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Foreign Investment, Regulatory Arbitrage, and the Risk of U.S. Banking Organizations

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Abstract: This study investigates the implications of cross-country differences in banking regulation and supervision for the international subsidiary locations and risk of U.S. bank holding companies (BHCs). We find that U.S. BHCs are more likely to operate subsidiaries in countries with weaker regulation and supervision and that such location decisions are associated with elevated BHC risk and higher contribution to systemic risk. The quality of BHCs' internal controls and risk management play an important role in these location choices and risk outcomes. Overall, our study suggests that U.S. banking organizations engage in cross-country regulatory arbitrage with potentially adverse consequences.

JEL classification: G15, G21, G28

Key words: regulation, supervision, bank holding companies, cross-border operations, subsidiary locations, risk, systemic risk

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1 Introduction

The international banking system has evolved into an increasingly important cross-border conduit for the transfer of capital (McGuire and Tarashev (2008)). In fact, according to the Bank for International Settlements (BIS), foreign claims of international banking organizations surged 30-fold, from $3.7 to $111.5 trillion dollars, between 1995 and 2013. Foreign claims associated exclusively with U.S. banking organizations rose in tandem over this period and stood at $12.9 trillion in 2013. Figure 1 illustrates these trends.

[Insert Figure 1 about here]

The rapid growth of international banking can be broadly attributed to technological advancements, as well as trends towards capital market liberalization and economic integration (e.g., Focarelli and Pozzolo (2005)). However, the distribution of international banking flows has been found to vary significantly depending on host country economic and institutional characteristics, including the stringency of banking regulation and supervision (Houston et al. (2010)). The recent global financial crisis highlighted international financial linkages within and between global banking organizations, and also exposed limitations associated with material cross-border differences in regulatory environments. Since that time, significant policy attention has been paid to improved international coordination in setting banking regulatory and supervisory standards through the Financial Stability Board and Basel Committee on Banking Supervision.[1]

An important issue for policymakers is regulatory arbitrage: the situation where countries with weaker regulatory environments attract capital flows from banking organizations

[1] In the extreme, one might imagine centralizing international banking regulation (rather than seeking to coordinate on broad principles). But such an approach could be very costly and necessarily limit the flexibility in policy design tailored to the banking sector of individual countries (Morrison and White (2009)).

domiciled in countries with stricter rules (e.g., Tarullo (2010)).[2] Different perspectives on the implications of this form of regulatory arbitrage have emerged. On one hand, this strategy may enable banking organizations to effectively evade costly regulation, which ultimately improves capital allocation efficiency and enhances global economic growth. Alternatively, regulatory arbitrage may be viewed as a "race to the bottom," whereby banking organizations can engage in excessive risk-taking by operating in countries with lax oversight (Barth et al. (2004)). This second view of regulatory arbitrage suggests that such behavior could have adverse consequences for bank-specific performance in the form of excessive risk taking and also contribute to a build-up of system-wide risks.

Understanding whether banking organizations actually engage in regulatory arbitrage and (if so) the implications for bank-specific and systemic risk is crucial for calibrating the design of global regulatory and supervisory standards. This paper explores these issues by studying whether cross-country differences in banking regulatory environments are associated with the subsidiary location choices and risk profiles of U.S. bank holding companies (BHCs). We focus on subsidiaries as the mechanism for regulatory arbitrage since these are separate legal entities incorporated in host countries and subject to those nations' regulatory regimes (Focarelli and Pozzolo (2005), Fiechter et al. (2011), Ongena et al. (2013)). By contrast, direct exposures or those through foreign branches are subject to home country regulations.

Using supervisory information about the international structure of U.S. BHCs from 1995 to 2013, we first investigate whether differences in the stringency of regulation and su-

[2]The International Monetary Fund's Managing Director at the time, Dominique Strauss-Kahn, stated: "One of the lessons of the crisis is that we must avoid regulatory arbitrage. Key aspects of prudential regulations must be applied consistently across countries and across financial activities. This is especially important today, as the road to a safer future involves strengthened financial regulation and supervision, not only of cross-border institutions but also of cross-border markets. This will only work if all countries sign on and take ownership of the initiative, and resist the temptation to offer loopholes" ("Crisis Management and Policy Coordination: Do We Need a New Global Framework?", Oesterreichische Nationalbank, Vienna, May 15, 2009).

pervision across countries influences the international subsidiary locations of these institutions. Consistent with regulatory arbitrage, we find that U.S. BHCs are more likely to have subsidiaries in countries with laxer regulatory environments (defined as fewer activities restrictions, less stringent capital requirements, and weaker supervision).[3] Moreover, these relationships are consistent for both traditional commercial banking subsidiaries as well as non-traditional subsidiaries (e.g., those engaging in securities, insurance, asset management, or real estate). On average, we estimate that a one standard deviation decrease in the stringency of regulation and supervision corresponds to an increase of 1.3 percentage points in the probability of having a subsidiary in a given country.[4]

Previous research has shown that the quality of U.S. BHCs' risk management function is crucial for curtailing their risk exposures (Ellul and Yerramilli (2013)). Hence, we explore the potential link between BHC risk management quality and country regulatory environment with respect to foreign subsidiary location decisions. We document that banking organizations with stronger risk management functions are more likely to engage in regulatory arbitrage. This result, which could stem from BHCs' choices and/or supervisory limitations, may reduce some concerns about excessive risk-taking.

We then more directly investigate the risk implications of U.S. BHCs' foreign subsidiary location decisions. We find that BHCs with subsidiaries in countries with weaker regulatory regimes are riskier and also contribute more to systemic risk in the United States. Specifically, on average, a one standard deviation decrease in the stringency of regulation and supervision of countries where BHCs have subsidiaries increases VaR and $\Delta CoVaR$ by 11.9% and 9.9%

[3]Our study leverages the global banking regulation database presented in Barth et al. (2013), which builds on four surveys sponsored by the World Bank (released in 2001, 2003, 2007 and 2011). The dataset provides information on measures of bank regulation and supervision in 180 countries over the period [1999-2011]. See section 2.2 for more details.

[4]We also find a relatively weak and fragile empirical relation between regulatory stringency in host countries and BHC branch locations driven by a single host country — Great Britain. This finding is consistent with Goldberg and Saunders (1980), who argue that Great Britain played a key role as a driver of U.S. bank branch expansion abroad, but suggests that U.S. BHCs likely do not engage in regulatory arbitrage through foreign branch activity. See Section 3.4 for more details.

(relative to the mean), respectively. We also find that BHC risk management quality plays a critical role in both individual and systemic risk outcomes, as the link between weaker foreign regulatory environments and increased risk is primarily driven by institutions with weak risk management. Overall, our evidence suggests that regulatory arbitrage has potentially adverse consequences — consistent with the "race to the bottom" interpretation. However, we also find an important role for risk management systems to limit the heightened risks associated with banking organization subsidiaries operating in more laxly regulated markets.

Our study contributes to several research streams. The first is an emerging literature examining the relationship between international banking activity and cross-country differences in banking regulation and supervision that focuses on the issue of regulatory arbitrage.[5] Houston et al. (2012) examine the extent to which cross-country differences in regulatory environments are related to international bank flows and find evidence consistent with regulatory arbitrage. Ongena et al. (2013) provide evidence that European banking regulation affects multinational banks' lending practices insofar as banks with more stringent domestic regulatory regimes lower lending standards and make riskier loans abroad. Karolyi and Taboada (2015) show that cross-border bank acquisition flows usually involve acquirers from countries with stronger regulatory regimes than their targets, and find that target and aggregate abnormal returns around deal announcements are positive and larger when acquirers come from stricter bank regulatory environments.[6] Karolyi et al. (2016) find that cross-border bank flows are associated with lower systemic risk and improved financial stability in recipient countries, with results particularly strong in countries with weak regulatory quality. Temesvary (2016) shows that U.S. banks lend less to countries with stricter bank regulations, and that banks that do so are more profitable in their foreign activities.

[5]More broadly, our research also contributes to the large literature examining the economic effects of cross-country differences in banking regulation and economic liberalization in an international context (e.g., Beck et al. (2006), Dell'Ariccia and Marquez (2006), Barth et al. (2008), Houston et al. (2010)).

[6]For other recent studies that link regulatory issues to cross-border merger activity see Hagendorff et al. (2008) and Carbo-Valdere et al. (2012).

Similar to Temesvary (2016) and unlike the rest of the literature in this area, our research analyzes the foreign activities of U.S. BHCs, some of the very institutions that played a central role in the 2008-2009 global financial crisis. However, unlike that paper, we focus on foreign subsidiary locations because these entities are principally subject to host country regulatory regimes, while foreign branches and direct cross-border exposures fall under the U.S. regulatory system. By examining U.S. BHCs' foreign subsidiary locations, we provide new direct evidence on the extent to which banks engage in regulatory arbitrage. We show that the regulation and supervision stringency of host countries is a relevant factor for the location of both traditional and non-traditional subsidiaries. In addition, we provide unique evidence on the interaction between country regulatory environment and BHCs' risk management quality with regards to subsidiary location choices. Crucially, we also document a strong association between BHCs' subsidiary locations, regulatory stringency, and BHC risk profiles, highlighting a channel for the transmission of risk to the U.S. financial system.

Our study also contributes to the literature on the determinants of global banking activity. Goldberg and Saunders (1980) test various hypotheses on the drivers of U.S. bank expansion abroad, with particular emphasis on Great Britain. Miller and Parkhe (1998) examine U.S. banks' patterns of foreign operations, including their levels of banking services and choice of organizational forms in host countries. Focarelli and Pozzolo (2001) focus on cross-border M&As in the banking industry and investigate which factors make it more likely for a bank to expand its activities abroad. Buch (2003) finds that information cost and regulation are correlated with the international asset choices of banks in the European Union. Focarelli and Pozzolo (2005) examine the importance of institutional characteristics and market profitability for bank location choice. Mian (2006) studies how cultural and geographical distance limits foreign lending in poor economies. Sengupta (2007) examines interactions between foreign entry and bank competition, and discusses lending patterns by foreign banks. Temesvary (2014) uses a structural dynamic estimation model to link foreign

banking activities and foreign market characteristics. Complementary to such literature, we find that cross-country differences in banking regulation and supervision are an important determinant of the foreign subsidiary location decisions of U.S. BHCs.

Finally, while an abundance of research examines the determinants of bank risk, most studies largely ignore the effects of internationalization (Beltratti and Stulz (2012)). Amihud et al. (2002) examine the effects of cross-border bank mergers and report that, on average, neither the total risk nor the systematic risk of acquiring banks changes significantly. Similarly, Buch et al. (2013) investigate the effects of bank internationalization on domestic market power and risk for German banking institutions, and document a weak link between internationalization and bank risk. In contrast, Berger et al. (2016) document a positive relation between internationalization and bank risk, and suggest that this results from foreign market-specific factors. Cetorelli and Goldberg (2011) highlight the importance of multinational banks in cross-border risk transmissions and the propagation of international liquidity shocks.[7] We extend this literature by documenting an important channel of internationalization, regulatory arbitrage, through which banking organizations may potentially engage in excessive risk taking. We also study how the quality of institutional risk management may influence regulatory arbitrage-related risk outcomes.

Our study also has potential policy implications by contributing to the discussion about international regulatory coordination. We find evidence consistent with the interpretation that U.S. BHCs engage in regulatory arbitrage and that this has an effect on both institution-specific and systemic risk metrics. This implies that regulatory arbitrage could undermine attempts to limit banking organization risk-taking in the aftermath of the global financial crisis. Reducing cross-country regulatory and supervisory differences through improved international coordination of banking regulation and supervision seems a natural way to reduce

[7]While not explicitly focusing on the risk implications of BHC internationalization, Laeven and Levine (2009) examine the importance of regulations and ownership structures of private banks for bank risk taking in different countries.

potential problems.

2 Data

2.1 Foreign subsidiaries of U.S. BHCs

We start our analysis by examining the international organizational structure of U.S. BHCs during the period [1995-2013]. These institutions can gain foreign exposure through direct cross-border activities, or via branches or subsidiaries. Foreign exposures emerging from direct cross-border activities, such as a loan to a firm based in a foreign country, are governed by the BHCs' home country regulations. Likewise, banking activity through foreign branches, which are integrated into the BHC, are bound by home country regulations. By contrast, foreign subsidiaries are separate legal entities that must comply with regulations for the jurisdiction in which they operate (Focarelli and Pozzolo (2005), Fiechter et al. (2011), Ongena et al. (2013)). For this reason, we study the location of U.S. BHCs' foreign subsidiaries in relation to cross-border differences in banking regulation and supervision.[8]

Data on the location of U.S. BHCs' foreign subsidiaries are obtained from the Federal Reserve's FR Y-10 report.[9] Specifically, we start with the stock of foreign subsidiaries as of 1995 and then record entry and exit decisions thereafter, including the establishment of *De Novo* subsidiaries, acquisition of a controlling interest in existing institutions and loss of those interests through mergers or divestitures. Importantly, the organizational data comprises only material exposures. For example, the report excludes subsidiaries that are

[8]We restrict our analysis to foreign subsidiaries associated with the following NAICS industry classifications: 522 (credit intermediation and related activities), 523 (securities, commodity contracts, and other financial investments), 524 (insurance carriers and related activities), 525 (funds, trusts, and other financial vehicles), 531 (real estate), and 551 (management of companies and enterprises).

