.25) and the UK (10.00) grant low power. Overall, our sample is geographically dispersed, rather than dominated by specific countries, which helps ensure the generalizability of our findings.

Variables

We measure regulatory distance, Δ RESTRICT, as the index of home-country activity restrictions minus the index of host-country activity restrictions. The activity restrictions index (RESTRICT) comes from Barth et al. (2013).⁹ The index ranges from 3 to 12, with higher values indicating more restrictive regulations on banks' securities, insurance, and real

Table 1 Sample selection and distribution

Panel A: Sample selection													
	No of subsidiaries associated with each step			%	Total no. of subsidiaries after each step								
Majority-owned subsidiaries, 1995–2009					2,814	100							
Subsidiaries without direct ownership	– 281			– 9.99	2,533	90.01							
M&A targets	– 147			– 5.22	2386	84.79							
Domestic subsidiaries	– 968			– 34.40	1,418	50.39							
Subsidiaries without financial statement data	– 646			– 22.96	772	27.43							
Missing bank regulation index	– 22			– 0.78	750	26.65							
Missing required variables (including loan or securities) and only one in host country-year	– 450			– 15.99	300	10.66							
Panel B: Comparison of final sample and other majority-owned foreign subsidiaries that are not retained in the final sample													
Variable	Final sample			Other foreign majority-owned sub.			Diff.						
	No. of sub. = 300, 1995–2009							No. of sub. = 472, 1995–2009					
	n	%	Mean	n	%	Mean							
	(1)	(2)	(3)	(4)	(5)	(6)							
Geographic distribution, home country													
Europe	209	69.67	n.a.	252	53.39	n.a.	16.28%						
Asia	55	18.33	n.a.	105	22.25	n.a.	– 3.91%						
Americas	23	7.67	n.a.	60	12.71	n.a.	– 5.05%						
Africa	8	2.67	n.a.	41	8.69	n.a.	– 6.02%						
Oceania	5	1.67	n.a.	14	2.97	n.a.	– 1.30%						
Geographic distribution, host country													
Europe	197	65.67	n.a.	203	43.01	n.a.	22.66%						
Asia	35	11.67	n.a.	112	23.73	n.a.	– 12.06%						
Americas	38	12.67	n.a.	88	18.64	n.a.	– 5.98%						
Africa	18	6.00	n.a.	55	11.65	n.a.	– 5.65%						
Oceania	12	4.00	n.a.	14	2.97	n.a.	1.03%						
Financial characteristics													
Size	1617	n.a.	7.409	2257	n.a.	6.094	1.316						
Roa	1617	n.a.	0.011	2108	n.a.	0.016	– 0.005						
Capital ratio	1617	n.a.	0.123	2859	n.a.	0.215	– 0.091						
Panel C: Sample distribution by year													
Pre-crisis period (N, sub.-years = 1102)													
1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006		
4	22	30	31	45	60	89	178	181	162	155	145		
Panel C: Sample distribution by year													
Crisis period (N, sub.-years = 515)						N (sub.-years)			N (subs.)				
2007		2008		2009		Total							
152		167		196		1617			300				



Table 1 continued

Panel D: Sample distribution by home country										
Region	Home country	No., sub.-years	%, sub.-years	No., subs.	Region	Home country	No., sub.-years	%, sub.-years	No., subs.	
Europe	Germany	190	11.75	26	Asia	Singapore	25	1.55	3	
	France	155	9.59	29		Israel	17	1.05	4	
	UK	122	7.54	26		Hong Kong	15	0.93	4	
	Switzerland	106	6.56	18		Kuwait	12	0.74	2	
	Austria	100	6.18	20		Turkey	11	0.68	4	
	Luxembourg	87	5.38	14		Bahrain	11	0.68	2	
	Italy	73	4.51	15		Thailand	10	0.62	1	
	Spain	66	4.08	15		Other	33	2.04	6	
	Netherlands	61	3.77	10		Subtotal	273	16.88	55	
	Sweden	55	3.40	8		Americas	Canada	75	4.64	10
	Belgium	30	1.86	8			Brazil	15	0.93	4
	Russia	26	1.61	4			US	15	0.93	5
	Denmark	19	1.18	3			Other	5	0.31	4
	Greece	18	1.11	2		Subtotal	110	6.80	23	
	Liechtenstein	16	0.99	2		Africa	South Africa	24	1.48	4
	Slovenia	14	0.87	2			Egypt	6	0.37	1
	Norway	12	0.74	2			Other	7	0.43	3
	Other	11	0.68	5		Subtotal	37	2.29	8	
	Subtotal	1,161	71.80	209		Oceania	Australia	36	2.23	5
Asia	Japan	101	6.25	21	Subtotal		36	2.23	5	
	South Korea	38	2.35	8	Total	1,617	100.00	300		

Panel E: Sample distribution by host country									
Region	Host country	No., sub.-years	%, sub.-years	No., subs.	Region	Host country	No., sub.-years	%, sub.-years	No., subs.
Europe	Luxembourg	296	18.31	37	Asia	Indonesia	21	1.30	5
	Switzerland	283	17.50	41		Hong Kong	18	1.11	7
	UK	130	8.04	21		Singapore	17	1.05	4
	Germany	115	7.11	21		Macao	13	0.80	4
	Czech Republic	44	2.72	8		Other	18	1.11	6
	France	41	2.54	7		Subtotal	148	9.15	33
	Netherlands	34	2.10	7	Americas	Brazil	63	3.90	12
	Poland	30	1.86	8		US	20	1.24	11
	Belgium	26	1.61	5		Argentina	14	0.87	2
	Croatia	25	1.55	5		Chile	12	0.74	2
	Spain	25	1.55	5		Uruguay	10	0.62	2
	Malta	23	1.42	5		Other	20	1.24	9
	Austria	23	1.42	4	Subtotal	139	8.60	38	
	Latvia	22	1.36	3	Africa	Botswana	18	1.11	3
	Ireland	20	1.24	7		Mauritius	14	0.87	4
	Italy	19	1.18	4		Malawi	10	0.62	2
	Hungary	14	0.87	2		Other	17	1.05	9
	Liechtenstein	12	0.74	3	Subtotal	59	3.65	18	
	Estonia	10	0.62	2	Oceania	Australia	49	3.03	9
Other	4	0.25	2	New Zealand		26	1.61	3	
Subtotal	1,196	73.96	197	Subtotal		75	4.64	12	
Asia	Malaysia	61	3.77	7	Total	1,617	100.00	300	

Reports the sample selection and distribution of foreign subsidiaries. Panel A reports the sample selection procedure and Panel B reports the comparison between the final sample and subsidiaries excluded from the analyses. Panels C, D, and E present the sample distribution by year, home country, and host country, respectively

estate activities. We focus on regulatory distance (Δ RESTRICT) because parent banks' risk-taking should be influenced as much by the regulatory environment in home countries as by that in host countries. A higher value of Δ RESTRICT indicates more stringent restrictions at home. Appendix A provides detailed definitions of the variables. Table A of the internet appendix presents the average value of the activity restrictions index by country.¹⁰

Our measure of bank transparency, DISCLOSURE, is an index of aggregate disclosure that captures the level of disclosures related to loans and securities. We focus on loans and securities, because they account for the majority of total bank assets (Beatty & Liao, 2014). In addition, given that tighter activity restrictions at home lead to lower lending standards and more investment activities abroad (Karolyi & Taboada, 2015; Ongena et al., 2013), the disclosures related to loans and securities can directly capture the effect of regulatory distance on bank transparency. DISCLOSURE is the sum of two sub-indexes: (1) DISCLOSURE_LOAN, which measures whether the subsidiary discloses loan types, the amount of loan loss provisions, and the amount of nonperforming loans, and (2) DISCLOSURE_SEC, which measures whether the subsidiary discloses securities types, issuing party, the amount of gains (losses) on trading and derivatives, and the amount of available-for-sale valuation adjustment. Table B of the internet appendix describes the construction of the disclosure index and provides examples.

While our approach of measuring disclosure through a count of nonmissing values comports with the approach used elsewhere (e.g., Baumann & Nier, 2004; Chen, Miao, & Shevlin, 2015), we acknowledge that our approach is subject to measurement errors (i.e., coding an item as missing when the bank does not lend or trade or when the information is publicly available elsewhere). To mitigate the errors, we require our sample banks to have nonmissing values for loan and security holdings. We also contact Bankscope representatives to validate the data coverage. The response indicates that Bankscope collects financial information from various sources, including banks and local regulators. To the extent that banks' financial information is subject to disclosure regulations and can facilitate counter-party transactions,¹¹ it is reasonable to interpret the missing value as non-public disclosure.

