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ABSTRACT

This paper investigates how foreign ownership shapes bank information environments. Using a sample of listed banks from 60 countries over 1997-2012 we show that foreign ownership is significantly associated with greater (lower) informativeness (synchronicity) in bank stock prices. We also find that stock returns of foreign-owned banks reflect more information about future earnings. In addition, the positive association between price informativeness and foreign ownership is stronger for foreign-owned banks in countries with stronger governance, stronger banking supervision, and lower monitoring costs. Overall, our evidence suggests foreign ownership reduces bank opacity by exporting governance, yielding important implications for regulators and governments.

Keywords: Foreign bank ownership; Bank information environments; Stock price synchronicity; Earnings coefficients; International mobility of corporate governance.

JEL Classification: G14; G15; G21; G38.

1 INTRODUCTION

Despite an extensive body of international business (IB) research on globalization (see a review by Verbeke et al., 2018), researchers pay relatively little attention to banking globalization. However, banks are instrumental in promoting IB because of their roles in financing global trade and foreign investments of multinational companies (MNCs) (Niepmann and Schmidt-Eisenlohr, 2017), as well as in maintaining the stability of international financial systems (Laeven, 2013). The 2008-09 global credit crisis is a vivid example of how instability in the banking sectors could impair global trade and investment flows.

Many argue that weak bank transparency is a major cause of the crisis because poor-quality information makes asset risk opaque and the lack of disclosure aggravates conflicts between different bank stakeholders (Healy and Palepu, 2001; Hyytinen and Takalo, 2002; Bushman and Williams, 2012; Bushman, 2014). Over the decades, various international institutions, including the International Monetary Fund, the Basel Committee on Banking Supervision (BCBS), and the Financial Stability Board, have proposed prudential regulations for banks. They have also campaigned for greater emphasis on effective corporate governance and improved disclosure for banks. For instance, Pillar Three of the Basel II Accord focuses specifically on enhancing the transparency of the global banking sectors by raising bank disclosure requirements and strengthening market discipline (BCBS, 2015). A number of scholars, such as Berlin et al. (1991), Bhattacharya et al. (1998), Laeven (2013), and Bushman (2014), also advocate increased transparency in banking systems. Given these increasing calls from policymakers and scholars, and considering the importance of bank stability to global trade, it is essential for IB researchers to have a better understanding of what enhances bank transparency within a globalization context to ensure efficacy and sustainability in international trade.

In this paper, we examine whether foreign ownership increases bank transparency through improved corporate governance. In an agency-theory framework, effective governance, such as monitoring by owners, boards of directors, and other market participants, could improve corporate transparency by reducing managers' incentives to exploit or hoard private information for their own advantage (see, e.g., Bertrand and Mullainathan, 2003; Ferreira and Laux, 2007; Gul et al., 2011; Armstrong et al., 2012; Armstrong et al., 2014). Also, a recent, growing body of IB and international finance literature theorizes and documents that foreign owners who actively monitor corporate insiders play a significant role in exporting corporate governance to subsidiaries or invested entities in host countries (Gillian and Starks, 2003; Ferreira and Matos, 2008; Aggarwal et al., 2011; He et al., 2013; Han, 2015; Bena et al., 2017; Cumming et al., 2017).

In line with this governance-mobility view, several cross-border M&A studies show that target firms benefit from importing superior governance and contracting devices from acquirers headquartered in good-governance countries (Ferreira and Matos, 2008; Martynova and Renneborg, 2008; Aggarwal et al.,

2011; Ellis et al., 2017; Renneboog et al., 2017). The banking literature also suggests that foreign owners bring better governance and risk-management systems to their local counterparts, in turn improving efficiency (Berger et al., 2009). Based on these arguments, we hypothesize that foreign ownership is positively associated with bank transparency because governance spills over from home countries with stronger governance or banking regulations.

To test this hypothesis, we measure bank transparency by the amount of firm-specific variation in bank stock returns, which reflects the incorporation of private information (see, e.g., Morck et al., 2000; Jiang et al., 2009). When information environments improve, stock prices incorporate more variation in firm-specific factors and thus synchronize less with market factors. Following this literature, our dependent variable is price synchronicity, estimated as the logistic-transformed R^2 from an expanded market model. Our explanatory variable of interest is an indicator for majority foreign ownership (*Foreign*) that equals 1 for banks with 50% or more foreign ownership, and 0 otherwise. Using a sample of 710 banks from 60 countries over 1997-2012, our baseline results show that foreign bank ownership is associated with significantly lower (higher) price synchronicity (informativeness). This relationship is robust to alternative fixed effects, estimation approaches, sample periods, standard errors, and use of discretionary loan loss provisions as an alternative proxy for bank transparency.

A potential concern is endogeneity. Unobserved country or bank characteristics that codetermine foreign ownership and price synchronicity could bias our estimates. Additionally, foreign investors may prefer to invest in countries with more transparent banking systems (Leuz et al., 2009). Because the treatment status is not randomly assigned to the sample banks, our results may be subject to potential selection issues or reverse causality. To address these concerns, we examine the results using bank fixed effects, instrumental variable estimation, and dynamic panel generalized method of moments (GMM) estimation, all showing that endogeneity does not drive our results.

Another concern recent studies raise (see, e.g., Dasgupta et al., 2010; Xing and Anderson, 2011) is that stock price synchronicity may be noisy and unreliable in capturing information flows. To address this, we study the extent to which stock prices incorporate future earnings information, and we examine its relationship to foreign bank ownership. Our results show that stock prices of foreign-owned banks contain significantly more future earnings information than those of local banks, consistent with our hypothesis.

To test the theory of governance mobility, we evaluate whether the quality of corporate governance and banking regulations in the home countries governs the relationship between foreign bank ownership and stock price informativeness. If foreign owners export better governance practices and improve bank information environments, then increases in stock price informativeness should be more pronounced for foreign-owned banks from home countries with relatively strong corporate governance or banking regulations. Moreover, because monitoring foreign subsidiaries and invested companies incurs significant

transportation and communication costs (Degryse and Ongena, 2005; Mian, 2006; Kang and Kim, 2008), physical distance between the home and host countries could reduce the spillover of corporate governance across borders. Our results support these predictions.

Our paper makes several important contributions to the literature. First, we add to an emerging body of IB literature theorizing and documenting that governance does indeed travel abroad through, for example, foreign ownership, cross-border M&As, etc. (see, e.g., Aguilera, et al., 2017; Cumming, et al., 2017; Ellis et al., 2017; Miletkov et al., 2017). We complement this literature by analyzing banks, an industry of central importance to IB regarding the stability of global trade, revealing that foreign bank ownership is another effective channel through which governance moves across borders.

Second, we add to the growing literature on the economic consequences of banking globalization.[1] However, relatively few studies analyze its role in shaping banks' information environments. This question has far-reaching implications for IB because bank opacity, often considered a major cause of banking crises, could seriously disrupt global trade. Our findings uncover a bright side of banking globalization in mitigating information asymmetry.

Third, using more general samples of firms, our paper relates to studies on the link between foreign investors and the information content of stock prices (see, e.g., Gul et al., 2010). For instance, He et al. (2013) and Han (2015) show that foreign shareholders enhance price informativeness due to a greater ability in processing value-relevant information. However, our paper differs from theirs in several ways. First, our sample contains global banks; theirs consist of mainly nonfinancial firms. Banks are distinct from nonfinancial firms in that they are opaque (Morgan, 2002), highly levered, and interconnected; their failures could have adverse systemic consequences that disrupt global markets and trade. As such, we extend the significant contribution these studies make by offering practical implications regarding market and trade stability for regulators as well as scholars in IB. Second, our theoretical framework, motivated by recent, growing IB literature, asserts that increased corporate governance exported by foreign bank owners enhances information environments. Although more intense monitoring by foreign shareholders is a potential channel that He et al. (2013) consider, their study only analyzes the host countries' governance characteristics. However, because we know the home countries of foreign-owned banks, we are able to examine in a governance context whether relative distance between home and host countries explains price informativeness, directly testing the theory.