[9]The FR Y-10 report collects data on the organizational structure of U.S. BHCs. For more information see: `http://www.federalreserve.gov/apps/reportforms/reportdetail.aspx?sOoYJ+5BzDaGhRRQo6EFJQ==`.

not controlled by a BHC or actively engaged in a business activity.[10] We use these data to construct a panel data set consisting of 135 unique U.S. BHCs operating 8,194 foreign subsidiaries during the period [1995-2013].

We capture BHCs' foreign subsidiary location decisions with *PresSub* and *Ln(NSub)*. *PresSub* is an indicator that equals one if a BHC operates at least one subsidiary in a given country during a year, and zero otherwise.[11] *Ln(NSub)* is the natural log of one plus the number of foreign subsidiaries a BHC operates in a given country during a year.

2.2 Cross-country banking regulation and supervision

We use the global banking regulation databased presented in Barth et al. (2013) to measure the stringency of banking regulation and supervision across countries. The data set has been used by several recent studies to examine cross-country differences in regulatory stringency in relation to global banking activities (Houston et al. (2012), Karolyi and Taboada (2015), Karolyi et al. (2016)).

The banking regulation and supervision data builds on four surveys sponsored by the World Bank and released in 2001 (I), 2003 (II), 2007 (III) and 2011 (IV). Each survey recorded regulation and supervision stringency across a large number of dimensions. Since the survey data are not available yearly, we take values from Survey I for the period 1995-2001, values from Survey II for the period 2002-2005, values from Survey III for the period 2006-2009, and values from Survey IV for the period 2010-2013.

We focus on three dimensions of regulation and supervision: activities restrictions, cap-

[10]Control is defined according to the Federal Reserve's Regulation Y. In particular, a BHC controls a subsidiary if: 1) it owns at least 25 percent of the voting securities; 2) it controls the election of a majority of the directors, trustees, or general partners (or individuals exercising similar functions); or 3) has the power to exercise directly or indirectly a controlling influence over the management of the offspring.

[11]In unreported results, we tested alternative definitions of *PresSub*. First, we defined *PresSub* as an indicator that equals one if a BHC operates at least one foreign subsidiary in a given country during a year, but excluded all subsidiary entries that occurred prior to 1995. Second, we defined *PresSub* as equal to one only in the first year a BHC reports having a subsidiary in a country. Our main results are robust to such alternative definitions.

ital regulation and supervisory power. These measures are relatively broad and capture historically key macro- and micro-prudential areas of regulatory focus and tools for corrective action, and have received emphasis in prior research (Ongena et al. (2013), Karolyi and Taboada (2015)). The stringency of each dimension is measured by an index. The activities restriction index ranges from three to twelve and measures the stringency of regulation regarding BHC involvement in securities, insurance and real estate activities. The capital regulation index ranges from zero to ten and measures the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. The supervisory power index ranges from zero to fourteen and measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions by, for example, engaging with external auditors and changing the bank's organizational structure, respectively. Finally, to construct a unified measure capturing overall banking regulation and supervision stringency, we extract the first principal component from activities restrictions, capital regulation and supervisory power. To ease the exposition of results, we transform all four indices by subtracting each index from its maximum value so that higher values indicate weaker regulatory stringency.

Table 2 sorts the total number of distinct U.S. BHC subsidiaries into the countries where they operate (top thirty countries by representation).[12] The summary statistics suggest significant heterogeneity in foreign subsidiary locations. In the top ten countries, we encounter global financial centers such as the United Kingdom, and Japan; emerging markets such as Brazil; and offshore financial centers such as Mauritius. The summary statistics also show that banking regulation and supervision stringency varies across the different dimensions within countries, suggesting that the indices capture sufficiently distinct aspects of regulatory intensity. For example, the sample averages of the regulatory indices suggest

[12]Due to data availability issues, we exclude the Cayman Islands, one of the largest subsidiary destination countries for U.S. BHC, from our sample. To the extent that the Cayman Islands maintains a relatively weak regulatory environment, such an exclusion should only weaken our results.

that the United Kingdom had relatively strict capital requirements, but weak bank activity restrictions over the period.

[Insert Table 2 about here]

2.3 Other determinants of BHC subsidiary locations

In much of our analysis, we control for other factors that may affect BHCs' cross-border activities and be correlated with countries' banking regulation and supervision stringency. For example, BHCs' foreign subsidiary locations may respond to economy size and the potential for economic growth (Goldberg and Johnson (1990)). Thus, we include the natural log of real GDP and real GDP per capita, as well as real GDP growth from the World Bank Development Indicators (WBDI). Cross-border bank flows and activities may also be influenced by bilateral ties between the source and target countries (Goldberg and Saunders (1980)). Therefore, we include as control a measure of bilateral trade, the maximum of bilateral imports and exports between the U.S. and a given country. Bilateral imports (exports) are calculated as the total value of imports (exports) by a given country from (to) the U.S. as a proportion of total imports by that country from (to) the rest of the world. Data on bilateral trade are obtained from the IMF Direction of Trade Statistics (DOTS).

Many studies have shown the importance of country institutional quality for foreign direct investment (Daude and Stein (2007), Antràs et al. (2009), Buchanan et al. (2012)). Therefore, we include the average of six country governance indicators from Kaufman et al. (2009): control of corruption, rule of law, regulatory quality, government effectiveness, political stability, and voice and accountability. We also control for offshore financial centers, which have been found to host more cross-border assets of financial companies (Rose and Spiegel (2007)). Specifically, we include an indicator variable that equals one if a country

is classified as an offshore financial center by the Financial Stability Board. The Financial Stability Board classifies jurisdictions as offshore financial centers based on banking activity by non-residents, taxes on business and investment income, licensing requirements, supervisory stringency and secrecy laws (International Monetary Fund (2000)). Relatedly, creditor rights has been shown to be important in promoting cross-border credit provision (Djankov et al. (2007)). We thus include an index of borrower and lender protection by collateral and bankruptcy laws as control. These data are from the World Bank's Doing Business 2015 survey.[13]

BHCs' foreign subsidiary locations may also be related to capital market's development, composition of the banking sector and banking sector profitability (Focarelli and Pozzolo (2005)). Thus, we also control for host country's ratio of private credit to GDP, banking sector concentration, and banking sector return on equity using measures from Barth et al. (2013) and the Global Financial Development Database (GFBD).[14]

Finally, cross-border banking flows may also be influenced by the physical and cultural distance between the home and host markets. Therefore, we include a measure of geographic distance, and indicator variables for countries that have English as the official language and those that share a border with U.S. (Mayer and Zignago (2011)). Detailed definitions of all variables are presented in Table 1. In all of our analyses, we require non-missing country-level information and focus on the subset of countries with available data.

[13]The World Bank's Doing Business 2015 survey contains information starting in 2004. Thus, we carry the earliest observable value of the borrower and creditor rights index for each country to the period 1995-2003. Our results are robust to doing the analysis on the period [2004-2013].

[14]Information on countries' banking sector return on equity is available starting in 1999. Hence, we carry the earliest observable value for each country to the period [1995-1998]. Our results are robust to doing the analysis on the period [1999-2013].

2.4 Summary statistics

Table 3 reports summary statistics for all variables described above (Panel A) and pairwise correlations between our main dependent variables and regulatory stringency measures (Panel B).

[Insert Table 3 about here]

The variable *PresSub* has a mean of 0.069, indicating that, on average, 6.9 percent of our sample BHCs report having foreign subsidiaries in a country-year pair. The unconditional sample mean of *NSub*, the number of subsidiaries a BHC has in a country during a year, is 0.5. This translates into an average of approximately seven subsidiaries per country-year based on observations that reflect BHC subsidiary presence. The sample means of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power* are 4.6, 3.4, and 5.1 respectively. For comparison, average index values for the U.S. across the same indices are 3.4, 2.3, and 2.7, respectively. Thus, according to these measures, the U.S. tends to have more stringent banking regulation and supervision relative to the average country in our sample. The pairwise correlations indicate that *PresSub* and *Ln(NSub)* are positively correlated with *Activities Restrictions*, *Capital Regulation* and *Supervisory Power* as well as our composite measure *Regulation & Supervision*. This suggests that U.S. BHCs tend to operate subsidiaries in countries with more lax regulatory environments.

3 Subsidiary locations and regulatory stringency

3.1 Baseline regression analysis

This section of our study formally examines the relationship between the locations of U.S. BHCs' foreign subsidiaries and host countries' banking regulation and supervision stringency in a multivariate regression setting. We use the following empirical specification:

$$Y_{i,j,t} = \alpha_i \times \alpha_t + \beta Regulation\ \&\ Supervision_{j,t-1} + \delta X_{j,t-1} + \epsilon_{i,j,t} \tag{1}$$

where i indexes BHCs, j indexes countries, and t indexes years. We define the dependent variable as $Y_{i,j,t} = Pr(PresSub_{i,j,t} = 1)$ or $Y_{i,j,t} = Ln(NSub)_{i,j,t}$. As discussed previously, $PreseSub_{i,j,t}$ is a binary variable that equals one if BHC i operates at least one foreign subsidiary in country j at year t, and zero otherwise. $Ln(NSub)_{i,j,t}$ is the natural log of one plus the number of subsidiaries BHC i operates in country j at year t — a measure of the intensity of foreign exposure to that country. $Regulation\ \&\ Supervision_{j,t-1}$ represents the independent variable of interest, a measure of overall regulation and supervision stringency, defined as the first principal component of *Activities Restrictions*, *Capital Regulation*, *Supervisory Power*. We also estimate analogous specifications where we replace the composite measure with each of the underlying indices.

The vector $X_{j,t-1}$ contains several country-level controls discussed earlier, including: economy size and economic growth (*Ln(GDP)*, *Ln(GDPPC)*, and *GDPG*); bilateral ties with the U.S. (*Bilateral Trade*); institutional quality (*Country Governance*, *Offshore Financial Center*, and *Borrower & Creditor Rights*); banking sector efficiency and depth (*Credit-to-GDP*, *Banking Concentration*, and *Banking Profitability*); and cultural and physical distance (*Contiguous*, *Common Language*, and *Ln(Dist)*). Finally, $\alpha_i \times \alpha_t$ denotes BHC-year fixed effects, which controls for unobservable time-varying bank characteristics that might otherwise

conflate the analysis. We use robust standard errors that are clustered at the BHC-country level. To assuage information availability concerns, we lag all independent variables by one year. Table 4 presents OLS coefficient estimates for the baseline specifications.[15]

[Insert Table 4 about here]

The results suggest that a country's banking regulation and supervision environment is related to U.S. BHCs' foreign subsidiary locations. *PresSub* is positively associated with *Regulation & Supervision*, indicating that a BHC is more likely to operate foreign subsidiaries in countries with weaker banking regulation and supervision. Based on the specification in Column (1), a one standard deviation increase in *Regulation & Supervision* is associated with a 1.3 percentage point increase in the likelihood of subsidiary presence, on average. Given that the unconditional mean of BHC subsidiary presence is 6.9 percent in our dataset, the magnitude of the estimated coefficient is not trivial. Similarly, in Column (5), we find a positive relationship between *Ln(NSub)* and *Regulation & Supervision*. Hence the results indicate that not only are BHCs more likely to operate foreign subsidiaries in countries with weaker banking regulation and supervision, but they also tend to operate more subsidiaries there. The estimated coefficient suggests that a one standard deviation increase in *Regulation & Supervision* is associated with a 1.9 percent increase in the number of subsidiaries a BHC operates in a country during a given year.

Our composite measure (*Regulation & Supervision*) incorporates three distinct dimensions of regulatory quality: *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. While these dimensions may be correlated within a given country, each potentially affects

[15] We employ a linear probability model specification to avoid the incidental parameter problem as a result of including a large number of fixed effects in a binary response model. As a robustness check, we estimate a conditional fixed-effects logit model for *PresSub* and a Poisson Pseudo Maximum Likelihood (PPML) model for *NSub*. In each case, we confirm our baseline results.

U.S. BHC's foreign subsidiary locations to a different extent. So, we examine the relationship between BHC subsidiary location choices and these individual components separately. We find that all three dimensions of a country's banking regulatory environment are important — a BHC is more likely to be present and operate more foreign subsidiaries in countries with weaker restrictions to banking activities, lower capital standards, and weaker supervision. Based on the specifications in Columns (2)-(4), a one standard deviation increase in *Activities Restrictions*, *Capital Regulation* and *Supervisory Power* is associated with an average increase in the likelihood of subsidiary presence in a given country of 1.2, 0.5 and 0.7 percentage points, respectively. Likewise, results in Columns (6)-(8) suggest that a one standard deviation increase in such indices is associated with increases of approximately 2.9, 0.5 and 1 percent in the number of subsidiaries, on average. All coefficients are statistically significant at the 1% level.

The estimated coefficients on the control variables are largely consistent with findings in prior literature. For example, we find that country presence is positively associated with measures of economy size and capital market development (*Ln(GDP)*, *Credit-to-GDP*). This result is consistent with Goldberg and Johnson (1990) who find that U.S. banks are more likely to establish branches and have more assets in countries with higher populations, and higher levels of per capita income. Similarly, we find that country presence is positively related to *Country Governance*, which is consistent with the finding that FDI flows tend to go to countries with stable governments; and strong property rights (Daude and Stein (2007), Buchanan et al. (2012)). Consistent with Rose and Spiegel (2007), we also find that BHCs are more likely to operate foreign subsidiaries in offshore financial centers. Banking concentration also seems to matter for BHCs' foreign subsidiary locations, with BHCs more likely to establish foreign subsidiaries in countries with lower levels of banking concentration. Finally, U.S. BHCs are more likely to establish foreign subsidiaries in countries that are contiguous to the United States (i.e. Mexico and Canada), and countries whose official

language is English.