Although Generally Accepted Accounting Principles (such as US GAAP or IFRS) provide a basic framework and minimum requirements for financial disclosures, considerable latitude remains in determining what information is provided and how it is presented (Chen et al., 2015). As managers have discretion in choosing which items are material and how to aggregate line items, DISCLOSURE reflects their discretionary choices within GAAP.¹²

Studies commonly use the timeliness or estimation errors of loan loss provisions as the proxy for bank transparency (e.g., Bushman & Williams, 2015). We do not use these proxies because discretionary loan loss provisions may reflect managers' private information, opportunistic earnings management, or both. In contrast, DISCLOSURE directly captures bank transparency and avoids the challenges of interpreting discretionary loan loss provisions. Further, using DISCLOSURE to measure bank transparency can avoid the significant decrease in sample size (i.e., the loan loss provisions model requires the disclosures of loan loss provisions and nonperforming loans).

Our primary proxy for bank failure, BANK FAILURE, is an indicator variable equal to one if the bank existed prior to the crisis but ceases to have financial statement information during the crisis and becomes inactive thereafter.¹³ This measure likely captures the extreme outcome that the subsidiary is liquidated or dissolved.¹⁴ We also use a supplement measure, LARGE DEPOSIT WD, that captures whether the bank experiences a large deposit withdrawal during the crisis (Iyer & Puri, 2012).

Descriptive Statistics

Table 2, Panels A and B, present the descriptive statistics and correlation coefficients for the sample testing our first hypothesis (1,102 subsidiary-years from 1995 to 2006). We winsorize all continuous variables at the top and bottom 1% of their distributions. Panel A shows that the mean Δ RESTRICT is 0.184, indicating that on average the home countries have more restrictive regulations than the host countries.¹⁵ The mean DISCLOSURE is 2.883, suggesting that the subsidiaries disclose less than three pieces of information related to their lending and trading. The mean DISCLOSURE_LOAN is 1.757, and the mean DISCLOSURE_SEC is 1.126, indicating that banks provide less information regarding trading than lending. The mean and median total assets of our sample subsidiaries are \$7,310 million and \$1,503 million.¹⁶ The mean

ROA and CAPITAL RATIO is 1.1% and 11.8%, suggesting that the subsidiaries are financially healthy and well capitalized. Finally, we find that 79% of the subsidiaries are audited by Big Five auditors and only 4% are publicly listed.¹⁷ Panel B shows that Δ RESTRICT and DISCLOSURE are negatively correlated.

Table 2, Panels C and D, present the descriptive statistics and correlation coefficients for the sample testing our second hypothesis (145 subsidiaries that existed in 2006). In Panel C, the number of observations for the variable LARGE DEPOSIT WD is reduced to 135, because we exclude the 10 failed banks. The mean BANK FAILURE is 7%, and the mean LARGE DEPOSIT WD is 21%. Panel D shows that BANK FAILURE and DISCLOSURE are negatively correlated (correlation coeff. = - 0.19).

EMPIRICAL RESULTS

Regulatory Distance and Foreign Subsidiaries' Transparency

We test our first hypothesis by regressing the aggregate disclosure index (DISCLOSURE) on the regulatory distance between home and host countries (Δ RESTRICT). We control for the following bank characteristics that explain banks' financial reporting quality (Kanagaretnam et al., 2014): (1) SIZE, the log of lagged total assets; (2) ROA, return on assets; (3) LOAN GROWTH, the growth of total loans; (4) CAPITAL RATIO, shareholder equity divided by total assets; (5) BIG 5, a variable indicating whether the subsidiary is a client of a Big Five auditor; and (6) PUBLIC, a variable indicating whether the subsidiary is publicly listed. In addition, we include a variable indicating whether the home and host countries share the same official language (SAME LANGUAGE) to control for the barriers to communication and supervision across countries. Because parent banks likely determine their financial reporting practices based on the strength of bank supervision and deposit insurance, we control for Δ SUPV POWER, an index that measures the extent to which the bank supervisors can take specific actions to prevent or correct problems, and Δ DEPOSIT INS, an indicator variable equal to one if there is explicit deposit insurance and depositors were fully compensated the last time a bank failed.

We also control for a bank's distance-to-default, LOG Z, because riskier banks may face greater demand for information or have incentives to

decrease disclosure to deter outside monitoring. Following prior studies (Laeven & Levine, 2009), we measure LOG Z as the natural logarithm of mean(-ROA+CAR)/volatility(ROA), where ROA is the return on assets and CAR is the capital to asset ratio. We include entity-type fixed effects, δ , to control for the types of the subsidiaries,¹⁸ and host country-year fixed effects, η , to control for local country-year accounting practices and regulatory/economic factors. Our regression model follows:

$$\begin{aligned} \text{DISCLOSURE} = & \beta_0 + \beta_1 \Delta \text{RESTRICT} + \beta_2 \text{SIZE} \\ & + \beta_3 \text{ROA} + \beta_4 \text{LOAN GROWTH} \\ & + \beta_5 \text{CAPITAL RATIO} + \beta_6 \text{BIG5} \\ & + \beta_7 \text{PUBLIC} + \beta_8 \text{SAME LANGUAGE} \\ & + \beta_9 \Delta \text{SUPV POWER} \\ & + \beta_{10} \Delta \text{DEPOSIT INS} + \beta_{11} \text{LOG Z} \\ & + \delta + \eta + \varepsilon \end{aligned} \quad (1)$$

Our first hypothesis predicts β_1 , the coefficient on Δ RESTRICT, to be negative. Because DISCLOSURE is an ordinal variable, we use Ordered probit regression model. We cluster standard errors by host country-year following Ongena et al. (2013).

Table 3, Panel A, presents the regression results. Column (1) shows that the coefficient on Δ RESTRICT is - 0.073 ($p = 0.001$), suggesting that foreign subsidiaries' transparency decreases when their home-country regulations are more restrictive than their host-country regulations. In terms of economic significance, a one standard deviation increase of Δ RESTRICT from the mean reduces the probability of disclosing four pieces of information related to lending and securities activities from 11.60% to 8.30% when all other variables equal their means.¹⁹ Column (2) confirms our results using an ordinary least squares (OLS) regression model because non-linear Ordered probit models with many fixed effects may suffer from incidental parameter bias (Greene, 2004).

To address the endogeneity concern, Column (3) reports the results using the IV approach. We use two home-country variables as instruments: (1) bank competition, ENTRY BARRIER, a measure of the limitation on foreign bank entry/ownership (Barth et al., 2013), and (2) exogenous growth opportunity, GGO, a measure of country-specific growth opportunity implied by the global market (Bekaert, Harvey, Lundblad, & Siegel, 2007). As activity restriction is to prevent banks from non-

Table 2 Descriptive statistics

	No. (sub.-years)	Mean	Q1	Median	Q3	SD
ARESTRICT	1.102	0.184	- 2.000	0.000	2.000	2.659
DISCLOSURE	1.102	2.883	2.000	3.000	3.000	1.059
DISCLOSURE_LOAN	1.102	1.757	1.000	2.000	2.000	0.860
DISCLOSURE_SEC	1.102	1.126	1.000	1.000	1.000	0.485
TOTAL ASSETS (US\$ MILLION)	1.102	7.310	534	1.503	6.703	16.942
SIZE	1.102	7.368	6.123	7.219	8.730	1.706
ROA	1.102	0.011	0.003	0.008	0.016	0.017
LOAN GROWTH	1.102	0.254	- 0.070	0.123	0.358	0.750
CAPITAL RATIO	1.102	0.118	0.048	0.079	0.138	0.120
BIG 5	1.102	0.794	1.000	1.000	1.000	0.405
PUBLIC	1.102	0.044	0.000	0.000	0.000	0.206
SAME LANGUAGE	1.102	0.187	0.000	0.000	0.000	0.390
ΔSUPV POWER	1.102	- 1.329	- 4.000	- 1.500	1.000	3.633
ΔDEPOSIT INS	1.102	0.036	0.000	0.000	0.000	0.475
LOG_Z	1.102	3.223	2.624	3.242	3.859	0.940

Panel A: Summary statistics, regulatory distance and foreign subsidiaries' transparency

Panel B: Pearson correlation coefficients, regulatory distance and foreign subsidiaries' transparency