Our findings yield several policy implications. First, despite the growing literature, researchers still do not fully understand the costs and benefits of foreign bank ownership, as well as their tradeoffs. Some studies document a few dark sides of foreign banks, such as cherry-picking elite clients and not venturing out of urban territories in host markets. They conclude that foreign banks fail to enhance domestic credit and financial inclusion (Detragiache et al., 2008; Allen et al., 2011; Claessens and van Horen, 2014; Beck

and Brown, 2015; Allen et al., 2017). Recent financial crises also raise concerns that foreign bank ownership is a potential channel for transmitting liquidity shocks across borders (Dages et al., 2000; Cetorelli and Goldberg, 2012). As such, foreign ownership of banks remains controversial, especially in emerging markets where foreign bank ownership is limited or banned.

Our study adds to this policy debate by uncovering a new bright side of foreign bank ownership: enhanced banking information environments through governance spillovers. Because transparency is important for creating a domestic banking environment that fosters credit creation and efficiency in capital allocation (Greenspan, 1996; Morgan, 2002), emerging economies with low incomes, high opacity, weak governance, and ineffective banking regulations likely benefit the most from governance spillovers induced by foreign bank ownership. Regulators should consider such benefits when evaluating policies regarding foreign bank entry.

Second, reduced information asymmetry due to foreign bank ownership strengthens market-based oversight, regulatory efficiency, and market discipline.[2] Third, by reducing price synchronicity among banks, foreign ownership reduces the likelihood of concurrent price declines during difficult economic conditions, contributing to market and trade stability. Finally, as shown in events such as the Great Depression and "Brexit" in the UK, and amid nationalism's surging popularity in some countries, we add to the partisan debate about globalism versus nationalism. Our evidence suggests that governments should foster legislation supporting the convergence of governance.

We structure the rest of the paper as follows: section 2 reviews the literature and develops our hypotheses. Section 3 explains our sample, variable construction, and empirical methodology, and it presents our descriptive statistics. Section 4 presents our test results, and section 5 concludes.

2 THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

2.1 The Implications of Banking Globalization

There has been a dramatic globalization trend in banking and a constantly increasing demand for transparency around the world over the past several decades.[3] Although a core body of IB research seeks to understand the antecedents, processes, and consequences of globalization in modern corporations (see Verbeke et al., 2018), researchers pay relatively little attention to banking globalization and its relevance for market stability.

In fact, increased banking globalization has several important implications for IB. First, foreign-owned banks, often major credit suppliers for MNCs, play a key role in providing liquidity locally as well as in facilitating foreign direct investments (Detragiache et al., 2008; Gormley, 2010; Claessens et al., 2017). Second, increases in banking competition and thus the potential shifts in the quality of financial intermediation due to the entry of foreign banks could benefit or harm the export businesses in the host

countries (Beck et al., 2006; Berger et al., 2009; Giannetti and Ongena, 2009, 2012; Bruno and Hauswald, 2014). Third, foreign-owned banks could help facilitate information flows among global trading partners (Portes and Rey, 2005), thereby narrowing the information gap and fostering more trustworthy trade relationships. Fourth, because the efficacy and extent of international trade depend on the health of the global financial and banking sectors, foreign-owned banks have implications for IB through their role in market stability (Iacovone and Zavacka, 2009; Gormley, 2010; Amiti and Weinstein, 2011; Cetorell and Goldberg, 2012). In particular, the extent to which banking systems should integrate into the global financial economy is an important question for economic growth, financial stability, and global businesses.

2.2 The Importance of Bank Information Environments

A bank shapes its information environment through the quality of its financial disclosure, including the timeliness, reliability, and discretionary choices of its financial reporting. Improving bank transparency has been one of the most important prudential policy initiatives globally over the past decades (Rochet, 1992; Bushman and Williams, 2015). There are at least four reasons.

First, informational transparency strengthens market discipline in bank risk-taking. From an *ex ante* perspective, anticipating that informed investors will respond swiftly to increased risk by demanding higher returns, bank managers would be less prone to taking excessive risks, thereby enhancing stability. In an *ex post* sense, bank transparency also disciplines managers to the extent that distressed securities could trigger regulatory interventions to restore stability (Flannery, 1998, 2001), thereby threatening careers and casting doubt on managerial abilities.

Second, informational transparency improves bank stability by supporting governance mechanisms (Bushman and Smith, 2001; Bushman, 2014, 2016). Banks are prone to moral-hazard problems, and their managers have incentives to invest in excessively risky projects because of high leverage (Laeven, 2013), limited discipline from insured depositors (Merton, 1977; Hett and Schmidt, 2017), asset opacity (Morgan, 2002; Acharya et al., 2016), and implicit government guarantees (Gropp et al., 2011). In this regard, bank information that is reliable and publicly available not only helps appraise the performance of bank managers, but also supports monitoring bank directors, owners, and regulators, which in turn mitigates agency costs and systemic risk.

Third, bank transparency reduces uncertainty about solvency, as well as panic and rollover risk among depositors and short-term creditors, and thus helps prevent bank failures and runs (Gorton and Huang, 2006; Ratnovski, 2013). Finally, managerial incentives such as stock grants, option grants, and other forms of equity-related pay often tie to stock prices. Because stock prices convey useful information about managers' efforts and performance, the information content of bank stock prices is useful in

structuring executive incentives to better align the interests of owners and agents, thereby increasing the effectiveness of such incentives (Holmstrom and Tirole, 1993; Kang and Liu, 2008; Alok et al., 2016).

2.3 Corporate Governance, Banking Regulations, and Information Environments

Among the factors that shape a bank's information environment is corporate governance, which researchers widely discuss (see, e.g., Enriques and Volpin, 2007; Mehran et al., 2011; Laeven, 2013). Better governance improves corporate transparency by encouraging management to increase public disclosures and provide more relevant and timely information to external parties (e.g., Bertrand and Mullainathan, 2003; Ferreira and Laux, 2007; Gul et al., 2011; Armstrong et al., 2012; Armstrong et al., 2014). Consistent with this view, empirical studies document that companies with better governance have higher-quality disclosures, lower incidences of financial statement fraud (Beasley, 1996), less earnings management (Dechow et al., 1996), and more precise earnings forecasts (Ajinkya et al., 2005).[4]

Because banks are heavily regulated, one governance-related factor that shapes a bank's information environment is its external supervisory and regulatory environment. The Basel Committee on Banking Supervision (BCBS) has published a number of microprudential and macroprudential regulatory guidance documents that emphasize the importance of capital adequacy, effective corporate governance, and improved accounting and disclosure practices for banks. In particular, the Basel II Accord, proposed in 2004, contains three pillars: minimum capital requirements, official supervisory power, and market discipline mechanisms. The first pillar concerns the ongoing maintenance of regulatory capital that is required to protect banks against different kinds of risks, such as credit risk, operational risk, and market risk. The second pillar gives supervisory authorities more power to take actions in preventing and correcting problems. The third pillar promotes market discipline and bank transparency by imposing various regulatory disclosure requirements that enable market participants to access key information about a bank's capital adequacy and risk exposures (BCBS, 2015). More recently, in response to the global financial crisis, the Basel III Accord raised the regulatory capital requirements, set up new requirements for funding illiquidity, and introduced new prudential regulations specifically targeting systemically important financial institutions (SIFIs).

Several studies confirm the significant role of banking supervision and regulations in determining bank efficiency (Barth et al., 2013b) and risk-taking behaviors (Laeven and Levine, 2009). Importantly, Francis et al. (2015) document that more stringent capital regulations and increased incentives for private monitoring are associated with less synchronized bank stock prices, consistent with improved bank information environments.