So far, our results provide evidence consistent with the notion of regulatory arbitrage, whereby U.S. BHCs tend to operate foreign subsidiaries in countries with weaker regulatory and supervisory environments. These findings complement evidence in Houston et al. (2012) and Karolyi and Taboada (2015), who show that weak regulatory environments attract international bank flows and are associated with cross-border bank acquisition volumes respectively.

3.2 Subsidiary locations and non-traditional banking activities

After the global financial crisis, policymakers and academics have paid closer attention to the relationship between non-traditional banking activities such as investment banking and trading, and the rise in bank size, interconnectedness, complexity and risk. For example, a critical component of the complexity indicator used by the Financial Stability Board and Basel Committee on Banking Supervision to designate financial institutions as globally systemically important banking organizations (G-SIBs) is the notional amount of their over-the-counter derivatives.[16] Furthermore, studies have shown that banks with higher involvement in non-traditional banking activities contribute more to systemic risk (e.g., Brunnermeier et al. (2012)). Given these observations, and our finding in Section 3.1 that weaker restrictions to banking acitivities in host countries may be a motive for the location of U.S. BHCs' foreign subsidiaries, we next separately analyze foreign subsidiaries engaged in traditional versus non-traditional banking activities.

We start by splitting the sample into traditional and non-traditional subsidiaries according to NAICS industry definitions. Traditional subsidiaries are defined as those with NAICS code 522, which corresponds to entities engaged in credit intermediation and related activ-

[16]Details on the methodology used to designate institutions as G-SIBs can be fount at: `http://www.bis.org/publ/bcbs255.pdf`

ities. In contrast, non-traditional subsidiaries are defined as those with NAICS code 523, 524, 525, 531 and 551. These correspond to entities engaged in securities, insurance, asset management, and real estate activities. We then re-estimate Equation (1) for each group separately. Table 5 presents results.

[Insert Table 5 about here]

The coefficient estimates for *Regulation & Supervision* are positive and statistically significant at the 1% level across all specifications. The results in Columns (1) and (3) suggest that U.S. BHCs are equally likely to locate foreign traditional and non-traditional subsidiaries in host countries with weaker banking regulation and supervision regimes. However, the results in Columns (2) and (4) suggest that more lenient foreign regulation and supervision environments attract more non-traditional subsidiaries.

3.3 Subsidiary locations and risk management practices

Garfinkel and Hankins (2011) show that merger activity, and particularly merger waves, are significantly influenced by risk management considerations. In related research, Ellul and Yerramilli (2013) show the strength of BHC risk controls and the independence of BHC risk management functions can curtail excessive risk-taking. This motivates us to examine whether the quality of BHC risk management is related to BHC subsidiary location choices and the stringency of host-country regulatory environments. On the one hand, BHCs with stronger risk management functions should be better positioned to exploit profitable opportunities in more weakly regulated markets keeping risk in check through effective monitoring and control. On the other hand, such markets could also furnish opportunities for excessive risk-taking by BHCs with inadequate risk management functions steered by bank executives with high-powered incentive compensation schemes.

To study this issue empirically, we use a risk management rating that has been developed and maintained by the Federal Reserve System. This rating, which is part of the RFI/C(D) BHC rating system, is a composite index based on four subcomponents: (1) board and senior management oversight; (2) policies, procedures, and limits; (3) risk monitoring; and (4) internal controls. The discrete rating system ranges from one to five and is decreasing in the quality of risk management.[17] According to the Bank Holding Company Supervision Manual, a BHC with a rating of three or higher exhibits fair to moderately severe risk-management weaknesses.[18] Thus, we create a weak risk management indicator (WRM) that equals one if a BHC has a risk management rating greater than or equal to three, and zero otherwise.[19]

The advantage of using a supervisory risk management rating is that it should encompass both public and private information and hence provide a comprehensive assessment of an institution's risk management processes. Nevertheless, as an additional test, we also examine the relationship between BHC risk management, subsidiary location choices, and foreign regulatory environments using the risk management index (RMI) developed by Ellul and Yerramilli (2013).[20] The RMI is a continuous measure of the organizational strength and independence of the risk management function at a given BHC each year based on publicly available data. RMI is constructed as the first principal component of seven measures of BHC risk management quality, including variables that capture whether a BHC has a designated risk officer to manage enterprise-wide risk, and variables that capture how well quantitative and qualitative information on risk is shared between the top management and

[17]The RFI/C(D) system has only been in place since 2005. Thus, we supplement it with data from the BOPEC BHC rating system, which was in place from 1987 to 2004. The BOPEC BHC rating system included an analogous composite risk management rating. For more information on the RFI/C(D) and BOPEC rating systems see the following supervisory letters: SL 95-91, SL 95-69, SR 95-17, SR 95-22, and SR 04-18.

[18]The Bank Holding Company Supervisory Manual can be found at: `https://www.federalreserve.gov/boarddocs/supmanual/bhc/bhc.pdf`

[19]We use an indicator variable as opposed to the original risk management index because we face thin data at each extreme of the index's distribution. In addition, the index is based on an ordinal scale and thus individual values have no particular meaning beyond establishing a ranking among institutions.

[20]We thank Andrew Ellul and Vijay Yeramilli for providing RMI data.

business segments of a BHC. We transform the original *RMI* index to be decreasing in the quality of BHCs' risk management functions.

We estimate a model similar to Equation (1), including interaction terms between *WRM* (*RMI*) and *Regulation & Supervision*. Because we also include BHC-year fixed effects like in prior specifications, we are not able to identify the coefficients on *WRM* (*RMI*) individually. Table 6 presents results.

[Insert Table 6 about here]

The coefficient estimates of the interaction term *WRM* × *Regulation & Supervision* is negative and statistically significant at the 1% level. This suggests that BHCs operating subsidiaries in countries with weak regulatory environments tend to have stronger risk management. Decreasing the stringency of regulatory environment by one standard deviation and contemporaneously switching the quality of BHC risk management from "strong" to "weak" reduces the likelihood of subsidiary presence (the number of BHC subsidiaries) in a given country by 2.9 percentage points (4.8%). This empirical observation may reflect BHC choices or supervisory limitations on cross-border expansions. Either way, this result mitigates some of the concern that cross-border regulatory arbitrage will necessarily lead to excessive risk-taking. The link between subsidiary location, supervision and regulation stringency and BHC risk management quality is also robust to using *RMI* instead of *WRM*. The coefficient estimates of *RMI* × *Regulation & Supervision* are consistently negative and statistically significant at least at the 10% level.

3.4 Additional analysis

3.4.1 Instrumental variables

One may naturally be concerned about endogeneity or the possibility of reverse causality driving our observed empirical relationships. In particular, it could be that the presence of U.S. BHCs may allow these institutions to shape foreign regulatory environments. Of course, as noted by Temesvary (2016), this may not be an important concern when focusing on institutions from a single country, as these firms may only account for a fraction of local activity. Nevertheless, to address such concerns, we follow prior research in this area and conduct some additional analysis using an instrumental variables (IV) approach.

We first follow Demirgüç-Kunt and Detragiache (2002) and Houston et al. (2012) who interpret trends in regional banking policies as a source of exogenous variation in a specific country's banking regulations manifested through "regulation contagion." For each country, we use the geographic region's average of *Regulation & Supervision* as an instrument for the local regulatory environment. In calculating the average, we require at least five countries per region and exclude the country in question from the region it belongs to. We assign countries to the following regions using World Bank definitions: South Asia, Europe & Central Asia, Middle East & North Africa, East Asia & Pacific, Sub-Saharan Africa, Latin America & Caribbean and North America. While a geographic region's regulatory environment should be related to the region's constituent countries' regulatory environment through regulation contagion, it should be unrelated to U.S. BHC subsidiary locations. Table 7 presents IV estimation results.[21]

[Insert Table 7 about here]

[21]The variable *Contiguous* (i.e., an indicator variable for Canada and Mexico) drops out of the IV estimations because our instrument requires at least five countries per geographic region.

The first-stage results in Column (1) of Panel A show that the instrument's estimated coefficient is positive and highly statistically significant, which is consistent with a "regulation contagion" argument. In addition, the first-stage regression adjusted R^2 and F-statistic are above the threshold of 10 prescribed by Stock and Yogo (2005), supporting the claim that our IV estimations do not suffer from weak instrumental variable problems. The second-stage results in Columns (2) and (3) indicate that the estimated coefficients on *Regulation & Supervision* retain their signs and are statistically significant at the 1% level.

We further confirm our results with a number of alternative instruments that have been used in the literature including the percentage of years since 1776 a country has been independent (Beck et al. (2006), Karolyi and Taboada (2015)), the government ownership of banks in 1970 (La Porta et al. (2002), Karolyi and Taboada (2015)), the number of systemic crisis in the 1970s and 1980s (Laeven and Valencia (2012), Karolyi and Taboada (2015)), the level of executive constrains in 1900 (Acemoglu et al. (2001)), and ethnic fractionalization (Beck et al. (2006), Houston et al. (2012)). Our results again remain robust to such alternative IV estimations.

3.4.2 Branch locations and regulation and supervision stringency

This study focuses on the association between BHCs' foreign subsidiary locations and the strength of regulation and supervision in host countries. A relevant question is why we focus on subsidiaries exclusively and omit analysis for other types of affiliates, particularly BHC branches.

As pointed out by prior studies (Focarelli and Pozzolo (2005), Fiechter et al. (2011) and Ongena et al. (2013)), foreign branches typically fall under the supervisory jurisdiction of a BHC's head office. Thus, differences in countries' banking regulation and supervision stringency should not have a first-order effect on BHCs' foreign branch locations. To test this empirically, we first augment our sample by including BHC-year-branch country observations

and estimate several variations of Equation (1). For comparison, we also include equivalent specifications for the foreign subsidiary sample. Table 8 presents results.

[Insert Table 8 about here]

While Column (4) shows a positive link between U.S. BHCs' foreign branch locations weaker regulation and supervision abroad, this relationship is driven by Great Britain. Including a control for Great Britain in Column (5) or country fixed effects in Column (6) breaks the association between branch locations and regulatory stringency in Column (4). This observation is consistent with Goldberg and Saunders (1980), who explore and discuss the key role of Great Britain for the U.S. bank branch expansion abroad. In contrast to the fragile association between branch locations and local country banking regulations, analogical tests in Columns (1)-(3) show that BHCs' subsidiary locations are robustly correlated with host country regulatory environment.

4 BHC risk and regulatory stringency

4.1 BHC-level Data

Given that many of the globally important financial firms are U.S. institutions, understanding the risks associated with BHCs' cross-border activities is imperative. We build on our previous analysis to test whether operations in foreign markets with weaker regulatory environments is related to BHC risk and their contribution to systemic risk. To that end, we focus on a subset of our initial data, conditioning only on observations that indicate BHC presence in a particular country. We expand the panel of BHC-year-subsidiary country observations to a panel of BHC-quarter-subsidiary countries to match the quarterly frequency of BHC financial and market data. Since we face multiple instances per BHC-quarter (one

observation for every country of exposure), our base results use subsidiary count weights within a BHC-quarter to "collapse" BHC-country-quarter observations of country level variables to the BHC-quarter level. We do this for all country level variables, including our main regulatory stringency index *Regulation & Supervision*.[22]

We leverage prior research studying BHC stand-alone risk and contribution to systemic risk by using the VaR and $\Delta CoVaR$ measures from Adrian and Brunnermeier (2016).[23] VaR captures BHC stand-alone risk and is defined as a BHC's unconditional maximum market equity return loss at the 95% confidence level on a quarterly basis. $\Delta CoVaR$ captures a BHC's contribution to systemic risk and is defined as the difference between the conditional value at risk (CoVaR) of the financial system conditional on an institution being in distress (95% quantile of quarterly equity return losses) and the CoVaR conditional on the median state of the institution.[24]

We also control for other factors that can affect BHC risk outcomes in our empirical analysis. First, we include the full set of country-level controls used in Section 3 since host country institutional, macroeconomic and cultural environments may affect BHC risk. We then control for time-varying U.S. financial market volatility and BHC-level characteristics. Specifically, prior research has highlighted size, leverage and market-to-book ratio as important determinants of BHC risk and their contribution to systemic risk (Demsetz and Strahan (1997), Brunnermeier et al. (2012), Acharya et al. (2016)). Therefore, we include the natural log of BHCs' total assets, total assets divided by equity capital and the market value of equity

[22]Our main results carry through for other weighting schemes. For example, in unreported tests, we confirm our results using three alternatives: 1) weighting each country exposure within a BHC-quarter equally; 2) weighting each country exposure within a BHC-quarter proportionately to a BHCs' local claims in countries; 3) weighting each country exposure within a BHC-quarter proportionately to the size of a country's GDP in a given quarter.

[23]We thank Tobias Adrian and Markus Brunnermeier for providing VaR and $\Delta CoVaR$ data.