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) ΔRESTRICT													
(2) DISCLOSURE	- 0.24												
(3) DISCLOSURE_LOAN	- 0.19	0.89											
(4) DISCLOSURE_SEC	- 0.18	0.60	0.18										
(5) SIZE	0.04	0.03	0.06	- 0.04									
(6) ROA	- 0.06	- 0.01	0.01	- 0.05	- 0.24								
(7) LOAN GROWTH	0.03	- 0.07	- 0.09	- 0.00	- 0.09	0.14							
(8) CAPITAL RATIO	0.05	0.01	0.01	0.01	- 0.49	0.29	0.00						
(9) BIG 5	0.03	0.05	0.08	- 0.05	0.02	- 0.03	- 0.01	- 0.02					
(10) PUBLIC	- 0.11	0.13	0.12	0.07	0.05	0.10	- 0.03	- 0.02	- 0.06				
(11) SAME LANGUAGE	- 0.05	0.05	0.10	- 0.05	0.11	0.07	- 0.06	- 0.08	- 0.06	0.17			
(12) ΔSUPV POWER	0.01	- 0.19	- 0.22	- 0.02	0.03	- 0.15	0.06	- 0.01	- 0.11	0.01	- 0.01		
(13) ΔDEPOSIT INS	- 0.20	- 0.03	- 0.14	0.18	- 0.09	0.07	- 0.02	- 0.01	- 0.02	0.09	- 0.02	0.08	
(14) LOG_Z	0.12	0.03	0.06	- 0.04	0.04	0.04	- 0.02	0.04	0.02	- 0.01	- 0.05	- 0.03	- 0.07

Panel C: Summary statistics, foreign subsidiaries' transparency and bank failure

	No. (subs.)	Mean	Q1	Median	Q3	SD
BANK FAILURE ₂₀₀₇₋₂₀₀₉	145	0.069	0.000	0.000	0.000	0.254
LARGE DEPOSIT WD ₂₀₀₇₋₂₀₀₉	135	0.207	0.000	0.000	0.000	0.407
DISCLOSURE ₂₀₀₆	145	2.834	2.000	3.000	4.000	1.080
DISCLOSURE_LOAN ₂₀₀₆	145	1.710	1.000	2.000	2.000	0.920

Table 2 (Continued)

Panel C: Summary statistics, foreign subsidiaries' transparency and bank failure

	No. (subs.)	Mean	Q1	Median	Q3	SD
DISCLOSURE_SEC ₂₀₀₆	145	1.124	1.000	1.000	1.000	0.484
ΔRESTRICT ₂₀₀₆	145	- 0.186	- 2.000	0.000	1.000	2.480
TOTAL ASSETS ₂₀₀₆ (US\$ MILLION)	145	8.818	566	1.877	6.505	24.456
SIZE ₂₀₀₆	145	7.305	6.086	7.284	8.438	1.795
ROA ₂₀₀₆	145	0.018	0.006	0.011	0.024	0.020
LOAN GROWTH ₂₀₀₆	145	0.450	0.069	0.243	0.460	1.014
CAPITAL RATIO ₂₀₀₆	145	0.115	0.048	0.085	0.138	0.110
ΔSUPV POWER ₂₀₀₆	145	- 1.281	- 4.000	- 2.000	1.500	3.549
ΔDEPOSIT INS ₂₀₀₆	145	0.034	0.000	0.000	0.000	0.477
LOG Z ₂₀₀₆	145	3.354	2.763	3.390	3.990	0.941

Panel D: Pearson correlation coefficients, foreign subsidiaries' transparency and bank failure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) BANK FAILURE ₂₀₀₇₋₂₀₀₉												
(2) LARGE DEPOSIT WD ₂₀₀₇₋₂₀₀₉	- 0.11											
(3) DISCLOSURE ₂₀₀₆	- 0.19	- 0.08										
(4) DISCLOSURE_LOAN ₂₀₀₆	- 0.15	- 0.03	0.89									
(5) DISCLOSURE_SEC ₂₀₀₆	- 0.13	- 0.11	0.53	0.10								
(6) ΔRESTRICT ₂₀₀₆	0.08	0.07	- 0.15	- 0.13	- 0.08							
(7) SIZE ₂₀₀₆	- 0.07	0.14	0.07	0.06	0.05	0.00						
(8) ROA ₂₀₀₆	0.03	- 0.06	0.07	0.10	- 0.03	- 0.17	- 0.44					
(9) LOAN GROWTH ₂₀₀₆	0.08	0.15	- 0.01	0.00	- 0.03	- 0.06	- 0.04	0.30				
(10) CAPITAL RATIO ₂₀₀₆	- 0.03	- 0.07	0.14	0.12	0.09	0.04	- 0.46	0.46	0.07			
(11) ΔSUPV POWER ₂₀₀₆	0.01	0.16	- 0.21	- 0.22	- 0.05	0.24	0.14	- 0.13	0.09	- 0.14		
(12) ΔDEPOSIT INS ₂₀₀₆	0.15	- 0.12	- 0.11	- 0.21	0.16	- 0.15	- 0.06	0.23	0.02	- 0.11	0.03	
(13) LOG Z ₂₀₀₆	0.08	- 0.12	0.13	0.15	- 0.00	0.10	0.05	- 0.08	- 0.05	0.21	- 0.26	- 0.09

Panels A and B (Panels C and D) report the summary statistics and correlation coefficients for the first hypothesis test on regulatory distance and foreign subsidiaries' transparency (for the second hypothesis test on foreign subsidiaries' transparency and bank failure). Correlation coefficients in bold indicate significance at the 10% level. See Appendix A for variable definitions

banking activities, we expect that banks have strong incentives to invest in non-banking activities when net interest margin is low and/or when the profits from non-banking activities is high. Thus, we use ENTRY BARRIER to proxy for decreasing net interest margin and employ GGO to capture the profitable opportunities from non-banking activities. In addition, while more restrictive home-country regulations can lead to greater regulatory distance (i.e., the IV is correlated with the endogenous regressor), the home-country ENTRY BARRIER and GGO are unlikely to have a first-order effect on subsidiary-level disclosure because subsidiaries are subject to host-country rather than home-country regulations (i.e., the exclusion restriction that the IV is uncorrelated with error terms).

We find that the coefficient on Δ RESTRICT remains significantly negative under the IV approach (coeff. = -0.277 ; $p = 0.016$). We use the Hausman test to examine whether the regulatory distance is endogenous, where the null hypothesis is that the error terms is not correlated with regressors. To assess the validity of the instruments, we perform an F test of the excluded exogenous variables in the first-stage regression, in which the null hypothesis is that the coefficient estimates of these variables are jointly equal to zero. We also test for overidentified restrictions, where the joint null hypothesis is that the instruments and the error term are uncorrelated. The last several rows of Column (3) report these statistics. The Hausman test is statistically significant ($\chi^2 = 6.048$; $p = 0.015$), indicating that the regulatory distance is endogenous. The first-stage F statistic is 9.622, close to the cutoff of 10 that indicates good instruments (Staiger & Stock, 1997). The chi-squared statistic for Sargan's overidentification test, 1.234 ($p = 0.267$), provides marginal support that our instruments are exogenous. Columns (4) and (5) of Table 3, Panel A, find that our results remain similar for DISCLOSURE_LOAN and DISCLOSURE_SEC.

Our results are robust to a variety of sensitivity tests. First, we repeat our analysis after excluding foreign subsidiaries from Germany, France, and the UK, i.e., the home countries of a large number of our sample foreign subsidiaries, as well as foreign subsidiaries located in Luxembourg, Switzerland, and the UK, i.e., the host countries of a large number of our sample foreign subsidiaries. Table 3, Panel B, shows that our results remain similar (Columns (1)–(6)).²⁰ Second, we repeat our analysis

after using the components of the regulatory distance index: Δ RESTRICT_SEC, Δ RESTRICT_INS, and Δ RESTRICT_REAL. Panel C shows that the restrictions on securities and real estate activities are the key factors shaping MNBs' financial reporting practices abroad (Columns (1)–(3)). Third, we use audit opinions as an alternative measure of bank transparency. Auditors' issuance of qualified audit opinions typically indicates deviations from GAAP or scope limitations, which alert investors and regulators of potential earnings manipulation (DeFond & Zhang, 2014). If the restrictiveness of home-country regulations reduces foreign subsidiaries' transparency, we expect to observe a greater likelihood of qualified audit opinions for the foreign subsidiaries. The result confirms our expectation (Column (4)).²¹

Finally, in the internet appendix, we perform tests using alternative sample periods, subsamples conditional on bank size, additional controls on cross-country distances, and multilevel mixed-effects linear models. Overall, the results indicate that foreign subsidiaries have lower financial reporting transparency when their home countries have more restrictive regulations than their host countries.