2.4 The International Mobility of Corporate Governance

Although an extensive amount of IB and international finance literature uncovers various governance factors that may determine MNCs' global strategies, most research views corporate governance as "location-specific" (Filatotchev and Wright, 2011). Recently, however, some researchers challenge this view. Cumming et al. (2017), for example, discuss at least two theoretical perspectives that could explain why governance travels across countries. The first is the agency perspective, focusing on the achievement of efficiency outcomes. Under this perspective, MNCs import or export corporate governance in order to gain access to superior resources, managerial expertise, and monitoring competencies. The second is the institutional perspective, positing that MNCs adjust their corporate governance structures and processes to increase their legitimacy among local stakeholders who may have different expectations of governance quality. Although the two perspectives differ in emphases, they both suggest there is a demand-side explanation for governance mobility.

Two of the most important ways corporate governance travels across countries are international mergers and acquisitions (M&As) and foreign ownership. In the context of cross-border M&As, Ellis et al. (2017) propose that governance moves under an agency theoretical framework (Jensen and Meckling, 1976). Part of the synergy value created in cross-border M&As in which acquirers are from countries with relatively strong shareholder protections is due to improved post-merger governance over the target's assets (Martynova and Renneborg, 2008).

Governance can also travel internationally through foreign ownership. Specifically, foreign investors who are active monitors change governance mechanisms and standards across borders (Gillian and Starks, 2003; Cumming et al., 2017). For example, Ferreira and Matos (2008) and Aggarwal et al. (2011) document that foreign investors from countries with strong shareholder protections significantly improve the corporate governance structures in target firms. Among Japanese firms, Aguilera et al. (2017) show that foreign investors' institutional backgrounds affect managerial discretion and optimism in earnings forecasts and subsequent revisions. Moreover, a related strand of banking literature documents that foreign owners improve bank efficiency in China, consistent with banks importing better governance systems from abroad (see, e.g., Berger et al., 2009).

However, not all firms can effectively learn and copy governance practices from their foreign counterparts, because such learning often requires acquiring new and refining existing managerial and monitoring skills, investing in new technologies, and interacting with people with the right expertise (Cumming et al., 2017). In the process of importing governance, the degree of governance mobility likely depends on differences in regulatory and legal environments between the host and home countries. Moreover, because monitoring is more costly for foreign owners that are farther away from the host

countries, geographical proximity may determine the extent of governance mobility (Degryse and Ongena, 2005; Mian, 2006; Kang and Kim, 2008).

2.5 Hypotheses Development

Our previous discussions suggest that if governance travels across countries via foreign ownership, then banking globalization could improve bank informational transparency. Our first hypothesis is as follows:

> ***Hypothesis 1:*** *Foreign bank ownership improves the quality of bank information environments.*

The governance-mobility explanation yields several additional testable predictions. First, if foreign owners export and promote improved corporate governance abroad, we expect a larger improvement in information environments for foreign-owned banks originating from economies with better governance or regulatory environments. Second, among foreign-owned banks, we expect higher-quality information environments when governance quality or the regulatory environment is relatively strong in the home countries; that is, the relative differences between the home and host countries are larger. Third, because monitoring incurs significant transportation and communication costs (Degryse and Ongena, 2005; Mian, 2006; Kang and Kim, 2008), learning governance practices from abroad may be less effective the farther the home and host countries are from each other physically. Based on these arguments, our second set of hypotheses are as follows:

> ***Hypothesis 2a:*** *The positive association between foreign bank ownership and the quality of the bank information environment is more pronounced when foreign owners come from countries with stronger corporate governance and banking regulations.*

> ***Hypothesis 2b:*** *Among foreign-owned banks, the quality of the bank information environment increases with the relative difference in corporate governance or in banking regulatory environment between the home and host countries.*

> ***Hypothesis 2c:*** *Among foreign-owned banks, the positive association between the relative distance in corporate governance or banking regulatory environment (between the home and host countries), and the quality of bank information environment decreases with the physical distance between the home and host countries.*

3 SAMPLE, VARIABLE MEASUREMENTS, AND DESCRIPTIVE STATISTICS

3.1 Sample

Our initial sample begins with all banks that have an International Securities Identification Number (ISIN) from the Bankscope database from 1996 to 2012. We collect bank information such as headquarters location,

total assets, capital, earnings, bad loans, etc., from Bankscope; we collect information about foreign bank ownership from Claessens and van Horen (2014).[5] We download bank security information, including stock prices, return indexes, shares outstanding, and exchange listings from Worldscope/DataStream (DS). We download the daily return series of the DS-calculated local market indexes, bank indexes, and a world market index to proxy for the local market, the local industry, and the world market risk factors, respectively. All variables are denominated in U.S. dollars.[6] We exclude banks whose primary stock exchanges are different from their host countries. Our final sample consists of 710 banks (7,550 bank-year observations) from 60 countries between 1997 and 2012.[7] In all, 137 (19.3%) of these banks are foreign-owned. We collect several macroeconomic indicators from the World Bank, and we collect country-level governance indexes from Djankov et al. (2008) and Kaufmann et al. (2006). The location information is from www.mapsofworld.com and the distances are from the CEPII database.[8]

3.2 Variable Measurements

3.2.1 Bank-specific return variation. We construct a proxy for the bank information environment — bank-specific return variation. French and Roll (1986) and Roll (1988) propose that a significant portion of stock return variation is unexplained by market movements and that a firm-specific component of return variation captures the amount of private information embedded in stock prices. Many accounting and finance studies verify it as a measure of information flow in prices (see, e.g., Morck et al., 2000; Jin and Myers, 2006; Hutton et al., 2009; Gul et al., 2011). They broadly agree that when information environments improve, stock prices incorporate more (fewer) variation in firm-specific (market) factors. Following this strand of literature, we estimate bank-specific return variation, or price synchronicity, as the estimated R^2 from an expanded market model:

$$r_{it} = \beta_{0i} + \beta_{1i}\, r_{it}^{W} + \beta_{2i}\, r_{it-1}^{L} + \beta_{3i}\, r_{it}^{L} + \beta_{4i}\, r_{it+1}^{L} + \beta_{5i}\, r_{it-1}^{I} + \beta_{6i}\, r_{it}^{I} + \beta_{7i}\, r_{it+1}^{I} + \varepsilon_{it}\,, \qquad (1)$$

where i is a bank and t is a week. The variable r_{it} represents weekly Wednesday-to-Wednesday returns of bank stock i in week t.[9] The r_{it}^{W} variable is the weekly return of a DS-calculated world market equity index, r_{it}^{L} is the weekly return of a DS-calculated local market equity index, and r_{it}^{I} is the weekly return of a DS-calculated local bank equity index. We allow for nonsynchronous trading by including lead and lag terms for the local market and bank indexes (Dimson, 1979). We estimate equation (1) for each bank year and require a minimum of 25 weeks of available observations for the estimation.

The estimated R^2 from equation (1) measures the proportion of return variation explained by the world market, local market, and local bank equity indexes; it is thus a proxy for price synchronicity. Because R^2 is bounded between 0 and 1, such boundedness may complicate the empirical estimation. Following the

extant literature, we apply a logistic transformation to the estimated R^2 to obtain our price synchronicity measure, *SYNCH*, as shown in equation (2):

$$SYNCH_{it} = log\ [\ R^2_{it} / (\ 1 - R^2_{it}\ )] \quad (2)$$

3.2.2 Foreign bank ownership. Our foreign bank ownership data is from Claessens and van Horen (2014), who manually collect the data from various sources, including bank websites, annual reports, web resources by banking regulators and central banks, corporate governance reports, local stock exchanges, SEC filings, newspaper articles, and country experts.[10] Because tracing all changes in ownership through time is impossible due to the large sample of banks, the authors follow standard practice in the literature and identify a bank as foreign-owned if foreign owners hold 50% or more of the shares in a given year, and as domestic otherwise. Following their definition, we construct a foreign bank indicator variable that equals 1 when foreign owners hold 50% or more of a bank's shares, and 0 otherwise.

3.2.3 Control variables. We consider various bank characteristics that may affect price synchronicity, including bank size, profitability, income from nontraditional banking activities, deposit funding, capital ratios, and credit quality of banks' loan portfolios. The detailed definitions are in appendix A.1. Finally, cross-listing could reduce price informativeness in emerging markets because the associated increase in analyst coverage encourages the production of marketwide information (Fernandes and Ferreira, 2008). We construct a dummy that equals 1 for banks with cross-listing in a given year, and zero otherwise.