[24]Our results are qualitatively similar if we use the 99% instead of the 95% quantile for VaR and $\Delta CoVaR$. In addition, our results are robust to using alternative risk measures. For example, we confirmed our results using the natural log of daily BHC return variance estimated over a calendar quarter as alternative measure of BHC stand-alone risk and the marginal expected shortfall (MES) defined in Acharya et al. (2016) as alternative measure of systemic risk.

divided by the book value of equity, respectively. Berger et al. (2016) document a positive relationship between internationalization and bank risk. Thus, we also control for each BHCs' foreign assets share. Prior studies have linked non-interest income and non-deposit funding to BHC stand-alone risk and contribution to systemic risk (Demirgüç-Kunt and Huizinga (2010), Brunnermeier et al. (2012)). Thus, we control for the ratio of non-interest to interest income and the ratio of deposits to total assets. Similar to before, we lag all independent variables by one quarter. Also, to avoid any potential bias from outliers, all continuous BHC-level variables are winsorized at the 1^{th} and 99^{th} percentiles. The availability of risk and other BHC-level data reduces the number of BHCs in the cross-section from 135 to 64.

Table 9 presents summary statistics of the main variables used in this section's empirical analysis (Panel A), pairwise correlations between *Regulation & Supervision* and risk measures (Panel B), and group sorts of risk measures on regulatory and supervisory stringency (Panel C). As mentioned above, all country-level variables are weighted by subsidiary counts.

[Insert Table 9 about here]

Panel A shows that the mean and standard deviation of VaR are 5.6% and 2.2%, and the mean and standard deviation of $\Delta CoVaR$ are 1.6% and 0.7%. These summary statistics combined with the ranges of the two variables (13.5% for VaR and 3.5% for $\Delta CoVaR$) suggest substantial variation of BHC risk in our sample. Panel B shows that both measures of risk are strongly positively correlated with *Regulation & Supervision*. This is consistent with the interpretation that BHC risk and contribution to systemic risk increases when the regulatory environment for foreign subsidiaries is weaker. In Panel C, we examine the average risk of groups of BHCs formed on univariate sorts on the regulation and supervision stringency of subsidiary locations. Every quarter, we sort banks into above and below median groups based on *Regulation & Supervision*, and test for mean differences in VaR

and $\Delta CoVaR$ between the two groups. In both cases, we find that BHCs in the above median group have higher risk compared to BHCs falling in the below median group. Since by definition our regulatory variables are decreasing in regulatory stringency, such results suggest BHCs operating subsidiaries in countries with more lax regulatory environments are riskier individually and contribute more to systemic risk in the U.S. All differences are statistically significant at the 1% level.

4.2 Baseline regression analysis

We now explore the relationship between subsidiary locations, regulation and supervision stringency, and BHC risk in a multivariate panel regression setting. We estimate the following model:

$$Risk_{i,t} = \alpha_i + \beta Regulation\ \&\ Supervision_{i,t-1} + \delta X_{i,t-1} + \epsilon_{i,t} \tag{2}$$

where i indexes BHCs and t indexes quarters; $Risk_{i,t}$ is $VaR_{i,t}$ or $\Delta CoVaR_{i,t}$; and $Regulation\,\&\,Supervision_{j,t-1}$ measures the average (weighted by subsidiary counts) regulatory stringency of subsidiary locations. $X_{i,t-1}$ is a vector of control variables capturing host country environment, U.S. financial market activity and BHC-level characteristics. Finally, α_i denotes BHC level fixed effects.[25] Error terms are clustered at the BHC level. Table 10 presents estimation results.

[Insert Table 10 about here]

The results in Column (1) indicate that subsidiary operations in jurisdictions with weaker regulation and supervision are associated with an increase in BHC stand-alone risk. Fur-

[25]Since our baseline regression analysis focuses on the within-BHC variation of risk, and how it relates to the regulatory stringency of the host countries where BHCs operate subsidiaries, we do not use time period fixed effects. In unreported tests, we include different time period fixed effects (e.g., economic cycle fixed effects and regulatory data survey period fixed effects). The results are consistent with our baseline.

thermore, the results in Column (5) show that subsidiary operations in these countries are associated with increases in BHCs' contribution to U.S. systemic risk. On average, a one standard deviation increase in *Regulation & Supervision* is associated with a 11.9% increase in VaR and a 9.9% increase in $\Delta CoVaR$ relative to their mean values (5.6% and 1.6% respectively). In both cases, the results are statistically significant at the 1% level.

For each risk measure, we also show results of the individual regulation and supervision component indices. The coefficients for *Capital Regulation* and *Supervisory Power* are positive and statistically significant at the 1% level, whereas the coefficient for *Activities Restrictions* is statistically insignificant. Such results suggest that capital regulation and supervisory controls in host countries have a direct link to U.S. BHC risk and contribution to systemic risk.

4.3 BHC risk and non-traditional banking activities

We previously examined whether BHCs' subsidiary location choices in response to cross-country differences in banking regulation and supervision differ between traditional and non-traditional banking subsidiaries. Similarly, this section examines whether the subsidiary location-BHC risk link manifests through traditional vis-à-vis non-traditional subsidiaries in weakly regulated markets. To test this, we estimate Equation (2) for the sub-samples of traditional and non-traditional subsidiaries separately. Table 11 presents results.

[Insert Table 11 about here]

The results suggest that having operations in foreign markets with weaker regulatory regimes is associated with higher BHC risk regardless of whether subsidiaries are engaged in traditional or non-traditional activities. The coefficients estimates on *Regulation & Supervision* are positive and statistically significant across all specifications and are similar in

magnitude to those in Table 10.

4.4 BHC risk and risk management practices

We presented evidence that BHCs with stronger risk management functions are more likely to operate subsidiaries in countries with weaker regulatory environments. Following up on this finding, we examine whether BHC risk management practices play a role in the relationship between BHC risk and the regulatory environment faced by subsidiaries. We estimate a variant of Equation (2) where we include interaction terms between *WRM* and *Regulation & Supervision*. Table 12 presents results.

[Insert Table 12 about here]

Columns (1) and (3) indicate that the increased risk associated with operating in countries with weaker regulatory environment is largely concentrated in BHCs with weak risk management functions and internal control systems. The results are directionally similar for both stand-alone BHC risk and contribution to systemic risk. More specifically, decreasing the stringency of the regulatory environment by one standard deviation and contemporaneously switching the quality of BHC risk management from "strong" to "weak" increases *VaR* ($\Delta CoVaR$) by 6.3% (3.6%) relative to its mean. Columns (2) and (4) show that our results are also robust to using *RMI* instead of *WRM* as measure of risk management quality. In all cases, results are statistically significant at least at the 5% level.

4.5 Evidence from foreign market entries

The variation in BHC exposure to regulatory stringency through foreign subsidiaries may materialize through two channels: 1) time-series variation in host-country regulatory strin-

gency; or 2) institutions changing subsidiary locations. As the focal area of this study is regulatory arbitrage and its risk implications, the latter channel is particularly relevant. As a next step, we examine within-BHC risk variation due to foreign market entries as a function of host market regulatory stringency. For estimation purposes, we define *Post-entry* indicators that equal one for quarters following the first report of subsidiary presence in a country and zero otherwise. We use several alternative window lengths around entry events: four, eight, twelve and sixteen quarters. For every event, we average data into pre-entry and post-entry observations. We then interact *Post-entry* indicators with country-level variables for the country of entry. We are particularly interested in *Post-entry*$\times$*Regulation & Supervision* terms and their association with BHC risk. Table 13 presents results.

[Insert Table 13 about here]

Here we find that BHC risk and their contribution to systemic risk increase upon establishing subsidiaries in countries with weaker regulatory environments. In particular, we find that VaR and $\Delta CoVaR$ increase in the four quarters following market entry as the stringency of banking regulation in host countries decreases. The increase in BHC-level risk and contribution to systemic risk is persistent, with a statistically significant relationship still observable at eight, twelve and sixteen quarters following a foreign market entry. Such results are consistent with the interpretation that subsidiary locations are directly relevant for BHC risk and that their choice to operate in countries with more lax regulatory environments has both short-term and long-term risk implications.

5 Conclusion

Many have expressed concerns that the lack of a harmonized regulatory framework across major jurisdictions and markets is bound to lead to competitive distortions among financial institutions and encourage regulatory arbitrage. Others have emphasized that actions on such concerns should also be balanced with the benefits of flexibility in policy design tailored to individual country banking sectors. With such issues in mind, this study investigates whether cross-country differences in bank regulation and supervision play a role in the choice of subsidiary locations for U.S. bank holding companies. Our empirical findings strongly support the hypothesis that they do, suggesting that a form of regulatory arbitrage is taking place whereby U.S. financial institutions tend to have both traditional and non-traditional subsidiary operations in locations with lower regulatory burden. Importantly, these subsidiary location choices have significant risk-taking implications. We find that BHCs with operations in countries with lax regulatory environment face increased firm-level risk and positively contribute to systemic risk. Overall, our results are consistent with a "race to the bottom" explanation of motives behind regulatory arbitrage with potentially adverse consequences. Additionally, our analysis highlights the important role risk management functions of financial institutions play in both location choices and risk outcomes. While BHCs with weak internal controls are less likely to have subsidiary operations in countries with weak regulatory environment, such institutions are the main driver of the link between risk and regulatory stringency of subsidiary locations.

Our findings have potentially important policy implications at the national and international levels. In an increasingly interconnected global financial world, the lack of a level playing could create opportunities for arbitrage that erode stricter domestic bank regulations and contribute to a build-up of additional leverage and risks in the system. The recent financial crisis demonstrated that enhanced coordination in international supervision and

regulation in areas where systemic risk and regulatory arbitrage concerns are inadequately addressed is essential.

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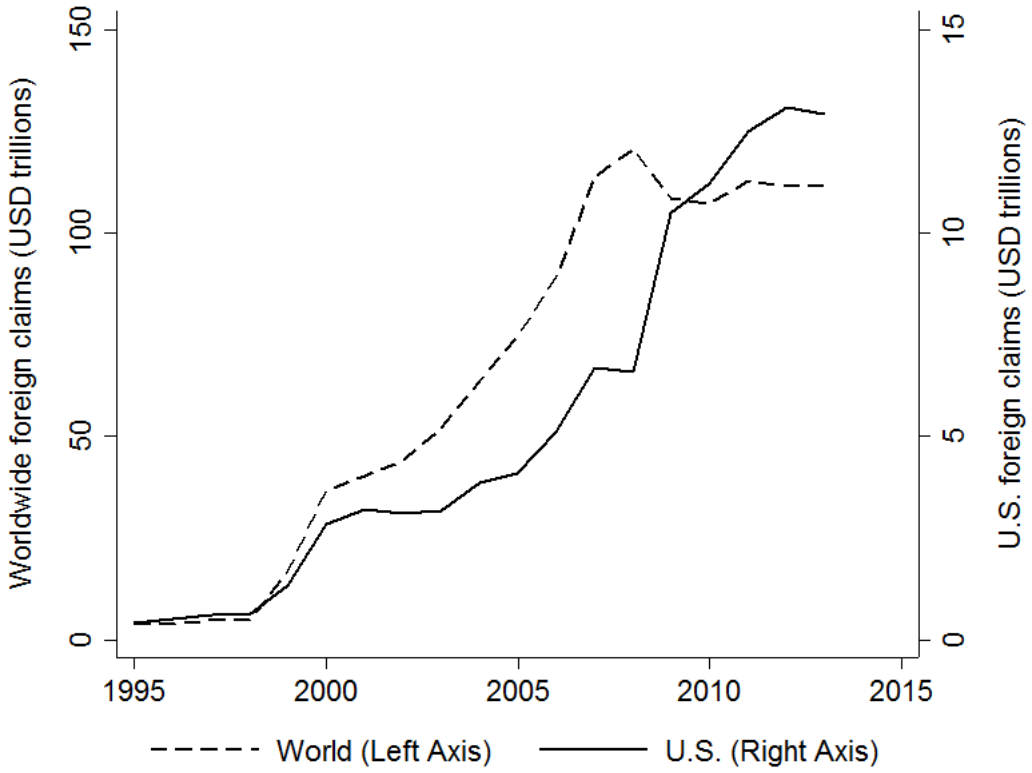

Figure 1: Worldwide and U.S. Bank Foreign Claims: 1995-2013
This figure shows worldwide and U.S. foreign claims (USD trillions) during the period [1995-2013]. Foreign claims are defined as the sum of cross-border and local claims. Cross-border claims are direct claims of domestic banks, or their foreign affiliates in third countries, on foreign entities and individuals. Local claims are claims of domestic banks' foreign affiliates on local entities and individuals. The data are from the BIS consolidated banking statistics on a immediate counterparty basis.