Foreign Subsidiaries' Transparency and Bank Failure

To test our second hypothesis, we employ the 2007–2009 global financial crisis as an unexpected negative shock to banks' financial performance. Following prior studies (Kanagaretnam et al., 2014), we perform our test by regressing BANK FAILURE and LARGE DEPOSIT WD (measured over 2007–2009) on DISCLOSURE (measured in 2006). We further include control variables on bank performance and risk that are expected to influence bank failure, also measured in 2006.²² Eq. (2) includes entity-type fixed effects, δ , to control for the types of the subsidiaries. Appendix A provides detailed definitions of variables. Our Probit regression model follows.

$$\begin{aligned}
 & \text{BANK FAILURE/LARGE DEPOSIT WD} \\
 &= \beta_0 + \beta_1 \text{DISCLOSURE} + \beta_2 \text{SIZE} \\
 &+ \beta_3 \text{ROA} + \beta_4 \text{LOAN GROWTH} \\
 &+ \beta_5 \text{CAPITAL RATIO} + \beta_6 \Delta \text{SUPV POWER} \\
 &+ \beta_7 \Delta \text{DEPOSIT INS} + \beta_8 \text{LOG Z} + \delta + \varepsilon.
 \end{aligned} \tag{2}$$

Table 3 Regulatory distance and foreign subsidiaries' transparency

Dep. var.=	Panel A: Regulatory distance and foreign subsidiaries' transparency									
	DISCLOSURE		DISCLOSURE		DISCLOSURE_SEC					
	Est.	p	Est.	p	Est.	p				
Δ RESTRICT	- 0.073 (0.022)	0.001	- 0.040 (0.015)	0.007	- 0.277 (0.115)	0.016	- 0.091 (0.026)	0.001	- 0.069 (0.035)	0.049
SIZE	0.009 (0.030)	0.760	0.005 (0.020)	0.792	- 0.057 (0.031)	0.068	0.001 (0.029)	0.964	0.001 (0.044)	0.988
ROA	- 3.501 (2.080)	0.092	- 1.773 (1.253)	0.159	- 3.650 (2.037)	0.073	- 2.900 (2.408)	0.228	- 4.265 (3.566)	0.232
LOAN GROWTH	- 0.096 (0.068)	0.155	- 0.055 (0.043)	0.205	- 0.064 (0.061)	0.295	- 0.110 (0.076)	0.145	- 0.075 (0.088)	0.392
CAPITAL RATIO	- 0.877 (0.602)	0.145	- 0.469 (0.368)	0.204	- 0.232 (0.365)	0.525	- 0.966 (0.593)	0.104	0.095 (1.003)	0.925
BIG 5	- 0.450 (0.132)	0.001	- 0.247 (0.089)	0.006	- 0.381 (0.103)	0.000	- 0.371 (0.143)	0.010	- 0.905 (0.191)	0.000
PUBLIC	0.916 (0.197)	0.000	0.510 (0.120)	0.000	0.634 (0.158)	0.000	1.111 (0.213)	0.000	0.405 (0.299)	0.176
SAME LANGUAGE	0.241 (0.140)	0.086	0.135 (0.085)	0.114	- 0.040 (0.104)	0.704	0.172 (0.161)	0.287	0.378 (0.224)	0.091
LOG Z	- 0.013 (0.018)	0.471	- 0.006 (0.012)	0.598	0.007 (0.013)	0.574	- 0.022 (0.018)	0.211	0.014 (0.036)	0.692
Δ SUPV POWER	- 0.198 (0.170)	0.244	- 0.115 (0.111)	0.302	- 0.159 (0.139)	0.252	- 0.349 (0.201)	0.082	0.291 (0.250)	0.244
Δ DEPOSIT INS	0.087 (0.063)	0.164	0.045 (0.041)	0.274	0.005 (0.041)	0.903	0.113 (0.071)	0.109	- 0.027 (0.070)	0.700
Entity-type fe.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Host-country year fe.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model	Ordered probit	Ordered probit	OLS	OLS	IV	OLS	OLS	Ordered probit	Ordered probit	Ordered probit
No. of obs.	1.102	1.102	1.102	845	845	0.015	1.102	1.102	1.102	1.102
Hausman χ^2	n.a.	n.a.	n.a.	6.048	6.048	< 0.001	n.a.	n.a.	n.a.	n.a.
First-stage F-statistics	n.a.	n.a.	n.a.	9.622	9.622	< 0.001	n.a.	n.a.	n.a.	n.a.
Sargan χ^2	n.a.	n.a.	n.a.	1.234	1.234	0.267	n.a.	n.a.	n.a.	n.a.
Pseudo R^2 /Adj. R^2	0.366	0.366	0.662	0.609	0.609	0.411	0.411	0.411	0.644	0.644

Table 3 continued

Dep. var.=	Panel B: Robustness checks using alternative samples											
	DISCLOSURE						DISCLOSURE					
	Influential home countries			Influential host countries			Influential home countries			Influential host countries		
	Excl. Germany	Excl. France	Excl. UK	Excl. Luxembourg	Excl. Switzerland	Excl. UK	Excl. Germany	Excl. France	Excl. UK	Excl. Luxembourg	Excl. Switzerland	Excl. UK
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
	Est.	p	Est.	p	Est.	p	Est.	p	Est.	p	Est.	p
ΔRESTRICT	-0.073 (0.020)	0.000	-0.101 (0.025)	0.000	-0.085 (0.022)	0.000	-0.087 (0.023)	0.000	-0.103 (0.026)	0.000	-0.074 (0.023)	0.001
Control var. and entity-type fe.	Yes		Yes		Yes		Yes		Yes		Yes	
Host-country × year fe.	Yes		Yes		Yes		Yes		Yes		Yes	
No. of obs.	966		993		1,021		883		917		1,008	
Pseudo R ²	0.380		0.383		0.372		0.335		0.333		0.337	
	Panel C: Robustness checks using alternative measures											
Dep. var.=	DISCLOSURE				DISCLOSURE				QUALIFIED OP			
	(1)		(2)		(3)		(4)		(1)		(2)	
	Est.	p	Est.	p	Est.	p	Est.	p	Est.	p	Est.	p
ΔRESTRICT												
ΔRESTRICT_SEC	-0.214 (0.086)		0.013								1.731 (0.954)	0.070
ΔRESTRICT_INS			0.065 (0.051)		0.204							
ΔRESTRICT_REAL											-0.121 (0.027)	0.000
Control var. and entity-type fe.	Yes		Yes		Yes		Yes		Yes		Yes	
Host-country × year fe.	Yes		Yes		Yes		Yes		Yes		No	
Host-country and year fe.	No		No		No		No		No		Yes	
No. of obs.	1099		1102		1102		1102		802		802	
Pseudo R ²	0.335		0.333		0.337		0.337		0.666		0.666	

Panel A reports the estimation of Eq. (1) using 1,102 majority-owned foreign subsidiary-years from 1995 to 2006. Panels B and C present robustness checks using alternative samples and measures. The models are Ordered probit (Probit) when the dependent variable is DISCLOSURE (QUALIFIED OP). See Appendix A for variable definitions. Standard errors (two-tailed p values) reported in parentheses (right-hand side columns) are based on the standard errors clustered at the host country × year level

Our second hypothesis predicts β_1 , the coefficient on DISCLOSURE, to be negative. Because each foreign subsidiary only appears once in this analysis, we cluster standard errors at the host-country level.

Panel A of Table 4 reports the results. Column (1) shows that the coefficient on DISCLOSURE is significantly negative (coeff. = -0.500 ; $p < 0.001$), suggesting that foreign subsidiaries with lower transparency are more likely to fail during the financial crisis. In terms of economic significance, a one standard deviation decrease (increase) of DISCLOSURE from the mean increases (decreases) the probability of failure from 2.93% to 8.82% (from 2.93% to 0.75%) when all other variables equal their means. The coefficient on SIZE is significantly negative, consistent with the view that government support reduces the likelihood of failure among large banks. The coefficients on CAPITAL RATIO and LOG Z are insignificant. One possible explanation is that these measures are not good predictors of subsidiaries' failure, because subsidiaries' equity capital may come from their parent bank's debt capital, which in turn increases the parent's risk-taking incentives.

Columns (2) and (3) use the disclosure subindexes, DISCLOSURE_LOAN and DISCLOSURE_SEC. The results remain qualitatively similar. Because DISCLOSURE is a function of Δ RESTRICT, we implement a two-stage regression model by using Ordered probit model to estimate Eq. (1) and Probit model to estimate Eq. (2). Column (4) shows that the coefficient on DISCLOSURE remains significantly negative (coeff. = -1.006 ; $p < 0.001$).²³ We also employ matched sample analysis to assess the robustness of our findings. To construct the matched sample, we first assign banks to the treatment group if their financial reporting transparency (DISCLOSURE) is higher than the sample median during the pre-crisis period and assign the other banks to the control group. Next, we match each treatment bank with a control bank based on the quintiles of Δ RESTRICT and LOG Z in the pre-crisis period. Column (5) shows that the coefficient on DISCLOSURE is significantly negative (coeff. = -0.549 ; $p < 0.001$), confirming that foreign subsidiaries with similar levels of risk-taking and regulatory distance are more likely to fail during the crisis when they have lower transparency.