We also control for several country characteristics in our analyses to account for differences in economic conditions and the degree of financial development across countries. Less developed or malfunctioning stock markets likely have thinly traded stocks and less informative stock prices. Following Bekaert and Harvey (1997), we measure stock market development as the ratio of market capitalization to GDP (*Stock market cap/GDP*). To account for differences in trading intensity across stock markets, we include annualized turnover ratios of local stocks (*Stock market turnover ratio*). To account for differences in economic growth, we include annual rates of change in real GDP (*GDP growth*) and consumer price index (*CPI*) in our tests. Moreover, following Stulz and Williamson (2003), we use the ratio of total private credit to GDP as a proxy for financial development (*Financial development*). Finally, countries' market size is captured by log total population (*Ln(Population)*). All country controls are from the World Bank Development Indicators database.

3.2.4 Descriptive statistics. Table 1 presents descriptive statistics. Panel A reports sample distribution by year. Covering 1997-2012, our sample contains 472 banks per year on average. The statistics show that *SYNCH* increases during crisis periods (in 1998 and 2008-2009), consistent with possible contagion. The proportion of foreign-owned banks increases over time from 6.1% in 1997 to 19.3% in 2012.

[Insert Table 1 about here]

Panel B reports sample distribution by country. The top five countries in terms of coverage are Japan (12.4%), Denmark (7.5%), India (4.1%), Italy (3.9%), and France (3.6%). Among the 10 countries with the most (least) informative bank stock prices, three (six) are member states of the European Union; the United States is ranked 39th in ascending order. The five countries with the largest foreign ownership are Luxembourg (100%), Slovakia (97.1%), Czech Republic (88.1%), Poland (74.4%), and Hong Kong (61.3%). These statistics closely resemble those in Claessens and van Horen (2014). The detailed sample distribution by country and year is in Table A-2.1 of the appendix A-2.

Panel A of table 2 reports summary statistics. Bank size is heavily skewed, and mean (median) total assets is $45.6 ($8.1) billion. The mean (median) R^2 and *SYNCH* are 48.2% (46.5%) and -0.06 (-0.14), respectively. Foreign-owned banks constitute 14.7% of our observations. The other statistics resemble those reported by Houston et al. (2010).

Panel B presents univariate comparisons between foreign-owned and non-foreign-owned banks. The analysis shows that R^2 and *SYNCH* are significantly lower among foreign-owned banks than non-foreign-owned banks in both mean and median tests, showing preliminary support for hypothesis 1. Besides, foreign-owned banks are more profitable, more reliant on deposit funding, smaller, have higher noninterest income, and have larger capital buffers. The host countries of foreign-owned banks have higher inflation, more GDP growth, less stock market turnover, smaller populations, and lower financial development than those of non-foreign-owned banks.

[Insert Table 2 about here]

4 MULTIVARIATE ANALYSIS

This section reports results on the association between foreign ownership and bank stock price informativeness based on a panel multivariate regression framework, written as follows:

$$SYNCH_{ijt} = \beta_0 + \beta_1 \, Foreign_{ijt-1} + \delta \, X_{ijt-1} + Country\ FE + Year\ FE + \varepsilon_{ijt}\,, \qquad (3)$$

where *i* is a bank, *j* is a country, and *t* is a year. $SYNCH_{ijt}$ is the estimated stock price synchronicity variable as described in section 3.2.1; $Foreign_{ijt-1}$ is an indicator variable that equals 1 when foreign ownership is 50% or more, and 0 otherwise; X_{ijt-1} is a vector of lagged bank control variables as defined in section 3.2.3. We include country and year fixed effects in the baseline specification to control for time-invariant,

unobserved country characteristics and marketwide shocks. In alternative specifications, we include the country control variables defined in section 3.2.3 in the regressions. All explanatory variables lag by one year and thus are determined prior to year *t* to alleviate potential endogeneity concerns. Standard errors are clustered at the bank level to account for serial correlations. To reduce the effects of outliers, we winsorize the variables at the 1st and 99th percentiles.

4.1 The Relationship between Foreign Bank Ownership and Bank Stock Price Informativeness

Panel A of table 3 reports the results of regressing price synchronicity on foreign bank ownership. In addition to *Foreign*, model (1) includes country and year fixed effects; model (2) includes bank- and country-level controls and year fixed effects. Models (3) to (5) apply alternative fixed effects.

The results from model (1) suggest a negative and significant (at the 1% level) relationship between *Foreign* and *SYNCH*, supporting hypothesis 1. Model (2) controls for bank and country characteristics and shows that the significantly negative association between *Foreign* and *SYNCH* remains robust. Model (3) replaces the country characteristics with country fixed effects and shows that the negative coefficient for *Foreign* remains significant. Our results are economically significant. Using the estimates from model (3) and holding all other variables at mean values, a move of *Foreign* from 0 to 1 decreases implied R^2 by 17.3% (from 0.497 to 0.412).[11]

To alleviate the concern that time-variant, unobservable country factors codetermine foreign ownership and price synchronicity, model (4) uses country-year interacted fixed effects to absorb time-varying country characteristics, confirming that our results are robust. Model (5) introduces bank fixed effects to absorb time-invariant bank characteristics. Note that bank fixed-effects regression only analyzes within-bank changes in foreign ownership and price synchronicity. As model (5) shows, the negative coefficient for *Foreign* remains significant at the 10% level, revealing a within-bank increase in price informativeness after a change in major ownership.

As for the control variables, larger banks have more synchronized prices, consistent with Gul et al. (2011). Cross-listings are positively associated with price synchronicity, consistent with Fernandes and Ferreira (2008). Bank profitability, deposit funding, and capital ratios also positively correlate with price synchronicity. Overall, our results support hypothesis 1.

[Insert Table 3 about here]

4.2 Robustness Tests

Panel B of table 3 presents several robustness tests. All models include the baseline controls and country and year fixed effects, if not stated otherwise. We only report the estimates for *Foreign* for brevity.

In row (1), we replace *SYNCH*, which is log-transformed, with the estimated R-squared. Our results are similar in magnitude (a foreign bank has 13.7% higher R-squared) and significance. In rows (2) and (3), we apply alternative estimation techniques, including the between-effects estimators and Fama-MacBeth (1973) cross-sectional regressions with Newey and West (1987) correction (with no year fixed effects).Our results hold. Row (4) tests whether the over-representation of certain countries drives our results. We estimate a weighted-least-squares (WLS) regression and calculate weights as the inverse of the number of observations in each country; each country receives equal weight in the estimation. As shown, our results are similar and significant.

In row (5), we estimate a median regression that is less influenced by potential outliers than an OLS regression, confirming that our results are intact. Row (6) examines whether the global financial crisis drives our results by restricting our sample to end in 2006. Our results are not much affected. Rows (7) and (8) apply alternative standard errors double-clustered by bank and year, and by country and year. Our results remain robust.

Prior studies document that the influence of foreign banks on local credit growth and other economic outcomes may vary with the market and economic development of the host countries. For instance, Allen et al. (2017) find that in Kenya foreign banks play a less positive role in access to financing than local and government banks do, indicative of foreign banks' strategies in targeting clients with higher incomes. Detragiache et al. (2008) show that foreign bank concentration in emerging markets is associated with lower credit and welfare due to their lower ability to monitor soft information. In light of the potential dark sides of foreign bank ownership, rows (9) to (13) examine whether the level of economic and financial development of the host countries may affect the coefficient of interest.

We consider five indicators of economic and financial development for the host countries. The first is an indicator that equals 1 for advanced economies and 0 for emerging countries following the IMF's classification. The second, *Financial development*, is the ratio of total private credit to GDP. The third is *Stock market cap/GDP*, which is a proxy of the degree of stock market development. The fourth is *GDP growth*, which captures the rate of economic growth. The fifth is a legal origin indicator that equals 1 for civil law countries and 0 for common law countries.[12] We interact each economic indicator with *Foreign* and find that the interaction terms between *Foreign* and the host country variables are all insignificant. Importantly, *Foreign* remains negatively and significantly associated with price synchronicity. The unabridged version of these results is in Table A-2.3 of the appendix A-2.