Table 1: Variable Definitions and Sources

Variable	Definition	Source
Activities Restrictions	A measure of the stringency of regulation regarding banks' involvement in securities, insurance and real estate activities. The index ranges from three to twelve and is transformed so that higher values indicate weaker stringency.	Barth et al. (2013)
Banking Concentration	The degree of banking industry's asset concentration in the five largest banks of a country.	Barth et al. (2013)
Banking Sector Profitability	A country's banking sector return on equity after taxes.	Global Financial Development Database
Bilateral Trade	The maximum of bilateral imports and exports between the U.S. and a given country. Bilateral imports (exports) are calculated as the total value of imports (exports) by a given country from (to) the U.S. as a proportion of total imports by that country from (to) the rest of the world.	IMF Direction of Trade Statistics (DOTS)
Borrower & Creditor Rights	An index that measures the degree to which collateral and bankruptcy laws protect the legal rights of borrowers and lenders. The index ranges from zero to twelve. A higher score indicates stronger borrower and creditor rights.	World Bank's Doing Business 2015 survey
Capital Regulation	A measure of the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. The index ranges from zero to ten and is transformed so that higher values indicate weaker stringency.	Barth et al. (2013)
Credit-to-GDP Ratio	A country's private credit by deposit money banks and other financial institutions as share of GDP.	Global Financial Development Database
Common Language	An indicator that equals one if a country's official language is English, and zero otherwise.	Mayer and Zignago (2011)
Contiguous	An indicator that equals one for countries that share a border with the U.S., and zero otherwise.	Mayer and Zignago (2011)
Country Governance	The simple average of six governance indicators: control of corruption, regulatory quality, rule of law, voice and accountability, government effectiveness, and political stability.	Kaufman et al. (2009)
Δ CoVaR	A measure of a BHC's contribution to systemic risk, defined as the difference between the conditional value at risk (CoVar) of the financial system conditional on an institution being in distress (95% quantile of quarterly equity return losses) and the CoVaR conditional on the median state of the institution.	Adrian and Brunnermeier (2016)

Variables	Definition	Source
Foreign Assets (%)	Total selected foreign assets (BHSR408) divided by total BHC assets (BHCK2170).	BHCPR and FR Y-9C
GDPG	A country's real GDP growth.	World Bank Development Indicators
Credit-to-GDP Ratio	Private credit by deposit money banks and other financial institutions as share of GDP.	Global Financial Development Database (GFBD)
Leverage	Total BHC assets (BHCK2170) divided by total BHC equity capital (BHCK3210).	FR Y-9C
Ln(Assets)	The natural log of BHC total assets (BHCK2170).	FR Y-9C
Ln(Dist)	The natural log of the distance in kilometers between New York and the most populated city in other countries.	Mayer and Zignago (2011).
Ln(GDP)	The natural log of a country's GDP in constant 2005 US$.	World Bank Development Indicators
Ln(GDPPC)	The natural log of a country's GDP per capita in constant 2005 US$.	World Bank Development Indicators
Ln(NSub)	The natural log of one plus the total number foreign subsidiaries a BHC reports in a given country during a year.	FR Y-10
Market-to-Book	Market value of equity divided by total BHC book value of equity (BHCK3210).	FR Y-9C and CRSP
Market Volatility	The quarterly average of the standard deviation of U.S. stock returns.	CRSP
Offshore Financial Center	An indicator variable that equals one if a country is classified as an offshore financial center by the Financial Stability Board, and zero otherwise.	International Monetary Fund (2000)
PresSub	An indicator that equals one if a BHC reports having foreign subsidiaries in a given country during a year, and zero otherwise.	FR Y-10
Regulation & Supervision	A measure of a country's overall banking regulation and supervision defined as the first principal component of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*.	Source: Barth et al. (2013)
Regional Regulation & Supervision	The average of *Regulation & Supervision* for the countries in a geographic region to which a country observation belongs to. In calculating the average, we require at least five countries per region and exclude the country in question from the region it belongs to. We assign countries to the following regions using World Banks' definitions: South Asia, Europe & Central Asia, Middle East & North Africa, East Asia & Pacific, Sub-Saharan Africa, Latin America & Caribbean and North America.	

Variables	Definition	Source
RMI	The first principal component of seven measures of BHCs' risk management quality: (1) an indicator that identifies BHCs with a designated Chief Risk Officer (CRO); (2) an indicator that identifies BHCs where the CRO is an executive officer; (3) an indicator that identifies BHCs where the CRO is among the five highest paid executives; (4) CRO centrality defined as the ratio of CRO's total compensation to the CEO's total compensation; (5) an indicator that identifies BHCs where at least one of the directors serving on the board's risk committee has banking experience; (6) an indicator that identifies BHCs where the board risk committee meets more frequently during a year than the board risk committee of the average BHC; (7) an indicator that identifies if a BHCs' key management-level risk committee reports directly to the board of directors. The original index is transformed so that it is decreasing in the quality of BHCs' risk management functions.	Ellul and Yerramilli (2013)
Supervisory Power	Measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions. The index ranges from zero to fourteen and is transformed so that higher values indicate weaker stringency.	Source: Barth et al. (2013)
VaR	The unconditional maximum market equity loss at the 95% confidence level on a quarterly basis.	Adrian and Brunnermeier (2016)
WRM	An indicator measuring the quality of a BHC's risk management function. *WRM* takes a value of one if a bank holding company has a Federal Reserve System risk management rating (ranging from one to five) that is greater than or equal to three, and zero otherwise.	Confidential safety and soundness supervisory reports

Table 2: Country Breakdown of U.S. BHC International Subsidiary Presence

This table sorts distinct U.S. BHC subsidiaries into countries where they operated (top 30 countries by representation) during the period [1995-2013]. The table also shows the means of four banking regulation and supervision measures. *Regulation & Supervision* captures overall regulatory stringency and is defined as the first principal component of three indices: *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. *Activities Restrictions* measures the stringency of regulation regarding banks' involvement in securities, insurance and real estate activities. *Capital Regulation* measures the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. *Supervisory Power* measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions.

Country	Number of Subsidiaries	Regulation & Supervision	Activities Restrictions	Capital Regulation	Supervisory Power
United Kingdom	1,983	4.501	8.427	2.767	6.282
Luxembourg	849	3.082	5.703	3.000	4.037
Australia	763	3.111	5.321	2.411	5.000
Canada	587	4.997	6.957	5.468	7.813
Netherlands	572	4.147	7.388	2.776	6.164
Brazil	412	3.907	8.000	5.000	3.000
Germany	409	4.726	7.869	3.605	7.131
Hong Kong	323	5.120	9.000	4.000	7.000
Mauritius	198	1.369	2.000	3.000	2.000
Singapore	190	2.107	5.000	2.000	2.000
France	186	2.893	4.000	2.000	6.000
Argentina	178	3.387	5.261	2.475	6.025
Chile	133	1.567	2.000	4.000	2.000
India	123	2.385	3.000	1.000	6.000
Spain	118	3.877	6.557	1.557	7.000
Korea, South	115	3.598	4.195	2.195	8.203
Poland	97	2.733	5.217	3.643	2.852
Belgium	95	3.295	6.212	2.485	4.606
Italy	85	3.381	4.605	4.395	5.369
Malaysia	75	4.374	9.000	3.000	5.000
Switzerland	75	2.317	4.000	5.724	1.224
New Zealand	62	5.286	7.000	8.000	7.000
Russia	41	2.950	3.455	3.273	5.909
Colombia	41	4.525	6.447	3.000	8.447
Philippines	40	3.553	7.000	2.000	5.000
Thailand	38	1.598	4.000	1.000	2.000
Uruguay	36	1.841	3.456	2.456	2.456
South Africa	32	5.207	6.000	5.000	10.000
Venezuela	32	2.705	4.020	5.529	2.755
Cyprus	30	2.852	4.724	1.579	5.330
Others	276	2.882	4.411	3.124	4.685
Mean	–	3.105	4.911	3.193	4.880
Total	8,194	–	–	–	–

Table 3: Summary Statistics and Variable Correlations

This table presents summary statistics (Panel A) and pairwise correlations (Panel B) of the main variables in our analysis. The sample includes a panel of 44,377 BHC-year-subsidiary country observations during the period [1995-2013] of 135 U.S. BHCs. Detailed definitions of all variables are presented in Table 1.

Panel A: Summary Statistics

	Mean	SD	Min	Max	Observations
PresSub	0.069	0.253	0	1	44,377
Ln(NSub)	0.099	0.434	0	5.468	44,377
Regulation & Supervision	3.107	1.147	0	6.027	44,377
Activities Restrictions	4.585	2.065	0	9	44,377
Capital Regulation	3.434	1.804	0	8	44,377
Supervisory Power	5.084	2.420	0	12	44,377
Ln(GDP)	24.394	2.234	19.249	28.918	44,377
GDPG	0.007	0.129	−0.895	0.383	44,377
Ln(GDPPC)	8.428	1.562	4.709	11.477	44,377
Bilateral Trade	0.566	0.796	0	5.566	44,377
Country Governance	0.224	0.824	−1.544	1.910	44,377
Offshore Financial Center	0.119	0.324	0	1	44,377
Borrower & Creditor Rights	5.553	2.415	0	12	44,377
Credit-to-GDP	0.586	0.511	0.010	2.846	44,377
Banking Concetration	0.695	0.180	0.120	1	44,377
Banking Profitability	0.121	0.129	−0.544	0.595	44,377
Contiguous	0.025	0.156	0	1	44,377
Common Language	0.266	0.442	0	1	44,377
Ln(Dist)	8.868	0.596	6.307	9.692	44,377

Panel B: Correlations

	PresSub	Ln(NSub)	Regulation and Supervision	Activities Restrictions	Capital Regulation	Supervisory Power
PresSub	1.000					
Ln(NSub)	0.836***	1.000				
	0.000					
Regulation and Supervision	0.119***	0.100***	1.000			
	0.000	0.000				
Activities Restrictions	0.155***	0.145***	0.729***	1.000		
	0.000	0.000	0.000			
Capital Regulation	0.037***	0.028***	0.554***	0.166***	1.000	
	0.000	0.000	0.000	0.000		
Supervisory Power	0.054***	0.042***	0.742***	0.264***	0.146***	1.00
	0.000	0.000	0.000	0.000	0.000	

Table 4: U.S. BHC Subsidiary Locations and Foreign Regulation and Supervision Stringency

This table reports coefficient estimates from panel regressions of U.S. BHC subsidiary locations on foreign banking regulation and supervision stringency measures and several control variables. The sample is a panel of 44,377 BHC-year-subsidiary country observations during the period [1995-2013] of 133 U.S BHCs. *PresSub* is an indicator that equals one if a BHC reports having foreign subsidiaries in a given country during a year, and zero otherwise. *Ln(NSub)* is the natural log of one plus the the total number of subsidiaries a BHC has in a given country during a year. *Regulation & Supervision* measures the overall stringency of a country's regulatory and supervisory environment. *Regulation & Supervision* is defined as the first principal component of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. *Activities Restrictions* measures the stringency of regulation regarding banks' involvement in securities, insurance and real state activities. *Capital Regulation* measures the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. *Supervisory Power* measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions. Detailed definitions of all variables are presented in Table 1. We include BHC×year fixed effects and use robust standard errors clustered at the BHC×country level in all specifications. P-values are reported in parentheses and ***, **, * denote significance at the 1, 5 and 10 percent significance level, respectively.

	PresSub				Ln(NSub)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regulation & Supervision	0.011***				0.017***			
	(0.000)				(0.000)			
Activities Restrictions		0.006***				0.011***		
		(0.000)				(0.000)		
Capital Regulation			0.003***				0.003***	
			(0.005)				(0.000)	
Supervisory Power				0.003***				0.004***
				(0.000)				(0.000)
Ln(GDP)	0.022***	0.022***	0.022***	0.022***	0.032***	0.031***	0.032***	0.032***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDPG	−0.006	−0.011	−0.010	−0.008	−0.012	−0.018	−0.019	−0.014
	(0.508)	(0.262)	(0.280)	(0.409)	(0.435)	(0.213)	(0.216)	(0.337)
Ln(GDPPC)	−0.008**	−0.007**	−0.006**	−0.007**	−0.013***	−0.012**	−0.011***	−0.012**
	(0.011)	(0.019)	(0.045)	(0.016)	(0.007)	(0.012)	(0.000)	(0.011)
Bilateral Trade	0.010**	0.010***	0.007*	0.009**	0.010	0.011*	0.007**	0.009
	(0.013)	(0.008)	(0.055)	(0.021)	(0.141)	(0.090)	(0.031)	(0.190)
Country Governance	0.028***	0.025***	0.027***	0.030***	0.050***	0.046***	0.049***	0.053***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Offshore Financial Center	0.032***	0.031***	0.023**	0.029***	0.036**	0.035**	0.022**	0.030*
	(0.001)	(0.001)	(0.015)	(0.003)	(0.031)	(0.030)	(0.011)	(0.067)
Borrower & Creditor Rights	−0.005***	−0.005***	−0.004***	−0.004***	−0.006***	−0.007***	−0.006***	−0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.007)
Credit-to-GDP	0.039***	0.039***	0.043***	0.040***	0.076***	0.075***	0.081***	0.078***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Banking Concentration	−0.053***	−0.047***	−0.063***	−0.055***	−0.119***	−0.107***	−0.130***	−0.120***
	(0.002)	(0.006)	(0.000)	(0.002)	(0.001)	(0.002)	(0.000)	(0.000)
Banking Profitability	−0.010	−0.009	−0.007	−0.014	0.010	0.011	0.012	0.002
	(0.477)	(0.519)	(0.630)	(0.284)	(0.630)	(0.566)	(0.405)	(0.927)
Contiguous	0.117***	0.126***	0.126***	0.127***	0.113	0.127	0.132***	0.129
	(0.006)	(0.003)	(0.003)	(0.002)	(0.167)	(0.119)	(0.000)	(0.111)
Common Language	0.054***	0.054***	0.053***	0.050***	0.113***	0.114***	0.110***	0.107***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Dist)	0.003	0.003	0.001	0.002	−0.010	−0.008	−0.012***	−0.011
	(0.718)	(0.641)	(0.934)	(0.796)	(0.501)	(0.566)	(0.008)	(0.454)
Observations	44,377	44,377	44,377	44,377	44,377	44,377	44377	44,377
Adj. R2	.30	.30	.30	.30	.29	.29	.29	.29

Table 5: U.S. BHC Subsidiary Locations and Non-Traditional Banking Activities

This table reports coefficient estimates from panel regressions of U.S. BHC subsidiary locations on foreign banking regulation and supervision stringency measures and several control variables separately for traditional and non-traditional subsidiaries. Traditional subsidiaries are entities that engage in commercial banking activities and are identified by NAIC code 522. Non-traditional subsidiaries are entities that engage in securities, insurance, asset management or real estate activities. These entities are identified by NAIC codes 523, 524, 525, 531 and 551. The sample is a panel of 44,377 BHC-year-subsidiary country observations during the period [1995-2013] of 133 U.S BHCs. *PresSub* is an indicator that equals one if a BHC reports having foreign subsidiaries in a given country during a year, and zero otherwise. *Ln(NSub)* is the natural log of one plus the total number of subsidiaries a BHC has in a given country during a year. *Regulation & Supervision* measures the overall stringency of a country's regulatory and supervisory environment. *Regulation & Supervision* is defined as the first principal component of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. *Activities Restrictions* measures the stringency of regulation regarding banks' involvement in securities, insurance and real state activities. *Capital Regulation* measures the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. *Supervisory Power* measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions. Detailed definitions of all variables are presented in Table 1. We include BHC×year fixed effects and use robust standard errors clustered at the BHC×country level in all specifications. P-values are reported in parentheses and ***, **, * denote significance at the 1, 5 and 10 percent significance level, respectively.