Table 4, Panel B, reports the results for large deposit withdrawal. Columns (1)–(3) show that the coefficients remain significantly negative on DISCLOSURE (coeff. = -0.178 ; $p = 0.086$) and

DISCLOSURE_SEC (coeff. = -0.715 ; $p = 0.008$), but becomes insignificant on DISCLOSURE_LOAN (coeff. = -0.108 ; $p = 0.409$). The evidence that loan disclosure has an insignificant effect on large deposit withdrawals but a significantly negative effect on the probability of bank failures suggests that the opacity of loan disclosure is primarily associated with more adverse outcome of foreign subsidiaries' bank failure. Using the two-stage estimation, Column (4) shows that the coefficient on DISCLOSURE is insignificant (coeff. = -0.875 ; $p = 0.173$), likely due to the weakened test power after excluding failed banks from our sample. Finally, Column (5) shows that the coefficient on DISCLOSURE remains significantly negative (coeff. = -0.262 ; $p = 0.025$) using the matched sample. Taken together, the findings support our hypothesis that foreign subsidiaries' diminished transparency increases the likelihood of bank failure.

ADDITIONAL ANALYSES

Difference-in-Differences Analyses

The association between regulatory distance and bank transparency abroad likely suffers from endogeneity in three dimensions: (1) correlated omitted variables in terms of local economic or regulatory environments, (2) correlated omitted variables in terms of bank-specific factors or self-selection bias, and (3) reverse causality. By including time-varying host-country fixed effects, our main analyses mitigate the first concern and ensure that the identification of our results comes from cross-sectional variation in transparency within a host-country-year. We address the second concern by including various controls in Eq. (1) and implementing an IV estimation. In this section, we further use difference-in-differences approaches to tackle the endogeneity challenge.

Our first analysis examines whether foreign subsidiaries' transparency decreases after their home countries adopt reforms that restrict more bank activities. We focus on France, Germany, and the UK, which pursued well-identified post-crisis reforms to shield depositors' assets from bank risks (Lehmann, 2016) and are home to many of our sample foreign subsidiaries. In 2013, France and Germany adopted regulations to prevent banks from certain types of risky transactions by limiting proprietary trading and investments in hedge funds and other leveraged investment funds. Also in 2013, the UK passed the Ring-Fencing Regulation

Table 4 Foreign subsidiaries' transparency and bank failure

Panel A: Foreign subsidiaries' pre-crisis transparency and likelihood of failures during the crisis										
Dep. var.= Bank failure ₂₀₀₇₋₂₀₀₉										
	Full sample								Matched sample	
	(1)		(2)		(3)		(4)		(5)	
	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>
DISCLOSURE ₂₀₀₆	- 0.500 (0.130)	0.000					- 1.006 (0.126)	0.000	- 0.549 (0.143)	0.000
DISCLOSURE_LOAN ₂₀₀₆			- 0.533 (0.146)	0.000						
DISCLOSURE_SEC ₂₀₀₆					- 0.803 (0.272)	0.003				
ΔRESTRICT ₂₀₀₆										
SIZE ₂₀₀₆	- 0.132 (0.071)	0.061	- 0.140 (0.066)	0.032	- 0.153 (0.072)	0.035	0.108 (0.076)	0.155	- 0.143 (0.111)	0.196
ROA ₂₀₀₆	- 11.443 (12.034)	0.342	- 9.673 (12.621)	0.443	- 16.571 (11.434)	0.147	4.966 (5.392)	0.357	- 13.238 (17.090)	0.439
LOAN GROWTH ₂₀₀₆	- 1.475 (0.359)	0.000	- 1.564 (0.408)	0.000	- 1.106 (0.267)	0.000	- 0.009 (0.093)	0.926	- 0.837 (0.330)	0.011
CAPITAL RATIO ₂₀₀₆	- 1.321 (2.265)	0.560	- 1.591 (2.459)	0.518	- 0.815 (1.668)	0.625	1.257 (1.147)	0.273	- 0.299 (3.344)	0.929
ΔSUPV POWER ₂₀₀₆	- 0.026 (0.040)	0.516	- 0.026 (0.040)	0.519	- 0.000 (0.040)	0.998	- 0.059 (0.025)	0.018	- 0.008 (0.053)	0.885
ΔDEPOSIT INS ₂₀₀₆	0.472 (0.326)	0.147	0.395 (0.325)	0.224	0.694 (0.299)	0.020	- 0.175 (0.202)	0.387	0.423 (0.376)	0.261
LOG Z ₂₀₀₆	0.378 (0.232)	0.103	0.389 (0.215)	0.071	0.250 (0.237)	0.292	0.072 (0.129)	0.576	0.241 (0.298)	0.419
Entity-type fe.	Yes		Yes		Yes		No		Yes	
Model	Probit		Probit		Probit		Second-stage Probit		Probit	
No. of obs.	145		145		145		145		145	
Pseudo R ²	0.289		0.279		0.238		0.898		0.305	

Panel B: Foreign subsidiaries' pre-crisis transparency and likelihood of large deposit withdrawals during the crisis

Panel B: Foreign subsidiaries' pre-crisis transparency and likelihood of large deposit withdrawals during the crisis										
Dep. var.= Large deposit WD ₂₀₀₇₋₂₀₀₉										
	Full sample								Matched sample	
	(1)		(2)		(3)		(4)		(5)	
	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>
DISCLOSURE ₂₀₀₆	- 0.178 (0.103)	0.086					- 0.875 (0.642)	0.173	- 0.262 (0.117)	0.025
DISCLOSURE_LOAN ₂₀₀₆			- 0.108 (0.131)	0.409						
DISCLOSURE_SEC ₂₀₀₆					- 0.715 (0.270)	0.008				
ΔRESTRICT ₂₀₀₆										
SIZE ₂₀₀₆	0.075 (0.093)	0.419	0.064 (0.091)	0.484	0.080 (0.096)	0.403	0.179 (0.086)	0.037	0.193 (0.105)	0.065
ROA ₂₀₀₆	- 0.254 (9.665)	0.979	- 0.318 (9.899)	0.974	- 2.716 (8.657)	0.754	5.278 (7.622)	0.489	- 0.455 (9.742)	0.963
LOAN GROWTH ₂₀₀₆	0.189 (0.124)	0.127	0.177 (0.120)	0.141	0.195 (0.128)	0.129	0.108 (0.216)	0.616	0.149 (0.143)	0.300
CAPITAL RATIO ₂₀₀₆	0.481 (1.202)	0.689	0.271 (1.202)	0.821	0.743 (1.325)	0.575	1.338 (1.058)	0.206	0.049 (2.697)	0.986
ΔSUPV POWER ₂₀₀₆	0.023 (0.031)	0.462	0.026 (0.031)	0.401	0.020 (0.030)	0.490	- 0.019 (0.099)	0.849	0.010 (0.032)	0.766
ΔDEPOSIT INS ₂₀₀₆	- 0.574 (0.228)	0.012	- 0.593 (0.230)	0.010	- 0.456 (0.240)	0.057	- 0.449 (0.377)	0.234	- 0.672 (0.259)	0.010
LOG Z ₂₀₀₆	- 0.246 (0.076)	0.001	- 0.249 (0.089)	0.005	- 0.304 (0.079)	0.000	- 0.072 (0.265)	0.786	- 0.462 (0.132)	0.000
Entity-type fe.	Yes		Yes		Yes		No		Yes	
Model	Probit		Probit		Probit		Second-stage Probit		Probit	
No. of obs.	135		135		135		135		116	

Table 4 (Continued)

Panel B: Foreign subsidiaries' pre-crisis transparency and likelihood of large deposit withdrawals during the crisis										
Dep. var.= Large deposit WD _{2007–2009}										
Full sample										Matched sample
(1)		(2)		(3)		(4)		(5)		
Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	
Pseudo <i>R</i> ²	0.090	0.081		0.102		0.598		0.152		

Reports the regression results of foreign subsidiaries' transparency and their failures during the 2007–2009 global financial crisis. Panel A presents the results for banks that do not survive the crisis and Panel B presents the results for large deposit withdrawals. See Appendix A for variable definitions. Standard errors (two-tailed *p* values) reported in parentheses (right-hand side columns) are based on the standard errors clustered at the host-country level

that requires banks to use a separate entity for risky wholesale and investment banking activities.²⁴ Table 5, Panel A, describes these regulations.

The sample for this test comprises 32 foreign subsidiaries (owned by 24 parent banks) as the treatment group and 39 foreign subsidiaries (owned by 32 parent banks) as the control group from 2011 to 2015.²⁵ The treatment sample consists of subsidiaries whose parent banks are located in France, Germany, or the UK. While we identify the treatment sample through regulatory reforms rather than changes in the activity restrictions index (because it is unclear in which year the changes take place), we use the World Bank surveys to construct our control sample, because they allow us to identify countries that do not experience changes in the indexes.²⁶ We regress DISCLOSURE on a dummy variable indicating the post-adoption period, 2013–2015 (POST), a dummy variable indicating the treatment sample (TREAT), their interaction term, and the same control variables and fixed effects, as in Eq. (1).