4.3 Endogeneity Tests

If unobserved bank or country characteristics determine foreign bank ownership and price informativeness, our estimations would be biased (omitted-variable bias). Reverse causality or selection issues might also

drive our results if foreign investors prefer to invest in firms in countries with better governance or disclosure quality (Leuz et al., 2009). We employ an instrumental variable approach and dynamic panel system GMM estimation to address these concerns.[13,14]

First, we employ the instrumental variables approach and estimate a two-stage least squares (2SLS) regression to isolate the effect of foreign bank ownership on price synchronicity.[15] Our first instrument is log absolute geographical distance from the equator (*Ln(Latitude)*). The endowment theory (Acemoglu et al., 2001) posits that during the colonial period, Europeans adopted different colonization strategies depending on the feasibility of settlement. In colonies where mortality rates were low, Europeans endowed more in developing institutions to support private property. These institutions endured after independence and shaped subsequent developments, such as property rights and financial development.[16] We thus measure initial endowments by their absolute distance from the equator, as climates and disease environments are less hospitable nearer to the equator (Easterly and Levine, 2003). If foreign investors prefer countries with better institutions (Leuz et al., 2009), we thus expect greater foreign ownership in countries farther from the equator.[17] Latitudes are from www.mapsofworld.com.

Our second instrument is the log of 1 plus the distance between the bank's home city and the host country's capital city (*Ln(1+Distance from bank city to capital city)*). The economic geography literature posits that firms have incentives to place businesses near large markets because of increasing returns to scale, lower transportation costs, and greater consumer preferences for variety (Krugman, 1991; Redding, 2013; Detragiache et al., 2008). Capital cities, which are often heavily populated, usually represent one of the largest markets within a country. Driven by such market-size-related benefits, we expect greater foreign bank presence near capital cities and thus a negative coefficient for *Ln(1+Distance from bank city to capital city)* in the first-stage regression. The location information is from the CEPII database.

[Insert Table 4 about here]

Model (1) of table 4 reports the first-stage results of regressing *Foreign* on the two instruments, bank and country controls, and year fixed effects. The coefficients for both instruments are significant and have the expected signs. The *F*-statistics of excluded instruments in the first stage show that the instruments are jointly different from zero at the 1% level. The Cragg-Donald *F*-statistic is significant at the 1% level, rejecting the null hypothesis of weak instruments (Cragg and Donald, 1993). Further, the Hansen's *J* overidentification test has a *p*-value of 0.258, increasing the likelihood that the two instruments are valid or uncorrelated with the error term (Hansen, 1982). Model (2) reports the second-stage results using the exogenous component of *Foreign* to explain *SYNCH*. The coefficient for the fitted *Foreign* remains negative and significant at the 5% level and is larger in magnitude than our baseline tests.

Another potential concern is that the relation between price informativeness and foreign bank ownership may be dynamically endogenous. If past realizations of the dependent variable affect current

levels of some or all independent variables, both OLS and fixed effects regressions that do not take into account such dynamic relations would be biased (Wintoki et al., 2012). We estimate a two-step dynamic panel system GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998) that controls for lagged *SYNCH* in the regressions and exploits past bank information as instruments. Following Wintoki et al. (2012), we include the first- and second-period lagged dependent variables in the regressions.[18] Model (3) of table 4 presents the estimation results, showing that the coefficient for *Foreign* remains significantly negative (at the 5% level). To check instrument validity, we test for the absence of second-order serial correlation in the residuals, finding that the test is passed. The Hansen test of overidentifying restrictions fails to reject the null hypothesis of instrument validity.

4.4 Foreign Bank Ownership and Earning Innovations

Although the R-squared-based stock return synchronicity measure is a common proxy for information flow, recent studies question its validity and reliability.[19] To address this concern, we examine the extent to which investors incorporate future earnings information into stock prices, and we test its association with foreign-owned banks. If stock prices contain future earnings information (Collins et al., 1994; Durnev et al., 2004) and stock prices of foreign-owned banks have greater earnings informativeness, the positive association between future earnings innovations and current stock returns would be stronger among foreign-owned banks.

The accounting literature shows that stock returns follow this return-earning relation:

$$R_t = \beta_0 + \beta_1 UE_t + \sum_{k=1}^{3} \beta_{k+1} \Delta \mathbb{E}_t(E_{t+k}) + e_t \,, \tag{4}$$

where R_t is annual stock returns in year *t*. UE_t is $E_t - \mathbb{E}_{t-1}(E_t)$, the unexpected earnings in year *t*. $\Delta \mathbb{E}_t(E_{t+k})$ is the revision of market expectations about future earnings in year $t+k$ from the beginning to the end of year *t* ($\mathbb{E}_{t-1}(E_{t+k}) - \mathbb{E}_t(E_{t+k})$). Following Collins et al. (1994) and Lundholm and Myers (2002), we choose k=3 because investors' revisions of earnings growth rates tend to be over short horizons and returns have limited ability to anticipate earnings more than three years in advance (Kothari and Sloan, 1992).

Following Collins et al. (1994), we proxy for UE_t using the annual growth rate in bank net income in year *t* (ΔE_t). The term $\Delta \mathbb{E}_t(E_{t+k})$ is proxied by realized future growth rates in bank net income. Because market expectations are unobservable, we must control for several sources of measurement errors. We control for two — $\mathbb{E}_{t-1}(E_t)$ and $\mathbb{E}_{t-1}(E_{t+k})$ — using the earnings-to-price ratio (E/MV_{t-1}) in year *t-1*. Another source of measurement error is the future earnings growth in year $t+k$ that is unanticipated in year *t* (UE_{t+k}, defined as $E_{t+k} - \mathbb{E}_t(E_{t+k})$), which we control for via the realized buy-and-hold future returns for year *t+1* to *t+3* following Lundholm and Myers (2002). As such, we formulate the following regression model and interact these terms with our foreign ownership indicator variable (bank subscript *i* and country subscript *j* are both suppressed for brevity):

$$R_t = \beta_0 + \beta_1\, E/MV_{t-1} + \beta_2\, \Delta E_t + \sum_{k=1}^{3} \beta_{2+k}\, \Delta E_{t+k} + \beta_6\, R_{(t+1\ to\ t+3)} + \beta_7\, Foreign$$
$$+ (\beta_8\, E/MV_{t-1} + \beta_9\, \Delta E_t + \sum_{k=1}^{3} \beta_{9+k}\, \Delta E_{t+k} + \beta_{13}\, R_{(t+1\ to\ t+3)}) \times Foreign$$
$$+ \delta_1\, X_{t-1} + (\delta_2\, E/MV_{t-1} + \delta_3 \Delta E_t + \sum_{k=1}^{3} \delta_{3+k}\, \Delta E_{t+k}$$
$$+ \delta_7\, R_{(t+1\ to\ t+3)}) \times X_{t-1} + Country\ FE + \varepsilon_{it}\,, \quad (5)$$

where R_t is the buy-and-hold annual bank stock returns in year *t*. E/MV_{t-1} is net income in year *t-1*, scaled by market capitalization at the end of year *t-1*; we expect it to have a positive coefficient. ΔE_t is the annual change in net income from year *t-1* to *t*, scaled by market capitalization at the end of year *t-1*. $R_{(t+1\ to\ t+3)}$ is the buy-and-hold stock return from the beginning of year *t+1* to the end of year *t+3*, and we expect it to be negatively related to stock returns. X_{t-1} is a vector of baseline bank controls; ε_{it} is the residual. Country fixed effects are included to account for time-invariant country differences in stock returns. We control for the interaction between our earnings and future returns variables with the bank controls in the regressions, but we only report the estimates for the variables of our interest for brevity.