	Traditional		Non-Traditional	
	PresSub	Ln(NSub)	PresSub	Ln(NSub)
	(1)	(2)	(3)	(4)
Regulation & Supervision	0.007***	0.007***	0.007***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(GDP)	0.013***	0.014***	0.017***	0.025***
	(0.000)	(0.000)	(0.000)	(0.000)
GDPG	0.005	0.010	−0.005	−0.016
	(0.550)	(0.214)	(0.518)	(0.216)
Ln(GDPPC)	−0.002	−0.004	−0.008***	−0.012***
	(0.295)	(0.115)	(0.001)	(0.005)
Bilateral Trade	0.007**	0.007	0.008**	0.005
	(0.028)	(0.101)	(0.025)	(0.446)
Country Governance	0.014***	0.017***	0.025***	0.041***
	(0.004)	(0.001)	(0.000)	(0.000)
Offshore Financial Center	0.016**	0.001	0.020**	0.029**
	(0.035)	(0.913)	(0.021)	(0.049)
Borrower & Creditor Rights	−0.002**	−0.001	−0.004***	−0.005***
	(0.032)	(0.417)	(0.000)	(0.005)
Credit-to-GDP	0.008	0.018**	0.044***	0.075***
	(0.169)	(0.023)	(0.000)	(0.000)
Banking Concentration	−0.019	−0.023	−0.056***	−0.120***
	(0.148)	(0.121)	(0.000)	(0.000)
Banking Profitability	−0.006	−0.002	0.008	0.022
	(0.571)	(0.850)	(0.511)	(0.227)
Contiguous	0.112***	0.108**	0.063	0.031
	(0.003)	(0.048)	(0.121)	(0.664)
Common Language	0.028***	0.044***	0.049***	0.101***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Dist)	0.003	−0.001	−0.003	−0.015
	(0.597)	(0.915)	(0.679)	(0.232)
Observations	44,377	44,377	44,377	44,377
Adj. R2	.22	.23	.27	.25

Table 6: U.S. BHC Subsidiary Locations and BHC Risk Management Quality

This table reports coefficient estimates from panel regressions of U.S. BHC subsidiary locations on foreign banking regulation and supervision stringency measures, interactions with BHC risk management quality and several control variables. The sample is a panel of 44,377 BHC-year-subsidiary country observations during the period [1995-2013] of 133 U.S BHCs. *PresSub* is an indicator that equals one if a BHC reports having foreign subsidiaries in a given country during a year, and zero otherwise. *Ln(NSub)* is the natural log of one plus the total number of subsidiaries a BHC has in a given country during a year. *Regulation & Supervision* measures the overall stringency of a country's regulatory and supervisory environment. *Regulation & Supervision* is defined as the first principal component of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. *Activities Restrictions* measures the stringency of regulation regarding banks' involvement in securities, insurance and real state activities. *Capital Regulation* measures the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. *Supervisory Power* measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions. *WRM* is an indicator variable for weak risk management practices at a given BHC during a year. *WRM* equals one if a bank holding company has a Federal Reserve System risk management rating (ranging from one to five) that is greater than or equal to three, and zero otherwise. *RMI* measures the organizational strength and independence of the risk management function at a given BHC during a year (Ellul and Yerramilli (2013)). Detailed definitions of all variables are presented in Table 1. We include BHC×year fixed effects and use robust standard errors clustered at the BHC×country level in all specifications. P-values are reported in parentheses and ***, **, * denote significance at the 1, 5 and 10 percent significance level, respectively.

	PresSub		Ln(NSub)	
	(1)	(2)	(3)	(4)
Regulation & Supervision	0.013***	0.019***	0.021***	0.043***
	(0.000)	(0.000)	(0.000)	(0.000)
WRM × Regulation & Supervision	−0.025***		−0.042***	
	(0.000)		(0.000)	
RMI × Regulation & Supervision		−0.009*		−0.030***
		(0.051)		(0.000)
Ln(GDP)	0.023***	0.030***	0.032***	0.044***
	(0.000)	(0.000)	(0.000)	(0.000)
GDPG	−0.002	−0.021	−0.004	−0.028
	(0.881)	(0.137)	(0.815)	(0.127)
Ln(GDPPC)	−0.008***	−0.011***	−0.014***	−0.017***
	(0.007)	(0.000)	(0.006)	(0.000)
Bilateral Trade	0.010**	0.014***	0.010	0.016***
	(0.015)	(0.000)	(0.159)	(0.001)
Country Governance	0.028***	0.036***	0.051***	0.064***
	(0.000)	(0.000)	(0.000)	(0.000)
Offshore Financial Center	0.035***	0.047***	0.040**	0.056***
	(0.001)	(0.000)	(0.019)	(0.000)
Borrower & Creditor Rights	−0.004***	−0.005***	−0.006***	−0.007***
	(0.000)	(0.000)	(0.006)	(0.000)
Credit-to-GDP	0.038***	0.044***	0.073***	0.078***
	(0.000)	(0.000)	(0.000)	(0.000)
Banking Concentration	−0.051***	−0.085***	−0.116***	−0.170***
	(0.004)	(0.000)	(0.001)	(0.000)
Banking Profitability	−0.011	−0.019	0.007	0.003
	(0.409)	(0.172)	(0.747)	(0.883)
Contiguous	0.116***	0.185***	0.106	0.151***
	(0.009)	(0.000)	(0.221)	(0.000)
Common Language	0.054***	0.074***	0.113***	0.158***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Dist)	0.002	0.005	−0.010	−0.012
	(0.774)	(0.333)	(0.491)	(0.147)
Observations	38,406	23,685	38,406	23,685
Adj. R2	.30	.33	.29	.33

Table 7: Instrumental Variable Estimations

This table reports coefficient estimates from instrumental variable panel regressions of U.S. BHC subsidiary locations on foreign banking regulation and supervision stringency measures and several control variables. The sample is a panel of 36,886 BHC-year-subsidiary country observations during the period [1995-2013] of 135 U.S BHCs. *PresSub* is an indicator that equals one if a BHC reports having foreign subsidiaries in a given country during a year, and zero otherwise. *Ln(NSub)* is the natural log of one plus the total number of subsidiaries a BHC has in a given country during a year. *Regulation & Supervision* measures the overall stringency of a country's regulatory and supervisory environment and is based on three distinct indices presented in Barth et al. (2013): *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. We use *Regional Regulation & Supervision* as an instrument for *Regulation & Supervision*. *Regional Regulation & Supervision* is the average of *Regulation & Supervision* for the countries in a geographic region to which a country observation belongs to. In calculating the average, we require at least five countries per region and exclude the country in question from the region it belongs to. We assign countries to the following regions using World Banks' definitions: South Asia, Europe & Central Asia, Middle East & North Africa, East Asia & Pacific, Sub-Saharan Africa, Latin America & Caribbean and North America. Detailed definitions of all variables are presented in Table 1. We include BHC×year fixed effects and use robust standard errors clustered at the BHC×country level in all specifications. P-values are reported in parentheses and ***, **, * denote significance at the 1, 5 and 10 percent significance level, respectively.

	IV 1-stage	IV 2-stage	
	Regulation & Supervision	Presence	Ln(Nsub)
	(1)	(2)	(3)
Regional Regulation & Supervision	0.298***		
	(0.000)		
Regulation & Supervision		0.074***	0.124***
		(0.000)	(0.000)
Ln(GDP)	0.001	0.023***	0.033***
	(0.769)	(0.000)	(0.000)
GDPG	−0.068*	0.013	0.035**
	(0.054)	(0.192)	(0.022)
Ln(GDPPC)	0.090***	−0.015***	−0.027***
	(0.000)	(0.000)	(0.000)
Bilateral Trade	−0.075***	0.019***	0.028***
	(0.000)	(0.000)	(0.000)
Country Governance	0.007	0.025***	0.047***
	(0.613)	(0.000)	(0.000)
Offshore Financial Center	−0.607***	0.071***	0.102***
	(0.000)	(0.000)	(0.000)
Borrower & Creditor Rights	0.036***	−0.007***	−0.011***
	(0.000)	(0.000)	(0.000)
Credit-to-GDP	0.171***	0.032***	0.062***
	(0.000)	(0.000)	(0.000)
Banking Concentration	−0.439***	−0.026	−0.066**
	(0.000)	(0.126)	(0.033)
Banking Profitability	−0.394***	0.000	0.018
	(0.000)	(0.986)	(0.352)
Common Language	−0.320***	0.086***	0.167***
	(0.000)	(0.000)	(0.000)
Ln(Dist)	−0.014	0.014*	0.012
	(0.417)	(0.069)	(0.425)
Observations	36,886	36,886	36,886
Adj. R2	.15	.28	.27

Table 8: U.S. BHC Branch Locations and Foreign Regulation and Supervision Stringency

This table reports coefficient estimates from panel regressions of U.S. BHC subsidiary and branch locations on foreign banking regulation and supervision stringency measures and several control variables. The sample is a panel of 56,900 BHC-year-subsidiary or branch country observations during the period [1995-2013] of 133 U.S. BHCs. *PresSub* is an indicator that equals one if a BHC reports having foreign subsidiary in a given country during a year, and zero otherwise. *PresBranch* is an indicator that equals one if a BHC reports having foreign branch in a given country during a year, and zero otherwise. *Regulation & Supervision* measures the overall stringency of a country's regulatory and supervisory environment. *Regulation & Supervision* is defined as the first principal component of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. *Activities Restrictions* measures the stringency of regulation regarding banks' involvement in securities, insurance and real state activities. *Capital Regulation* measures the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. *Supervisory Power* measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions. *GBR* is a country indicator that equals one for the United Kingdom, and zero otherwise. Detailed definitions of all variables are presented in Table 1. We include BHC×year fixed effects and use robust standard errors clustered at the BHC×country level in all specifications. In columns (3), (4), (7) and (8) we also include country fixed effects. P-values are reported in parentheses and ***, **, * denote significance at the 1, 5 and 10 percent significance level, respectively.

	PresSub			PresBranch		
	(1)	(2)	(3)	(4)	(5)	(6)
Regulation & Supervision	0.011***	0.008***	0.006**	0.001***	0.000	−0.000
	(0.000)	(0.000)	(0.024)	(0.006)	(0.337)	(0.670)
Ln(GDP)	0.022***	0.020***	0.063*	0.001***	0.000	−0.000
	(0.000)	(0.000)	(0.070)	(0.001)	(0.148)	(0.970)
GDPG	−0.006	−0.007	0.008	0.002	0.002	0.001
	(0.508)	(0.466)	(0.297)	(0.106)	(0.130)	(0.504)
Ln(GDPPC)	−0.008**	−0.007**	−0.044	−0.001**	−0.000	0.001
	(0.011)	(0.022)	(0.185)	(0.025)	(0.276)	(0.798)
Bilateral Trade	0.010**	0.014***	0.001	−0.000	0.001	0.001
	(0.013)	(0.000)	(0.861)	(0.601)	(0.155)	(0.758)
Country Governance	0.028***	0.031***	0.018	0.000	0.000	−0.002
	(0.000)	(0.000)	(0.156)	(0.947)	(0.539)	(0.149)
Offshore Financial Center	0.032***	0.041***	0.204	0.001	0.006	0.021
	(0.001)	(0.000)	(0.255)	(0.676)	(0.274)	(0.489)
Borrower & Creditor Rights	−0.005***	−0.006***	−0.004**	0.001**	0.000	0.000
	(0.000)	(0.000)	(0.012)	(0.013)	(0.128)	(0.966)
Credit-to-GDP	0.039***	0.028***	0.032*	0.004**	0.001	−0.004
	(0.000)	(0.001)	(0.059)	(0.018)	(0.348)	(0.258)
Banking Concentration	−0.053***	−0.044**	0.007	−0.005	−0.001	−0.006
	(0.002)	(0.010)	(0.779)	(0.125)	(0.679)	(0.319)
Banking Profitability	−0.010	−0.018	0.002	−0.001	−0.001	−0.002
	(0.477)	(0.172)	(0.874)	(0.703)	(0.651)	(0.367)
Contiguous	0.117***	0.173***		0.083***	0.104***	
	(0.006)	(0.000)		(0.007)	(0.000)	
Common Language	0.054***	0.033***		0.008**	0.001	
	(0.000)	(0.000)		(0.010)	(0.664)	
Ln(Dist)	0.003	0.014**		−0.003	0.002	
	(0.718)	(0.029)		(0.175)	(0.165)	
GBR		0.183***			0.068***	
		(0.000)			(0.008)	
Observations	44,377	44,377	44,841	56,384	56,384	56,900
Adj. R2	.30	.30	.33	.07	.08	.08
Country FE	No	No	Yes	No	No	Yes

Table 9: Summary Statistics, Variable Correlations and Univariate Sorts

This table presents summary statistics (Panel A), pairwise correlations (Panel B), and univariate sorts of VaR and $\Delta CoVaR$ into above/below median groups based on *Regulation & Supervision* (Panel C). VaR and $\Delta CoVaR$ are risk measures defined in Adrian and Brunnermeier (2016). The sample is a panel of 1,481 BHC-quarter observations during the period [1995Q1-2013Q4] of 64 U.S. BHCs. Subsidiary count weights within a BHC-quarter are used to "collapse" BHC-quarter-subsidiary country observations to the BHC-quarter level. Detailed definitions of all variables are presented in Table 1.