Table 5, Panel B, reports the results. Column (1) shows that the coefficient on POST × TREAT is significantly negative (coeff. = − 1.518; *p* = 0.038), indicating that, when home countries adopt more restrictive regulations, the foreign subsidiaries subsequently experience a decrease in transparency. Column (2) excludes the adoption year and finds similar results. Column (3) uses a timing approach that replaces POST with three indicator variables: YEAR -1 and YEAR 0 for the year prior to and during the adoption, and YEAR 1+, for the post-adoption period (Bertrand & Mullainathan, 2003). The coefficients on YEAR −1 × TREAT (coeff. = − 1.092; *p* = 0.304) and YEAR 0 × TREAT (coeff. = − 1.187; *p* = 0.198) are insignificant, suggesting no difference in trends between treatment and control groups before the reforms. Further, the coefficient on

YEAR 1+ × TREAT is significantly negative (coeff. = − 2.865; *p* = 0.005), suggesting that the reduced bank transparency materializes after home countries adopt more restrictive regulations. In sum, while the post-financial-crisis regulations do not measure regulatory distance in the same way as the baseline model, this analysis provides a cleaner identification and corroborates our inference that more restrictive regulations at home decrease bank transparency abroad.

Our second analysis takes advantage of cross-border acquisitions. We expect that subsidiaries would experience a decrease in transparency when they are acquired by banks from countries with more restrictive regulations. We build the sample by using financial statement data from Bankscope during 1995–2015 and cross-border acquisition data that involve majority-control deals ending in 2014 from Zephyr.²⁷ The final sample for this analysis comprises 1,502 subsidiary-years based on 163 deals from 38 acquirer countries and 39 target countries.

Table 6, Panel A, presents univariate analysis comparing the disclosure between treatment and control groups in the year before acquisition, where the control group consists of all the other subsidiaries from the same host-country-year as the target subsidiaries. We find that target subsidiaries have higher disclosures than the control group (3.772 vs. 3.010). Panel B shows that targets' disclosure levels increase from 3.091 to 4.351 after being acquired. These results suggest that target subsidiaries on average have higher transparency, compared with other subsidiaries in the same host country, and they continue to experience an increase in transparency after acquisition.

We regress DISCLOSURE on a dummy variable indicating post-acquisition period (POST), a variable measuring the regulatory distance between the

Table 5 The effect of home-country banking reforms on foreign subsidiaries' transparency

Panel A: Description of major banking reforms that constrain bank risk-taking							
Country	Year	Regulation	Description				
France	2013	French law no. 2013-672	Separate banking activities; limit proprietary trading and investments in hedge funds and other leveraged investment funds.				
Germany	2013	Bank Separation Act	Ring-fence the deposit and lending business of major institutions against certain types of risky transactions.				
UK	2013	Financial Services Act	Ring-fence retail and small and medium-sized enterprise and deposit-taking businesses in legal entities which are separate to, and financially independent from, those entities undertaking riskier, wholesale and investment banking activities				
Panel B: Regression analysis, ordered probit model							
		Dep. var.= Disclosure					
		Full sample		Excl. adoption year		Timing approach	
		(1)		(2)		(3)	
		Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>
POST		7.669 (2.195)	0.000	7.425 (2.442)	0.002		
TREAT		- 1.928 (1.166)	0.098	- 1.952 (1.186)	0.100	- 1.558 (1.307)	0.233
POST × TREAT		- 1.518 (0.730)	0.038	- 2.718 (0.780)	0.000		
YEAR - 1						4.701 (2.012)	0.019
YEAR 0						9.595 (2.488)	0.000
YEAR 1+						8.092 (2.181)	0.000
YEAR - 1 × TREAT						- 1.092 (1.062)	0.304
YEAR 0 × TREAT						- 1.187 (0.923)	0.198
YEAR 1+ × TREAT						- 2.865 (1.028)	0.005
Control variables, Entity-type fe., Host-country × year fe.		Yes		Yes		Yes	
No. of treatment/control parent banks		14/36		14/36		14/36	
No. of treatment/control subsidiaries		27/46		27/46		27/46	
No. of obs.		564		421		564	
Pseudo <i>R</i> ²		0.641		0.660		0.646	

Reports the results of the effect of major post-crisis banking reforms on foreign subsidiaries' transparency. Panel A describes the regulatory reforms. Panel B reports the difference-in-differences analysis from 2011 to 2015. POST is an indicator variable equal to one for the post-adoption period, 2013–2015. TREAT is an indicator variable equal to one for banks with the parent headquartered in France, Germany, and the UK. See Appendix A for the definitions of other variables. Standard errors (two-tailed *p* values) reported in parentheses (right-hand side columns) are based on the standard errors clustered at the host country × year level

Table 6 Bank acquisitions, regulatory distance, and transparency

Panel A: M&A target subsidiaries versus other subsidiaries in the year before acquisition						
Variable	Target subs., year before acquisition		Other subs. in the same host-country-year		Diff. in mean (target-others)	p
	Mean	Median	Mean	Median		
Disclosure	3.772	3.000	3.010	3.000	0.761	0.000
Panel B: Changes in subsidiaries' transparency following the acquisition						
Variable	Post-acquisition		Pre-acquisition		Diff. in Mean (Post-pre)	p
	Mean	Median	Mean	Median		
Disclosure	4.351	4.000	3.091	3.000	1.260	0.000
Panel C: Regression analysis, ordered probit model						
	Dep. var. = Disclosure					
	Full sample		Excl. event year		Timing approach	
	(1)		(2)		(3)	
	Est.	p	Est.	p	Est.	p
POST	0.067 (0.150)	0.657	0.047 (0.167)	0.779		
ΔRESTRICT	- 0.004 (0.042)	0.924	0.010 (0.044)	0.814	0.004 (0.046)	0.930
POST × ΔRESTRICT	- 0.122 (0.066)	0.062	- 0.159 (0.070)	0.024		
YEAR - 1					- 0.001 (0.213)	0.996
YEAR 0					- 0.019 (0.257)	0.941
YEAR 1+					0.104 (0.162)	0.519
YEAR - 1 × ΔRESTRICT					- 0.014 (0.093)	0.882
YEAR 0 × ΔRESTRICT					0.074 (0.113)	0.514
YEAR 1+ × ΔRESTRICT					- 0.150 (0.072)	0.036
Control variables, Deal payment control, Entity-type fe., Host-country × year fe.	Yes		Yes		Yes	
No. of deals	163		163		163	
No. of acquirer/target countries	38/39		38/39		38/39	
No. of acquirer/target banks	112/145		112/145		112/145	
No. of obs.	1,502		1,432		1,502	
Pseudo R ²	0.552		0.564		0.554	

Reports the effect of the regulatory distance between acquirer and target countries on target banks' transparency. Panel A presents the comparison of the disclosure between treatment and control groups in the year before acquisition. Panel B reports changes in target banks' disclosure following the acquisitions. Panel C reports the difference-in-differences analysis during 1995–2015. See Appendix A for variable definitions. Standard errors (two-tailed p values) reported in parentheses (right-hand side columns) are based on the standard errors clustered at the host country × year level

Table 7 Mechanisms through which regulatory distance affects bank transparency

	Dep. var.= Disclosure											
	High parent-bank capital ratio		Low parent-bank capital ratio		Strong host-country supervisory power		Weak host-country supervisory power		High subsidiary ROA		Low subsidiary ROA	
	(1)	(2)	(3)	(4)	(5)	(6)						
	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>	Est.	<i>p</i>
ΔRESTRICT	0.075	0.306	–	0.000	–	0.899	–	0.000	–	0.049	–	0.044
(β₁)	(0.073)		(0.179)	(0.045)	(0.004)	(0.029)	(0.129)	(0.032)	(0.069)	(0.035)	(0.091)	(0.045)
Control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Entity-type fe.	Yes		Yes		Yes		Yes		Yes		Yes	
Host-country × year fe.	Yes		Yes		Yes		Yes		Yes		Yes	
No. of obs.	379		544		542		560		551		551	
Pseudo R ²	0.600		0.431		0.346		0.389		0.481		0.413	
<i>p</i> value of the difference in β ₁	(1)	0.004			(3)	0.001			(5)	0.412		
	(2)				(4)				(6)			