[Insert Table 5 about here]

Table 5 reports the estimation for equation (5). As model (1) shows, the coefficient for *Foreign* × ΔE_{t+2} is positive and significant at the 5% level, consistent with hypothesis 1, suggesting that stock prices of foreign-owned banks incorporate more information about earnings growth two years in advance. The estimate for E/MV_{t-1} is significantly positive as expected, but it is significantly smaller for foreign-owned banks (at the 10% level). The estimate for future returns ($R_{(t+1\ to\ t+3)}$) is significantly positive, which is surprising, suggesting that the sources of measurement errors may be different among global banks.

Model (2) presents an alternative model specification that aggregates the three future earnings growth variables: $\Delta E_{i(t+1\ to\ t+3)}$ is the sum of annual changes in net income over years *t+1* to *t+3*, scaled by market capitalization at the end of year *t-1*, similarly interacted with *Foreign* and other bank controls in the regression. Our results show that the estimate for *Foreign* × $\Delta E_{(t+1\ to\ t+3)}$ is significantly positive (at the 5% level), again consistent with stock prices of foreign-owned banks having greater informativeness.

For robustness, we estimate an alternative cross-sectional earnings model following Bai et al. (2016). We again find that stock prices of foreign-owned banks reflect more earnings information two years in advance compared to non-foreign-owned banks. These unreported results are in Table A-2.9 of the appendix A-2.

4.5 Foreign Bank Ownership, Corporate Governance Mobility, and Price Informativeness

4.5.1 Do the home country's governance and banking regulatory environment matter? In this section, we test whether the negative association between foreign bank ownership and price synchronicity varies with home countries' governance and bank regulatory environment (hypothesis 2a).

We use three country governance indexes. The first is the revised anti-director-rights index; the second is the anti-self-dealing index, both from Djankov et al. (2008). The anti-director-rights index measures how well a country protects minority shareholders based on six legal rights granted to them. The anti-self-dealing index measures how well a country protects shareholders against corporate insiders' self-dealing. The third is the World Governance Index (WGI), measured as the average of six governance indicators capturing government effectiveness, political stability, regulatory quality, rule of law, voice and accountability, and control of corruption, respectively, from Kaufmann et al. (2006).

We focus on three aspects of bank regulations relating to the three pillars of the Basel II Accord, namely, minimum capital requirement (Pillar One), supervisory review process (Pillar Two), and market discipline (Pillar Three). In particular, we collect three country-level variables from the four worldwide surveys on bank regulations of Barth et al. (2004, 2006, 2008, and 2013a), namely, *Capital regulatory index*, *Official supervisory power*, and *Private monitoring index* to proxy for Pillar One, Pillar Two, and Pillar Three of the Basel II Accord, respectively.[20] *Capital regulatory index* is an index of overall capital stringency and is the sum of the answers to several survey questions relating to the extent of regulatory requirements in bank capital and to the sources of funds that count as regulatory capital. *Official supervisory power* is a measure of the power of supervisory agencies; we measure it using answers to 14 questions on the extent to which supervisory authorities have the authority to take action in preventing and correcting problems. *Private monitoring index* is a measure of the extent of bank disclosure requirements and incentives to increase private monitoring. We construct it using answers to several survey questions, such as "Is an external audit compulsory for banks?" and "Are off-balance sheet items disclosed to the public?"

For each of the three governance indexes and three banking regulatory variables, we divide *Foreign* into two indicator variables based on its respective sample median. For instance, *Foreign (High anti-director-rights index)* equals 1 when a foreign bank's home country has an above-median anti-director-rights index; it equals 0 otherwise. We estimate the baseline models using the split *Foreign* variables and report the estimation in table 6.

[Insert Table 6 about here]

As shown in models (1) to (3), the negative association of foreign bank ownership with price synchronicity is only significant when home countries have above-median values in the anti-director-rights index, anti-self-dealing index, and WGIs, supporting hypothesis 2a. The Wald tests show that the coefficients for *Foreign* are significantly different between the high- and low-governance groups for the

anti-director-rights index and the anti-self-dealing index. These results suggest that the increased price informativeness due to foreign ownership likely stems from home countries' governance, consistent with foreign-owned banks exporting governance overseas.

As for the banking regulatory variables, the results from models (4) to (6) exhibit a similar pattern, despite being less significant: the negative association between *Foreign* and price synchronicity is more pronounced when home countries have above-median values in the three banking regulation variables (such negative association is only significant when home countries have better supervisory power). Nonetheless, the results from the Wald tests show that the coefficients for *Foreign* between the high and low regulatory variables are not significantly different. These findings suggest that foreign-owned banks from home countries with stronger supervision likely have better practices and thus better information environments.

4.5.2 Does relative distance in governance and regulation between home and host countries matter? In this section, we test hypotheses 2b and 2c to determine whether relative differences in governance and banking regulatory environments between the home and host countries determine price informativeness, and whether such relation varies with geographical distance.

For each foreign bank in our sample, we subtract each of the three governance indexes and the three banking regulation variables of the host country from that of the home country, and we examine the relationship between the relative differences with price synchronicity. To illustrate, a positive value of *Anti-director-rights index (Home-Host)* indicates that the home country has better shareholder protections than the host country. Geographical distance is the distance (in miles) between a foreign bank's city (in the host country) and its home country's capital city.[21, 22]

[Insert Table 7 about here]

Table 7 reports these results. Models (1) to (3) show that the differences in anti-self-dealing index and WGI enter negatively and significantly (at the 10% level or better). Models (4) to (6) show that, of the three bank regulation variables, only the differences in *Official supervisory power* are negatively and significantly (at the 10% level) associated with price synchronicity. These findings support hypothesis 2b.

In models (7) to (9), we interact the governance distance with log geographical distance to explain price synchronicity; in model (10), we interact the three banking regulatory variables with log geographical distance. In line with our predictions, differences in the anti-self-dealing index and WGI are negatively and significantly associated with *SYNCH* (at the 5% level or better) (see models 8 and 9). For both the anti-self-dealing index and the WGI, their interaction terms with geographical distance are positive and significant at the 10% level or better. In model (10), we find that the relative distance in *Official supervisory power* is negatively associated with price synchronicity, and such negative relation strengthens when geographical distance decreases. These results are consistent with hypothesis 2c.

Specifically, for geographical distances (between the home and host countries) in the 25th (345.5 miles) and 75th (4464.7 miles) percentiles, an increase in the home-minus-host difference in the anti-self-dealing index [WGI] {*Official supervisory power*} from the 25th to the 75th percentiles reduces stock price synchronicity by -15.9% [-33.3%] {-13.3%} and -4.0% [-2.1%] {+12.2%}, respectively, holding other variables at mean values. Overall, these results support both hypotheses 2b and 2c.

4.6 Other Considerations

Our findings thus far suggest that foreign bank ownership plays an important role in improving banks' information environments. To shed more light on the economic mechanism behind these findings, we examine the disclosure quality of foreign-owned banks, and specifically, we focus on their loan loss provisions — a major device banks use to manage earnings and regulatory capital. We follow Beatty and Liao (2014) and Jiang et al. (2016) and estimate a bank's "abnormal" loan loss provisions, or discretionary loan loss provisions, that cannot be explained by bank fundamentals. Consistent with improved information environments, our tests (untabulated) show that foreign-owned banks have significantly lower discretionary loan loss provisions. Our results are robust to excluding positive discretionary loan loss provisions (which reduce earnings) that may represent accounting discretion to enhance transparency; they are also robust to using an alternative extended sample consisting of 2,639 banks from 134 countries. Moreover, such negative association is more pronounced when home countries have lower governance quality. For conciseness, these results are unreported but are in Table A-2.10 of the appendix A-2.

An issue we have not explored thus far in our study is the possibility that governance mechanisms substitute or complement one another. Prior studies analyze the interaction between internal and external governance mechanisms, such as between directors and the takeover market (Hirshleifer and Thakor, 1994), between executive compensation and the takeover market (Agrawal and Knoeber, 1998; John et al., 2000), between the legal environment and board monitoring (e.g., Marcel and Cowen, 2014), between ownership structure and board composition (Hermalin and Weisbach, 1991), and between external audits and board monitoring (Desender et al., 2016) (see John and Senbet, 1998; and Aguilera et al., 2015).