Panel A: Summary Statistics

Country	Mean	SD	Min	Max	Observations
VaR	5.644	2.232	2.560	16.013	1,502
Δ CoVaR	1.577	0.650	0.365	3.854	1,502
Regulation & Supervision	4.243	0.874	1.572	6.027	1,502
Activities Restrictions	6.931	1.233	2.200	9	1,502
Capital Regulation	3.793	1.122	1	6.667	1,502
Supervisory Power	6.304	1.783	2.800	10	1,502
Ln(GDP)	27.227	0.984	23.623	28.645	1,502
GDPG	0.038	0.071	−0.332	0.214	1,502
Ln(GDPPC)	10.270	0.540	6.743	11.477	1,502
Bilateral Trade	0.328	0.266	0.014	1.043	1,502
Country Governance	1.385	0.313	−0.366	1.746	1,502
Offshore Financial Center	0.175	0.303	0	1	1,502
Borrower & Creditor Rights	7.569	1.564	3	10	1,502
Credit-to-GDP	1.243	0.339	0.297	1.978	1,502
Banking Concetration	0.617	0.161	0.120	0.889	1,502
Banking Profitability	0.103	0.074	−0.266	0.364	1,502
Contiguous	0.290	0.353	0	1	1,502
Common Language	0.734	0.291	0	1	1,502
Ln(Dist)	8.146	0.946	6.307	9.681	1,502
Market Vol	0.011	0.006	0.005	0.042	1,502
Size	18.307	1.616	12.558	21.594	1,502
Leverage	11.544	3.704	3.468	44.408	1,502
Foreign Assets (%)	0.073	0.089	0	0.349	1,502
Income Mix	1.452	3.289	−0.006	17.676	1,502
Market-to-Book	1.984	1.076	0.314	5.258	1,502
Deposits (%)	0.576	0.197	0.015	0.891	1,502
WRM	0.032	0.175	0	1	1,481
RMI	0.687	0.293	0.170	1.28	1,312

Panel B: Pairwise Correlations

	Regulation and Supervision	VaR	Δ CoVaR
Regulation & Supervision	1.000		
VaR	0.080***	1.000	
	0.000		
Δ CoVaR	0.099***	0.656***	1.000
	0.000	0.000	

Panel C: Univariate Sorts

	Stringent	Lax	Stringent-Lax	P-value
VaR	5.298	5.967	0.668***	0.000
Δ CoVaR	1.457	1.691	0.234***	0.000

Table 10: U.S. BHC Risk and Foreign Regulation and Supervision Stringency

This table reports coefficient estimates from panel regressions of U.S BHC risk on foreign banking regulation and supervision stringency and several control variables. The sample is a panel of 1,481 BHC-quarter observations during the period [1995Q1-2013Q4] of 64 U.S. BHCs. *VaR* is a BHC's unconditional maximum market equity loss at the 95% confidence level on a quarterly basis. $\Delta CoVaR$ measures a BHC's contribution to systemic risk and is defined as the difference between the conditional value at risk (CoVar) of the financial system conditional on an institution being in distress (95% quantile of quarterly equity return losses) and the CoVaR conditional on the median state of the institution. *Regulation & Supervision*, *Activities Restrictions*, *Capital Regulation* and *Supervisory Power* capture the stringency of a country's regulatory and supervisory environment. *Regulation & Supervision* is a measure of overall banking regulation and supervision defined as the first principal component of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. *Activities Restrictions* measures the stringency of regulation regarding banks' involvement in securities, insurance and real state activities. *Capital Regulation* measures the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. *Supervisory Power* measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions. Subsidiary count weights within a BHC-quarter are used to "collapse" BHC-quarter-subsidiary country observations to the BHC-quarter level. Detailed definitions of all variables are presented in Table 1. We include BHC fixed effects and use robust standard errors clustered at the BHC level in all specifications. P-values are reported in parentheses and ***, **, * denote significance at the 1, 5 and 10 percent significance level respectively.

	VaR				Δ CoVaR			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regulation & Supervision	0.768***				0.178***			
	(0.000)				(0.000)			
Activities Restrictions		0.057				0.015		
		(0.712)				(0.635)		
Capital Regulation			0.581***				0.129***	
			(0.000)				(0.000)	
Supervisory Power				0.303***				0.070***
				(0.000)				(0.000)
Ln(GDP)	−1.011**	−0.359	−0.401	−0.787**	−0.246***	−0.098	−0.104	−0.194***
	(0.010)	(0.371)	(0.234)	(0.026)	(0.003)	(0.241)	(0.137)	(0.009)
GDPG	2.341**	1.715*	1.217	2.517***	0.507**	0.364	0.251	0.548**
	(0.011)	(0.090)	(0.189)	(0.007)	(0.034)	(0.148)	(0.286)	(0.027)
Ln(GDPPC)	1.219***	1.527***	1.741***	1.033***	0.236***	0.308***	0.355***	0.193***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)	(0.001)	(0.000)	(0.006)
Bilateral Trade	−5.010**	−5.475**	−7.192***	−3.964*	−1.007**	−1.116**	−1.495***	−0.765*
	(0.017)	(0.021)	(0.002)	(0.057)	(0.022)	(0.028)	(0.002)	(0.086)
Country Governance	−1.579**	−1.908***	−1.806***	−1.128*	−0.300*	−0.378**	−0.353**	−0.195
	(0.010)	(0.004)	(0.004)	(0.065)	(0.057)	(0.023)	(0.023)	(0.213)
Offshore Financial Center	−5.569***	−3.195**	−3.688***	−4.796***	−1.299***	−0.758**	−0.855***	−1.119***
	(0.001)	(0.045)	(0.008)	(0.002)	(0.000)	(0.016)	(0.002)	(0.000)
Borrower & Creditor Rights	−0.285**	−0.254*	−0.303**	−0.239**	−0.050	−0.044	−0.054	−0.040
	(0.014)	(0.066)	(0.023)	(0.037)	(0.138)	(0.253)	(0.156)	(0.235)
Credit-to-GDP	1.083**	0.695	0.348	0.987**	0.296***	0.209	0.129	0.274***
	(0.036)	(0.251)	(0.523)	(0.048)	(0.005)	(0.102)	(0.264)	(0.005)
Banking Concentration	−5.381***	−4.099***	−5.064***	−4.958***	−1.228***	−0.935***	−1.144***	−1.130***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Banking Profitability	3.984***	2.408**	3.097***	3.942***	0.913***	0.551	0.700**	0.902***
	(0.001)	(0.042)	(0.008)	(0.001)	(0.007)	(0.106)	(0.035)	(0.009)
Contiguous	7.171***	7.012***	6.778***	6.075***	1.696***	1.666***	1.605***	1.442***
	(0.001)	(0.005)	(0.003)	(0.003)	(0.000)	(0.002)	(0.001)	(0.001)
Common Language	1.503**	1.834**	2.508***	1.274**	0.213*	0.288*	0.439***	0.160
	(0.017)	(0.015)	(0.002)	(0.029)	(0.095)	(0.051)	(0.008)	(0.168)
Ln(Dist)	1.556**	1.032	1.091	1.373**	0.389**	0.269	0.280*	0.346**
	(0.024)	(0.168)	(0.111)	(0.040)	(0.012)	(0.104)	(0.072)	(0.018)
Market Vol	202.063***	203.729***	203.576***	203.521***	51.232***	51.606***	51.588***	51.570***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Assets)	0.355**	0.112	0.226	0.292*	0.119***	0.063	0.087**	0.104***
	(0.049)	(0.548)	(0.233)	(0.099)	(0.004)	(0.124)	(0.042)	(0.009)
Leverage	0.138***	0.143***	0.123***	0.128***	0.021***	0.023***	0.018***	0.019***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.003)	(0.001)
Foreign Assets (%)	0.251	−0.088	0.512	0.185	−0.095	−0.173	−0.040	−0.110
	(0.893)	(0.967)	(0.829)	(0.917)	(0.853)	(0.751)	(0.946)	(0.823)
Income Mix	0.071	−0.174	−0.113	0.057	−0.000	−0.056*	−0.044	−0.004
	(0.600)	(0.214)	(0.350)	(0.650)	(0.996)	(0.078)	(0.113)	(0.902)
Market-to-Book	−0.044	0.040	0.021	−0.001	0.037	0.056*	0.053	0.047*
	(0.695)	(0.753)	(0.870)	(0.993)	(0.190)	(0.090)	(0.121)	(0.083)
Deposits (%)	−4.044***	−5.056***	−4.530***	−3.763***	−0.764***	−0.999***	−0.882***	−0.699***
	(0.002)	(0.000)	(0.001)	(0.002)	(0.009)	(0.003)	(0.008)	(0.005)
Observations	1,502	1,502	1,502	1,502	1,502	1,502	1,502	1,502
Adj. R2	.53	.51	.52	.53	.70	.69	.69	.70

Table 11: U.S. BHC Risk and Non-Traditional Banking Activities

This table reports coefficient estimates from panel regressions of U.S. BHC risk on foreign banking regulation and supervision stringency and several control variables separately for traditional and non-traditional subsidiaries. Traditional subsidiaries are entities that engage in commercial banking activities and are identified by NAIC code 522. Non-traditional subsidiaries are entities that engage in securities, insurance, asset management, real estate and holding activities. These entities are identified by NAIC codes 523, 524, 525, 531 and 551. The sample is a panel of 1,481 BHC-quarter observations during the period [1995Q1-2013Q4] of 64 U.S. BHCs. *VaR* is a BHC's unconditional maximum market equity loss at the 95% confidence level on a quarterly basis. $\Delta CoVaR$ measures a BHC's contribution to systemic risk and is defined as the difference between the conditional value at risk (CoVar) of the financial system conditional on an institution being in distress (95% quantile of quarterly equity return losses) and the CoVaR conditional on the median state of the institution. *Regulation & Supervision*, *Activities Restrictions*, *Capital Regulation* and *Supervisory Power* capture the stringency of a country's regulatory and supervisory environment. *Regulation & Supervision* is a measure of overall banking regulation and supervision defined as the first principal component of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. *Activities Restrictions* measures the stringency of regulation regarding banks' involvement in securities, insurance and real state activities. *Capital Regulation* measures the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. *Supervisory Power* measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions. Subsidiary count weights within a BHC-quarter are used to "collapse" BHC-quarter-subsidiary country observations to the BHC-quarter level. Detailed definitions of all variables are presented in Table 1. We include BHC fixed effects and use robust standard errors clustered at the BHC level in all specifications. P-values are reported in parentheses and ***, **, * denote significance at the 1, 5 and 10 percent significance level respectively.