Reports the results of regulatory distance and foreign subsidiaries' transparency, conditional on parent-bank capital ratios, host-country supervisory power, and foreign subsidiaries' profitability, using a sample during 1995–2006. Columns (1) and (2) report the results conditional on parent-bank capital ratios. Columns (3) and (4) report the results conditional on host-country supervisory power. Columns (5) and (6) report the results conditional on foreign subsidiaries' ROA. The models are Ordered probit. See Appendix A for variable definitions. Standard errors (two-tailed *p* values) reported in parentheses (right-hand side columns) are based on the standard errors clustered at the host country × year level

country of the acquirer bank and the country of the target bank (ΔRESTRICT), their interaction term, and the same control variables and fixed effects, as in Eq. (1). We also include deal payment fixed effects to control for the factors that drive the method of payment choice (Harford, Klasa, & Walcott, 2009). Table 6, Panel C, reports the results. Column (1) shows that coefficient on POST is insignificant (coeff. = 0.067; *p* = 0.657), suggesting that subsidiaries experience no change in transparency when they are acquired by banks from countries with the same level of activity restrictions. The coefficient on ΔRESTRICT is also insignificant (coeff. = – 0.004; *p* = 0.924), suggesting that, prior to the acquisition, there is no difference in transparency between subsidiaries that are acquired by banks from countries with lax activity restrictions versus those from countries with tight restrictions. Importantly, the coefficient on POST × ΔRESTRICT is significantly negative (coeff. = – 0.122; *p* = 0.062). This result suggests that subsidiaries' transparency decreases after being acquired by banks from countries with greater activity restrictions. The results hold when we exclude the event year to mitigate the confounding effects of acquisition (Column (2)). Column (3) replaces POST with three indicator variables: YEAR

– 1 and YEAR 0 for the year prior to and during the acquisition, and YEAR 1+ for the post-acquisition period. The results suggest that transparency among targets acquired by banks with tighter or weaker activity restrictions is similar prior to the acquisitions and that the predicted effect of regulatory distance on subsidiaries' transparency materializes after acquisition.

Finally, we perform analysis using foreign branches from the same home country as the benchmark. As reported in the internet appendix, we find that, relative to foreign branches, foreign subsidiaries' transparency decreases when their home countries have tighter regulations than their host countries.

Analysis of the Mechanisms

To examine the role of agency conflicts and regulatory environments, we perform analyses conditional on parent banks' capital ratios and the host country's supervisory power. Because risk-taking incentives that arise from debt-equity conflicts are stronger when parent banks have higher leverage, this explanation predicts a more negative relationship between disclosure and regulatory distance when the parent banks have lower capital ratios.²⁸ It also predicts a more negative relationship when

the foreign subsidiaries are located in host countries with weaker supervision, because strong host-country supervisory power should reduce parent banks' ability to take excessive risk. To examine the role of proprietary costs, we perform analyses conditional on profitability. The proprietary cost explanation predicts a more negative relationship between disclosure and regulatory distance among foreign subsidiaries with higher profitability.

We partition our sample based on the sample median of parent banks' capital ratios, host-country supervisory power, and foreign subsidiaries' profitability, then re-estimate Eq. (1) for each subsample. Table 7 presents the results. Columns (1) and (2) show that the coefficient on Δ RESTRICT is significant only when the foreign subsidiaries are controlled by parent banks with low capital ratios (coeff. = -0.179 ; $p < 0.001$), and the difference between the subsamples is significant ($p = 0.004$).²⁹ Columns (3) and (4) show that this coefficient is significant only among foreign subsidiaries in the host countries with weak supervisory power (coeff. = -0.129 ; $p < 0.001$), and the difference between the subsamples is also significant ($p = 0.001$). Columns (5) and (6) show that this is significant in both the subsamples of high and low ROA, and the difference is insignificant ($p = 0.412$). These findings suggest that debt-equity agency conflicts and regulatory environments shape the disclosure practices of foreign subsidiaries.

CONCLUSIONS

We find that bank transparency declines when home countries have tighter activity restrictions than host countries, and the result is more pronounced for foreign subsidiaries controlled by parent banks with low capital ratios or located in host countries with weak supervision. Foreign subsidiaries are also more likely to fail during the 2007-2009 financial crisis when they have more opaque financial reporting right before the crisis. Our results are consistent with the view that the opacity of MNBs' reporting, which stems from debt-equity agency conflicts with weak regulation, exacerbates bank failures abroad.

Our study advances international business research by integrating debt-equity agency conflicts and institutional arrangements into headquarters–subsidiary relationships. As multinationals have become dominant global players, their behavior across regulatory environments constitutes a promising research avenue. Future research might

explore multinationals' information environments by taking a closer look at their subsidiary-level financial statement information to offer insights beyond reporting transparency and headquarters–subsidiary relationships.

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NOTES

¹As an example of the importance of these activities, in 2013, France and Germany adopted regulations that prevent banks from certain types of risky transactions, and the U.K. passed rules that require banks to separate core retail banking from investment banking.

²Karolyi and Taboada (2015, footnote 8) state "by acquiring banks in countries with fewer restrictions on bank activities, acquirers may engage in activities prohibited in the home country."

³According to IMF (2014b), 145 banks globally account for 85 percent of the assets of the world's top 1,000 banks in 2008. The top five largest cross-border banking groups have \$10 trillion of assets in total and over 50 percent of their credit risk exposures outside their home countries, with subsidiaries in more than 60 countries.

⁴Increased risk-taking abroad may include lending to risky firms, or engaging in risky securities or real estate activities, which can increase

shareholders value and preserve debtholder or other stakeholder value, or increase shareholder value but decrease debtholder or other stakeholder value.

⁵The Bankscope parent-subsidiary link table includes 6,620 subsidiaries with missing ownership data and 10,487 minority-owned subsidiaries. Most countries impose a threshold of 5% of the firm's issued shares for disclosing ownership (Li, Moshirian, Pham, & Zein, 2006). Because subsidiaries with missing ownership information are those below the required threshold and we focus on majority-owned subsidiaries, our results should be insensitive to cross-country differences in disclosure requirements.

⁶Bankscope includes two ownership variables: DATA9308 (Direct ownership%) and DATA9309 (Total ownership%). To illustrate, if Bank #1 owns Bank #2, and Bank #2 in turn owns Bank #3, the database will include two observations for Bank #3 in its parent-subsidiary link table: (1) Bank #1 (Parent) and Bank #3 (Sub.), with valid values of Total ownership% and missing value of Direct ownership%, and (2) Bank #2 (Parent) and Bank #3 (Sub.), with valid values of both Total ownership% and Direct ownership%. By imposing this sample selection criterion, we drop the first observation, thereby ensuring a unique parent-subsidiary link for each subsidiary.

⁷The sample size is small in early years because Bankscope retains data for a rolling period of 16 years.

⁸The number of U.S. foreign subsidiaries in our sample is much smaller than the number reported by the Board of Governors of the Federal Reserve System, because most of the foreign subsidiaries owned by U.S. banking organizations are leasing and investment companies (Board of Governors of the Federal Reserve System, 1999: 605). To examine the effect of regulatory arbitrage on bank transparency abroad, we include only subsidiary banks.

⁹Barth et al. (2013) compile the data for 180 countries based on the four surveys sponsored by the World Bank in 1999, 2003, 2007, and 2011. Because our sample period spans from 1995 to 2009, we follow Karolyi and Taboada (2015) and use the index from Survey I (data as of 1999) for the period before 2001, the index from Survey II (data as of 2002) for the period 2002 to 2004, the index from Survey III (data as of 2005) for the period 2005 to 2009.

¹⁰The U.S.'s regulatory approach to banks' non-core operations is distinct from other developed economies. The U.S. has a higher index due to the 1933 Glass-Steagall Act (which separates commercial and investment banking) and the 1956 Bank Holding Company Act (which prohibits bank holding companies from controlling almost all nonbanking firms). While the Glass-Steagall Act is repealed by the 1999 Gramm-Leach-Bliley Act, the Volcker Rule of the 2010 Dodd-Frank Act prohibits banks from certain investment activities.

¹¹Bankscope is commonly used among banks to assess counterparties. The average interbank liability to total assets ratio is 21.42% in our sample.

¹²Because we include host country-year fixed effects throughout the regression models, our results reflect the reporting discretion by controlling for mandatory disclosure requirements in the host-country-year. To assess the reporting discretion, we construct DISCLOSURE_MEAN and DISCLOSURE_STD that measure the mean and standard deviation of DISCLOSURE within each host-country-year. The analysis (untabulated) finds that the mean of DISCLOSURE_MEAN and DISCLOSURE_STD is 2.9 and 0.5, indicating that bank transparency exhibits considerable within-country variation.

¹³BANK FAILURE equals one if the bank: (1) exists in 2006, (2) stops providing financial statement information during 2007–2009, and (3) has an inactive status at Bankscope (e.g., “dissolved,” “in liquidation,” or “no longer with accounts on Bankscope”). Brown and Dinc (2011) suggest that most bank failures are in the form of government takeovers and license suspension or revocations, rather than bankruptcies.