We first shed light on the potential interaction between foreign bank ownership and an external governance mechanism: the banking regulatory environment. Specifically, we collect from the worldwide surveys of Barth et al. (2004, 2006, 2008, and 2013a) the three variables for Basel II's three pillars and an external governance index, which aggregates survey answers relating to the strength of external audit, banks' financial disclosure requirements, accounting practices, and external ratings and creditor monitoring. To the extent that the banking regulatory environment and monitoring by foreign owners are partial complements, our results may be more pronounced for host countries that have stronger regulations in bank

supervision and disclosure. However, our results (untabulated) show little evidence of interaction between *Foreign* and these external governance variables in explaining *SYNCH*.

Furthermore, we test whether foreign ownership and board governance are complements or substitutes. Because firm-level board data is unavailable for our sample of global banks, we collect the timing of country-specific board-related major reforms for 40 of our sample countries from Fauver et al. (2017). We examine whether the effect of such reforms in relation to (1) board independence and (2) audit committee and audit independence on price synchronicity depends on foreign ownership. We find that the negative association between foreign bank ownership and price synchronicity significantly (at the 10% level) strengthens after major reforms in board independence, but not with audit committee reforms, consistent with a complementary relation. To keep our paper concise, these results are in Table A-2.11 of the appendix A-2. Nonetheless, because the board reform variables are at the country level, our results are subject to measurement errors and are merely suggestive.

5 CONCLUSION

Under both the agency and institutional theoretical perspectives, recent IB research posits that corporate governance travels across countries through, for example, foreign ownership, international M&As, etc. (see, e.g., Cumming et al., 2017; Ellis et al., 2017). This study tests this emerging theory of governance mobility in the context of banking and, more specifically, investigates whether foreign ownership increases bank transparency via governance spillover from home countries. Because bank opacity is likely a major cause of banking crises (Bushman, 2014, 2016), a better understanding of what determines bank opacity in the context of globalization helps regulators and IB scholars stabilize financial markets and international trade.

Based on a large sample of global banks from 60 countries over 1997-2012, we find that foreign ownership is associated significantly with higher (lower) price informativeness (synchronicity) among bank stock prices. Further tests show that stock prices of foreign-owned banks reflect more information about future earnings growth than those of non-foreign-owned banks. The positive association between foreign ownership and price informativeness is more pronounced for foreign-owned banks from home countries with relatively strong governance and banking supervision, as well as when monitoring costs are low. Our evidence is consistent with foreign ownership increasing price informativeness through improved corporate governance.

Our findings contribute to the IB literature by uncovering a positive effect of globalization on bank information environments. Consistent with the emerging theory of international governance mobility, our study shows that foreign bank ownership is an effective channel through which governance travels across borders. Our results have direct implications for regulators, as more informative bank stock prices due to foreign ownership could help increase market discipline and thus the efficiency of supervision. Enhanced

bank transparency also helps international investors better discriminate between banks, improving the efficiency of capital allocation. For policymakers, fostering legislation that supports the importation or exportation of good governance may help stabilize markets and global trade.

We acknowledge a few limitations of our study that may offer possible directions for future research. First, firm-level data on corporate governance, such as governance provisions and board information, are unavailable for our sample of global banks. Although our results are in line with the theory of international governance mobility, we are unable to offer direct evidence of precisely what components of bank governance improve when foreign ownership increases and whether foreign ownership substitutes or complements other governance mechanisms. Future research efforts in compiling and analyzing more granular bank data are warranted.

Second, although our results are robust to alternative empirical approaches and tests, our main measure of stock price informativeness — firm-specific return variation — is nonetheless noisy in capturing information flows. This concern about measurement errors could be more severe for developing economies whose stock markets are undeveloped, inefficient, or malfunctioning, and where the role of stock prices in signaling and directing market activities is ineffective. As such, our findings have less to say about whether the effects of foreign ownership on bank transparency diverge across countries. Finally, because we exclude countries that ban foreign ownership in banks (e.g., Ethiopia), our findings may not generalize to such countries.

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TABLE 1
Descriptive Statistics

This table provides the descriptive and summary statistics for our international bank sample. The sample period is from 1997 to 2012. All bank fundamental information is from Bankscope. All stock information is from Datastream and Worldscope. Foreign bank ownership data is from the dataset compiled by Claessens and van Horen (2014). The final sample consists of 7,550 bank-year observations for 710 unique banks from 60 countries. *SYNCH* is bank stock price synchronicity; *Foreign* equals 1 for banks with 50% or more foreign ownership, and zero otherwise. Panel A reports the number of observations plus average *SYNCH* and *Foreign* by year. Panel B reports the number of observations, proportion, and the average *SYNCH* and *Foreign* by country.

Panel A: By Year

Year	Obs.	*SYNCH*	*Foreign*
1997	328	-0.252	0.061
1998	341	-0.107	0.076
1999	378	-0.401	0.093
2000	420	-0.326	0.110
2001	429	-0.329	0.117
2002	446	-0.257	0.123
2003	449	-0.327	0.131
2004	465	-0.088	0.127
2005	478	-0.202	0.132
2006	528	0.057	0.157
2007	547	-0.016	0.177
2008	567	0.267	0.183
2009	558	0.128	0.192
2010	559	0.146	0.181
2011	543	0.273	0.190
2012	514	0.019	0.193
Total	7550		

Panel B: By Country

Country	Obs.	%	*SYNCH*	*Foreign*
Argentina	90	1.2%	0.349	0.322
Australia	129	1.7%	1.042	0.093
Austria	126	1.7%	0.120	0.079
Bahrain	51	0.7%	-1.048	0.275
Belgium	11	0.1%	-0.278	0.000
Brazil	246	3.3%	-0.053	0.089
Bulgaria	30	0.4%	0.674	0.200
Canada	144	1.9%	0.740	0.056
Chile	104	1.4%	0.101	0.288
China	54	0.7%	-0.698	0.000
Colombia	6	0.1%	-1.314	0.000
Croatia	96	1.3%	-0.500	0.375
Cyprus	30	0.4%	0.279	0.033
Czech Republic	42	0.6%	0.989	0.881
Denmark	565	7.5%	-0.913	0.012
Egypt	176	2.3%	-0.870	0.369
Finland	16	0.2%	1.915	0.000

France	275	3.6%	-0.247	0.044
Germany	147	1.9%	-0.050	0.156
Greece	48	0.6%	0.211	0.208
Hong Kong	124	1.6%	-0.106	0.613
Hungary	28	0.4%	1.632	0.107
India	309	4.1%	0.032	0.045
Indonesia	66	0.9%	-1.464	0.409
Ireland	35	0.5%	0.636	0.000
Israel	140	1.9%	0.518	0.050
Italy	293	3.9%	-0.033	0.003
Japan	934	12.4%	-0.243	0.003
Jordan	69	0.9%	-0.709	0.362
Korea, Republic of	124	1.6%	-0.287	0.129
Kuwait	61	0.8%	-0.421	0.115
Luxembourg	57	0.8%	0.168	1.000
Mexico	13	0.2%	-0.477	0.000
Morocco	62	0.8%	-0.025	0.484
Netherlands	54	0.7%	0.459	0.037
Nigeria	31	0.4%	-0.316	0.097
Norway	228	3.0%	-0.721	0.000
Oman	33	0.4%	0.084	0.000
Pakistan	234	3.1%	-0.055	0.282
Peru	80	1.1%	-0.581	0.538
Philippines	171	2.3%	-0.364	0.082
Poland	215	2.8%	0.263	0.744
Portugal	80	1.1%	0.538	0.075
Qatar	40	0.5%	0.282	0.000
Romania	37	0.5%	1.488	0.324
Russian Federation	96	1.3%	0.003	0.042
Singapore	59	0.8%	0.818	0.000
Slovakia	35	0.5%	0.167	0.971
Slovenia	42	0.6%	0.254	0.500
South Africa	74	1.0%	-0.100	0.095
Spain	127	1.7%	0.386	0.055
Sri Lanka	110	1.5%	0.297	0.000
Sweden	48	0.6%	1.580	0.000
Switzerland	136	1.8%	-0.158	0.103
Taiwan, Province of China	210	2.8%	0.123	0.043
Thailand	178	2.4%	0.423	0.202
Turkey	155	2.1%	1.011	0.103
United Kingdom	93	1.2%	0.190	0.000
United States	148	2.0%	0.261	0.115
Venezuela, Bolivarian Republic of	135	1.8%	-0.494	0.356
Total	7550	100%		