	Traditional		Non-Traditional	
	VaR	Δ CoVaR	VaR	Δ CoVaR
	(1)	(2)	(3)	(4)
Regulation & Supervision	0.872***	0.199***	0.776***	0.176***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(GDP)	−0.778	−0.178	−1.201***	−0.278***
	(0.181)	(0.168)	(0.001)	(0.001)
GDPG	3.953***	0.945***	2.618**	0.519*
	(0.000)	(0.000)	(0.020)	(0.062)
Ln(GDPPC)	0.978*	0.166	0.879***	0.160**
	(0.091)	(0.194)	(0.008)	(0.044)
Bilateral Trade	−6.804***	−1.557***	−3.089	−0.482
	(0.001)	(0.001)	(0.109)	(0.199)
Country Governance	−2.033*	−0.444*	−0.504	−0.057
	(0.079)	(0.063)	(0.461)	(0.732)
Offshore Financial Center	−6.945***	−1.515***	−6.099***	−1.339***
	(0.000)	(0.000)	(0.000)	(0.000)
Borrower & Creditor Rights	−0.092	−0.017	−0.325**	−0.051
	(0.373)	(0.459)	(0.026)	(0.202)
Credit-to-GDP	1.064**	0.229***	1.360**	0.340**
	(0.017)	(0.008)	(0.027)	(0.010)
Banking Concentration	−6.474***	−1.329***	−5.581***	−1.261***
	(0.000)	(0.000)	(0.000)	(0.000)
Banking Profitability	1.974*	0.325	4.981***	1.132***
	(0.084)	(0.230)	(0.000)	(0.003)
Contiguous	10.267***	2.252***	6.109***	1.395***
	(0.000)	(0.001)	(0.004)	(0.005)
Common Language	0.223	−0.054	1.121*	0.133
	(0.842)	(0.814)	(0.083)	(0.346)
Ln(Dist)	2.154**	0.450**	1.654**	0.416**
	(0.022)	(0.041)	(0.033)	(0.028)
Market Vol	186.541***	48.121***	199.947***	51.089***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Assets)	0.419*	0.135**	0.502**	0.154***
	(0.078)	(0.013)	(0.019)	(0.004)
Leverage	0.128***	0.027***	0.158***	0.025***
	(0.001)	(0.002)	(0.000)	(0.000)
Foreign Assets (%)	−1.955	−0.647*	−0.018	−0.167
	(0.103)	(0.058)	(0.994)	(0.785)
Income Mix	0.166	0.032	0.094	0.001
	(0.260)	(0.259)	(0.520)	(0.966)
Market-to-Book	−0.050	0.030	−0.034	0.040
	(0.671)	(0.307)	(0.790)	(0.188)
Deposits (%)	−2.268*	−0.395	−5.007***	−0.968**
	(0.081)	(0.186)	(0.006)	(0.022)
Observations	1,037	1,037	1,253	1,253
Adj. R2	.52	.71	.54	.70

Table 12: U.S. BHC Risk and Risk Management Quality

This table reports coefficient estimates from panel regressions of U.S. BHC risk on foreign banking regulation and supervision stringency, interactions with BHC risk management quality and several control variables. The sample is a panel of 1,481 BHC-quarter observations during the period [1995Q1-2013Q4] of 64 U.S. BHCs. *VaR* is a BHC's unconditional maximum market equity loss at the 95% confidence level on a quarterly basis. $\Delta CoVaR$ measures a BHC's contribution to systemic risk and is defined as the difference between the conditional value at risk (CoVar) of the financial system conditional on an institution being in distress (95% quantile of quarterly equity return losses) and the CoVaR conditional on the median state of the institution. *Regulation & Supervision*, *Activities Restrictions*, *Capital Regulation* and *Supervisory Power* capture the stringency of a country's regulatory and supervisory environment. *Regulation & Supervision* is a measure of overall banking regulation and supervision defined as the first principal component of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. *Activities Restrictions* measures the stringency of regulation regarding banks' involvement in securities, insurance and real state activities. *Capital Regulation* measures the degree to which supervisory authorities oversee capital at risk and the initial source of funds used to capitalize a bank. *Supervisory Power* measures the extent to which supervisory authorities can intervene to prevent and correct problems at financial institutions. *WRM* is an indicator variable for weak risk management practices at a given BHC during a quarter. *WRM* equals one if a bank holding company has a Federal Reserve System risk management rating (ranging from one to five) that is greater than or equal to three, and zero otherwise. *RMI* measures the organizational strength and independence of the risk management function at a given BHC during a year (Ellul and Yerramilli (2013)). Subsidiary count weights within a BHC-quarter are used to "collapse" BHC-quarter-subsidiary country observations to the BHC-quarter level. Detailed definitions of all variables are presented in Table 1. We include BHC fixed effects and use robust standard errors clustered at the BHC level in all specifications. P-values are reported in parentheses and ***, **, * denote significance at the 1, 5 and 10 percent significance level respectively.

	VaR		Δ CoVaR	
	(1)	(2)	(3)	(4)
Regulation & Supervision	0.786***	0.532***	0.185***	0.124***
	(0.000)	(0.000)	(0.000)	(0.000)
Regulation & Supervision × WRM	0.409***		0.065**	
	(0.000)		(0.012)	
WRM	0.625		0.219***	
	(0.124)		(0.004)	
Regulation & Supervision × RMI		0.120**		0.037**
		(0.041)		(0.021)
RMI		−0.163		−0.054
		(0.793)		(0.738)
Ln(GDP)	−1.092***	−0.242	−0.264***	−0.100
	(0.004)	(0.540)	(0.001)	(0.235)
GDPG	2.862***	1.308	0.642***	0.272
	(0.001)	(0.124)	(0.008)	(0.176)
Ln(GDPPC)	1.156***	0.764**	0.230***	0.152*
	(0.001)	(0.035)	(0.005)	(0.051)
Bilateral Trade	−4.705**	−4.474**	−0.973**	−0.910*
	(0.023)	(0.047)	(0.033)	(0.055)
Country Governance	−1.524**	−0.672	−0.271*	−0.125
	(0.013)	(0.299)	(0.077)	(0.381)
Offshore Financial Center	−5.986***	−2.554	−1.399***	−0.761**
	(0.000)	(0.116)	(0.000)	(0.023)
Borrower & Creditor Rights	−0.279**	−0.423***	−0.053*	−0.087**
	(0.015)	(0.004)	(0.090)	(0.028)
Credit-to-GDP	1.134**	0.449	0.283***	0.167
	(0.025)	(0.337)	(0.005)	(0.114)
Banking Concentration	−5.590***	−3.946***	−1.271***	−0.993***
	(0.000)	(0.000)	(0.000)	(0.000)
Banking Profitability	4.057***	3.564***	0.960***	0.827***
	(0.001)	(0.001)	(0.004)	(0.003)
Contiguous	6.970***	4.621**	1.718***	1.126**
	(0.001)	(0.021)	(0.000)	(0.010)
Common Language	1.497**	1.739**	0.232*	0.298*
	(0.016)	(0.016)	(0.058)	(0.063)
Ln(Dist)	1.567**	0.918	0.414**	0.243
	(0.026)	(0.169)	(0.012)	(0.121)
Market Vol	201.393***	217.141***	51.984***	54.410***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Assets)	0.405**	0.308	0.125***	0.117**
	(0.019)	(0.219)	(0.003)	(0.033)
Leverage	0.094***	0.132***	0.001	0.017***
	(0.005)	(0.000)	(0.673)	(0.004)
Foreign Assets (%)	0.646	1.235	0.052	0.243
	(0.728)	(0.555)	(0.914)	(0.666)
Income Mix	0.032	0.029	−0.018	0.000
	(0.818)	(0.882)	(0.599)	(0.991)
Market-to-Book	−0.001	−0.007	0.057**	0.047
	(0.996)	(0.950)	(0.039)	(0.158)
Deposits (%)	−3.801***	−4.207***	−0.700**	−0.777**
	(0.002)	(0.005)	(0.016)	(0.013)
Observations	1,481	1,290	1,481	1,290
Adj. R2	.53	.53	.70	.69

Table 13: Evidence from Foreign Country Entries

This table reports coefficient estimates from regressions of U.S. BHC risk on foreign banking regulation and supervision stringency and several control variables around U.S. BHCs' foreign market entries. *VaR* is a BHC's unconditional maximum market equity loss at the 95% confidence level on a quarterly basis. $\Delta CoVaR$ measures a BHC's contribution to systemic risk and is defined as the difference between the conditional value at risk (CoVar) of the financial system conditional on an institution being in distress (95% quantile of quarterly equity return losses) and the CoVaR conditional on the median state of the institution. *Regulation & Supervision* is a measure of overall banking regulation and supervision defined as the first principal component of *Activities Restrictions*, *Capital Regulation* and *Supervisory Power*. *Regulation & Supervision* is decreasing in regulatory stringency. *Post-entry* is an indicator that equals one post entry, and zero otherwise. For each foreign market entry, we use observation windows of +/− 4, 8, 12 or 16 quarter periods around when BHCs first report a subsidiary in a country over the period [1995Q1-2013Q4]. Variables are then averaged into one observation pre-entry and one observation post-entry for every event. Detailed definitions of all variables are presented in Table 1. We include BHC fixed effects and use robust standard errors clustered at the BHC level in all specifications. P-values are reported in parentheses and ***, **, * denote significance at the 1, 5 and 10 percent significance level, respectively.

	+/- 4 Quarters		+/- 8 Quarters		+/- 12 Quarters		+/- 16 Quarters	
	VaR	Δ CoVaR	VaR	Δ CoVaR	VaR	Δ CoVaR	VaR	Δ CoVaR
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-entry	0.514	0.103	0.753	0.075	−0.015	−0.140	0.048	−0.102
	(0.465)	(0.453)	(0.149)	(0.596)	(0.983)	(0.544)	(0.930)	(0.577)
Post-entry × Regulation & Supervision	0.113***	0.025***	0.095***	0.020***	0.090***	0.020***	0.079**	0.018**
	(0.001)	(0.001)	(0.002)	(0.003)	(0.005)	(0.005)	(0.010)	(0.014)
Post-entry × Ln(GDP)	−0.124***	−0.023***	−0.088*	−0.012	−0.063*	−0.008	−0.046*	−0.005
	(0.000)	(0.003)	(0.053)	(0.189)	(0.077)	(0.428)	(0.097)	(0.508)
Post-entry × GDPG	0.091	0.105	−0.011	0.080	−0.127	0.046	−0.244	0.011
	(0.835)	(0.273)	(0.980)	(0.392)	(0.813)	(0.684)	(0.709)	(0.929)
Post-entry × Ln(GDPPC)	0.139**	0.028*	0.053	0.009	0.059	0.011	0.029	0.003
	(0.046)	(0.052)	(0.479)	(0.621)	(0.439)	(0.534)	(0.646)	(0.857)
Post-entry × Bilateral Trade	0.091	0.011	0.120	0.020	−0.108	−0.048	−0.079	−0.037
	(0.686)	(0.824)	(0.518)	(0.678)	(0.538)	(0.305)	(0.613)	(0.335)
Post-entry × Country Governance	−0.085	−0.021	−0.022	−0.002	−0.010	0.001	0.025	0.011
	(0.296)	(0.279)	(0.832)	(0.939)	(0.925)	(0.957)	(0.802)	(0.647)
Post-entry × Offshore Financial Center	−0.586***	−0.102***	−0.339**	−0.043	−0.198	−0.018	−0.112	−0.006
	(0.000)	(0.002)	(0.041)	(0.208)	(0.150)	(0.623)	(0.252)	(0.836)
Post-entry × Borrower & Creditor Rights	−0.036*	−0.009**	−0.038***	−0.009***	−0.032***	−0.008**	−0.031***	−0.008***
	(0.057)	(0.046)	(0.001)	(0.001)	(0.005)	(0.011)	(0.005)	(0.006)
Post-entry × Credit-to-GDP	0.116*	0.030**	0.093	0.022*	0.075	0.019	0.058	0.017
	(0.094)	(0.038)	(0.148)	(0.058)	(0.243)	(0.140)	(0.290)	(0.159)
Post-entry × Banking Concentration	−0.553***	−0.115***	−0.401***	−0.063**	−0.152	−0.009	−0.050	0.004
	(0.001)	(0.002)	(0.009)	(0.014)	(0.252)	(0.737)	(0.600)	(0.851)
Post-entry × Banking Profitability	1.014***	0.184***	0.663**	0.131**	0.672**	0.166**	0.699**	0.165**
	(0.000)	(0.000)	(0.011)	(0.011)	(0.013)	(0.010)	(0.025)	(0.022)
Post-entry × Contiguous	0.387	0.050	0.230	0.021	0.297	0.062	0.164	0.039
	(0.277)	(0.441)	(0.462)	(0.680)	(0.268)	(0.145)	(0.451)	(0.277)
Post-entry × Common Language	0.036	0.020	0.079	0.023	0.033	0.013	0.046	0.014
	(0.680)	(0.330)	(0.210)	(0.141)	(0.531)	(0.346)	(0.410)	(0.339)
Post-entry × Ln(Dist)	0.174*	0.026	0.132	0.018	0.123	0.022	0.089	0.018
	(0.087)	(0.108)	(0.132)	(0.193)	(0.103)	(0.114)	(0.120)	(0.117)
Market Vol	296.645***	69.845***	323.859***	75.334***	331.105***	77.458***	329.378***	77.835***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Assets)	0.174	0.075***	0.135	0.063**	0.167	0.075***	0.176	0.065***
	(0.133)	(0.003)	(0.367)	(0.040)	(0.246)	(0.010)	(0.214)	(0.006)
Leverage	0.036	0.012	0.049	0.013	0.053	0.016	0.042	0.012
	(0.378)	(0.248)	(0.248)	(0.219)	(0.259)	(0.189)	(0.310)	(0.249)
Foreign Assets (%)	1.870	0.263	1.238	0.033	0.342	−0.261	0.269	−0.230
	(0.489)	(0.655)	(0.638)	(0.952)	(0.888)	(0.658)	(0.904)	(0.662)
Income Mix	0.025	−0.021	0.081	−0.009	0.086	−0.005	0.069	−0.006
	(0.871)	(0.528)	(0.541)	(0.722)	(0.502)	(0.819)	(0.609)	(0.799)
Market-to-Book	0.282***	0.070***	0.230*	0.060**	0.226*	0.061**	0.227*	0.057**
	(0.005)	(0.006)	(0.079)	(0.044)	(0.083)	(0.034)	(0.065)	(0.025)
Deposits (%)	−1.727	−0.085	−1.263	0.034	−0.677	0.215	−0.508	0.248
	(0.165)	(0.739)	(0.140)	(0.833)	(0.468)	(0.285)	(0.593)	(0.165)
Observations	2,116	2,116	2,116	2,116	2,116	2,116	2,116	2,116
Adj. R2	.80	.90	.85	.93	.88	.95	.89	.96