¹⁴For example, public disclosure on one of the failed banks, BIPIELLE Bank (Suisse) SA, explicitly discusses the provision of deposit guarantee in its host country (<https://thebanks.eu/banks/9702>).

¹⁵Our additional analysis finds that the mean values of Δ RESTRICT_SEC, Δ RESTRICT_INS, and Δ RESTRICT_REAL are 0.094, 0.007, and 0.076, suggesting that securities and real estate are likely the main activities that are allowed in host countries but not in home countries. Later analysis in Table 3, Panel B, also confirms that the two activities are the ones that drive the disclosure opacity.

¹⁶Because the distribution is highly skewed, we measure bank size (SIZE) as the natural logarithm of total assets.



¹⁷While the majority of the subsidiaries are audited by Big Five, the literature suggests that Big Five auditors are less likely to enforce higher reporting quality when the legal regime is weaker (Francis and Wang, 2008).

¹⁸Indicators for bank-entity types are based on Bankscope. Among our sample subsidiary banks, 67% are commercial banks and 8% are investment banks.

¹⁹Additional analysis (untabulated) finds that the coefficient on Δ SUPV POWER becomes significantly negative (coeff. = -0.050 ; $p < 0.001$) after excluding host country-year fixed effects. This finding suggests that without controlling for host country-year fixed effects, bank transparency declines when the host country has weaker supervisory power than the home country. This finding is also consistent with the significantly negative correlation between DISCLOSURE and Δ SUPV POWER in Table 2, Panel B.

²⁰We also perform an additional test after restricting the sample to commercial banks and find the result (untabulated) remains qualitatively the same.

²¹We do not include entity-type and country-year fixed effects because the issuance of qualified audit opinions is rare and a model including these fixed effects cannot converge. Because some subsidiaries are unaudited, the number of observations for this test is slightly reduced. About 0.68 percent of the subsidiaries in our sample receive a qualified audit opinion. This low frequency is consistent with our expectation that qualified audit opinions are rare.

²²We do not include host-country-year fixed effects, because a failure of a foreign subsidiary is rare and there is not enough variation within each host country during the crisis period.

²³The two-stage regression model would not converge with inclusion of entity type fixed effects. We improve the odds of convergence by excluding entity type fixed effects and using STATA command "CMP" (Roodman, 2011).

²⁴The European Commission released a proposal of banking structural reforms in 2014 following the Liikanen report (or "Report of the European Commission's High-level Expert Group on Bank Structural Reform") but withdrew the proposal in 2017. Many countries have other regulatory reforms after the financial crisis. Basel III also strengthens capital requirements and increases risk disclosure. To the extent that the other countries in the control group also have significant regulatory reforms, it would bias against finding the predicted results.

²⁵The sample period ends in 2015 because Bankscope, owned by Bureau van Dijk, was replaced by BankFocus on January 1, 2017, which has different data coverage and structures.

²⁶We restrict the control sample to the subsidiaries that have no regulatory differences between home and host countries in both Surveys IV (data as of 2011) and V (data as of 2016) and whose parent banks are not located in France, Germany, and the U.K. We follow the same index construction approach by Barth et al. (2013) and use Survey V from the World Bank (2019) to update the activity restriction index as of 2016.

²⁷We stop the acquisition data in 2014 to allow at least one year of post-acquisition financial statement data for our difference-in-differences analysis.

²⁸We adjust parent banks' capital ratios by subtracting the average home country-year capital ratios to capture the risk-taking incentives beyond the limits imposed by home-country bank regulations.

²⁹The sample size is slightly smaller in the test of parent banks' capital ratios, because, for some subsidiaries, we can identify home countries but not specific parent banks using the Bankscope parent-subsidiary link table.

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APPENDIX A: VARIABLE DEFINITION

Variables of Interest

RESTRICT: A country-level index of regulatory restrictions on bank activities. This index measures



the regulatory impediments to a bank's engagement in securities (underwriting, brokering, dealing in securities, and all aspects of the mutual fund industry), insurance (insurance underwriting and selling), and real estate (real estate investment, development, and management) activities. The index ranges from 3 to 12, with higher values indicating more activity restrictions on banks (including either banks or subsidiaries, or in another part of a holding company or parent). *Source:* Barth et al. (2013).

Δ RESTRICT: The index of home-country activity restrictions minus the index of host-country activity restrictions. *Source:* Barth et al. (2013).

Δ RESTRICT_SEC: The index of home-country securities activity restrictions minus the index of host-country securities activity restrictions. This index measures the extent to which banks may engage in underwriting, brokering, and dealing in securities, and all aspects of the mutual fund industry. The index ranges from 1 to 4, with higher values indicating more restrictions on banks (including either banks or subsidiaries, or in another part of a common holding company or parent). *Source:* Barth et al. (2013).

Δ RESTRICT_INS: The index of home-country insurance activity restrictions minus the index of host-country insurance activity restrictions. This index measures the extent to which banks may engage in insurance underwriting and selling. The index ranges from 1 to 4, with higher values indicating more restrictions on banks (including either banks or subsidiaries, or in another part of a common holding company or parent). *Source:* Barth et al. (2013).

Δ RESTRICT_REAL: The index of home-country real estate activity restrictions minus the index of host-country real estate activity restrictions. This index measures the extent to which banks may engage in real estate investment, development, and management. The index ranges from 1 to 4, with higher values indicating more restrictions on banks (including either banks or subsidiaries, or in another part of a common holding company or parent). *Source:* Barth et al. (2013).

DISCLOSURE: The sum of DISCLOSURE_LOAN and DISCLOSURE_SEC. The index ranges from 0 to 7,

with higher values indicating more transparent financial reporting. *Source:* Bankscope.

DISCLOSURE_LOAN: An index formed by adding one when the bank discloses (1) any of the loan types, (2) the amount of loan loss provisions, and (3) the amount of non-performing loans. The index ranges from 0 to 3, with higher values indicating more transparent financial reporting on loan quality. *Source:* Bankscope.

DISCLOSURE_SEC: An index formed by adding one when the bank discloses (1) any of the securities types, (2) any of the securities issuing party, (3) the amount of gains (losses) on trading and derivatives, and (4) the amount of available-for-sale valuation adjustments. The index ranges from 0 to 4, with higher values indicating more transparent financial reporting on securities holdings and profits. *Source:* Bankscope.

BANK FAILURE: An indicator variable equal to one if a bank ceases to have financial statement information during 2007-2009 and becomes inactive thereafter. *Source:* Bankscope.

LARGE DEPOSIT WD: An indicator variable equal to one if an annual deposit growth of a bank lies at the bottom 10%ile of the distribution of the overall deposit growth (with a cutoff of -23.56%) during the crisis period 2007-2009. *Source:* Bankscope.

Other Country-Level Variables

Δ SUPV POWER: The index of home-country supervisory power minus the index of host-country supervisory power. Supervisory power index measures the extent to which the bank supervisors can take specific actions to prevent or correct problems. This index ranges from 0 to 14, with higher values indicating stronger supervisory power. *Source:* Barth et al. (2013).

Δ DEPOSIT INS: The index of home-country deposit insurance minus the index of host-country deposit insurance. Deposit insurance index is an indicator variable equal to one if there is an explicit deposit insurance and depositors were fully compensated the last time a bank failed. *Source:* Barth et al. (2013).

ENTRY BARRIER: A measure of the limitation on foreign bank entry/ownership. This index ranges



from 0 to 4, with higher values indicating greater stringency. *Source:* Barth et al. (2013).

GGO: A measure of country-specific growth opportunities implied by the global market. *Source:* Bekaert et al. (2007).

Other Firm-Level Variables

SIZE: The log of lagged total assets (in USD millions). *Source:* Bankscope.

ROA: Return on assets, measured as net income scaled by lagged total assets. *Source:* Bankscope.

LOAN GROWTH: The percentage change in total loans over the year. *Source:* Bankscope.

CAPITAL RATIO: Equity divided by lagged total assets. *Source:* Bankscope.

BIG 5: An indicator variable equal to 1 if the bank is a client of a Big Five auditor. *Source:* Bankscope.

PUBLIC: An indicator variable equal to 1 if the bank is publicly listed. *Source:* Bankscope.

SAME LANGUAGE: An indicator variable equal to 1 if the home and host countries share the same official language. *Source:* Mayer and Zignago (2011).

LOG Z: The log of the distance to default, measured as mean (ROA+CAR)/volatility (ROA) over the five-year period from year $t-4$ to year t . ROA is the return on assets, CAR is the capital to asset ratio, and volatility (ROA) is the standard deviation of ROA. *Source:* Bankscope.

QUALIFIED OP: An indicator variable equal to 1 if the bank receives a qualified audit opinion. *Source:* Bankscope.

DEAL PAYMENT: An indicator variable equal to 1 if the acquisition payment method is cash. *Source:* Zephyr.

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