TABLE 2
Summary Statistics and Univariate Analysis

This table presents the summary statistics (panel A) and the univariate analysis (panel B). Panel A reports the number of observations, means, medians, standard derivations, and percentile statistics of the main variables in this study. Panel B compares the means and medians of these variables between the foreign-owned banks (1,107 observations) and the non-foreign-owned banks (6,443 observations). It reports their differences with statistical significance based on the two-sample *t*-tests (mean tests) and the Wilcoxon signed rank tests (median tests). The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Summary Statistics

Variable	Obs.	Mean	Std. dev.	25th	Median	75th
SYNCH	7550	-0.061	1.219	-0.881	-0.140	0.675
R^2	7550	0.482	0.235	0.293	0.465	0.663
Foreign	7550	0.147	0.354	0.000	0.000	0.000
ROA	7550	0.008	0.014	0.003	0.008	0.013
Noninterest income/TA	7550	0.016	0.019	0.006	0.012	0.019
Deposits/TA	7550	0.714	0.195	0.630	0.777	0.857
Total assets	7550	45611	122129	1838	8194	29007
Ln(TA)	7550	8.928	2.014	7.517	9.011	10.275
Capital	7550	0.090	0.061	0.054	0.074	0.111
LLP/TA	7550	0.006	0.009	0.001	0.004	0.007
Cross-listing indicator	7550	0.329	0.470	0.000	0.000	1.000
CPI	7029	0.038	0.051	0.014	0.025	0.046
GDP growth	7340	0.029	0.035	0.012	0.028	0.048
Stock market cap/GDP	5743	0.642	0.824	0.180	0.458	0.777
Stock market turnover ratio	5624	0.780	0.539	0.409	0.686	1.068
Ln(Population)	7340	17.412	1.594	15.884	17.711	18.663
Financial development	7002	1.698	27.623	0.406	0.878	1.490

Panel B: Univariate Analysis

	Foreign=1 (1107 obs.)		*Foreign*=0 (6443 obs.)		Difference (1-0)			
	Mean	Median	Mean	Median	Mean		Median	
SYNCH	-0.160	-0.158	-0.045	-0.139	-0.116	***	-0.020	**
R^2	0.466	0.460	0.485	0.465	-0.019	**	-0.005	**
Foreign	1.000	1.000	0.000	0.000	1.000	***	1.000	***
ROA	0.011	0.010	0.008	0.007	0.003	***	0.003	***
Noninterest income/TA	0.018	0.015	0.016	0.012	0.002	***	0.003	***
Deposits/TA	0.742	0.786	0.710	0.774	0.032	***	0.012	
Total assets	19780	5328	50050	9153	-30269	***	-3825	***
Ln(TA)	8.599	8.581	8.984	9.122	-0.385	***	-0.541	***
Capital	0.103	0.091	0.088	0.071	0.015	***	0.020	***
Loan loss provisions/TA	0.007	0.004	0.006	0.004	0.001	*	0.000	*
Cross-listing indicator	0.291	0.000	0.336	0.000	-0.045	***	0.000	***
CPI	0.046	0.033	0.036	0.024	0.010	***	0.009	***
GDP growth	0.036	0.037	0.028	0.026	0.007	***	0.011	***
Stock market cap/GDP	0.650	0.140	0.640	0.486	0.010		-0.346	***
Stock market turnover ratio	0.490	0.415	0.831	0.740	-0.340	***	-0.325	***
Ln(Population)	16.968	17.310	17.490	17.877	-0.522	***	-0.567	***
Financial development	0.636	0.473	1.887	0.948	-1.251		-0.476	***

TABLE 3
Foreign Ownership and Price Synchronicity of Bank Stocks

Panel A of this table reports the results of our baseline tests. The dependent variable is the price synchronicity of bank stocks (*SYNCH*). The main variable of interest is *Foreign*, which equals 1 when a bank has 50% or more foreign ownership, and zero otherwise. The bank controls include return on assets (*ROA*), noninterest income to total assets (*Noninterest income/TA*), total deposits to total assets (*Deposits/TA*), log total assets (*Ln(TA)*), equity capital to total assets (*Capital*), loan loss provisions to total assets (*Loan loss provisions/TA*), and an indicator variable for cross-listing (*Cross-listing indicator*). Model 2 controls for six country characteristics, including the ratio of stock market capitalization to GDP (*Stock market cap/GDP*), the growth in real GDP (*GDP growth*), the rate of change in the national consumer price index (*CPI*), annualized turnover ratios of domestic stocks (*Stock market turnover ratio*), the log of total population (*Ln(Population)*), and the ratio of total private credit to GDP (*Financial development*). The coefficient estimates for these country controls are suppressed for brevity. The standard errors are clustered at the bank level, unless stated otherwise. Panel B reports the robustness results. For brevity, we report only the coefficient estimates on *Foreign*. Model specifications in panel B follow model (3) of panel A. In row 1, the nontransformed R-squared is the dependent variable. Rows 2 and 3 report the between-effect (BE) estimator and the Fama and MacBeth (FM) cross-sectional regression, respectively. Row 4 reports a weighted least squares (WLS) regression in which the weight is the inverse of the number of observations in each country. Row 5 reports a median regression that is less subject to the influences of outliers. Row 6 uses a subsample covering the period from 1997 to 2006. Rows 7 and 8 use alternative standard errors, clustered by bank and year, and by country and year, respectively. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Baseline Tests

	SYNCH				
	(1)	(2)	(3)	(4)	(5)
Foreign	-0.322***	-0.294***	-0.347***	-0.315***	-0.183*
	(0.094)	(0.101)	(0.068)	(0.071)	(0.097)
ROA		5.487**	4.620***	5.398***	2.363*
		(2.241)	(1.567)	(1.753)	(1.364)
Noninterest income/TA		2.697*	1.090	1.051	1.559
		(1.395)	(1.107)	(1.107)	(1.215)
Deposits/TA		0.160	0.452***	0.442***	-0.098
		(0.151)	(0.151)	(0.155)	(0.169)
Ln(TA)		0.373***	0.459***	0.464***	0.236***
		(0.023)	(0.024)	(0.026)	(0.054)
Capital		1.104**	3.070***	2.887***	1.354***
		(0.525)	(0.475)	(0.499)	(0.439)
Loan loss provisions/TA		7.770***	-1.830	0.155	0.743
		(2.857)	(1.923)	(2.134)	(1.892)
Cross-listing indicator		0.339***	0.250***	0.290***	0.171**
		(0.071)	(0.056)	(0.060)	(0.070)
Intercept	0.279	-2.185***	-4.194***	-3.442***	-2.179***
	(0.260)	(0.338)	(0.346)	(0.641)	(0.521)
Country controls		Yes			
Bank FE					Yes
Country FE	Yes		Yes		
Year FE	Yes	Yes	Yes		
Country×Year FE				Yes	Yes
Obs.	7550	5191	7550	7550	7550
Adj. R^2	0.234	0.381	0.482	0.567	0.352

Panel B: Robustness Tests

		R^2		*SYNCH*	
		Coef.	S.E.	Coef.	S.E.
(1)	Use R^2 as dependent variable	-0.066***	(0.013)		
(2)	Between-estimator			-0.407***	(0.088)
(3)	Fama-MacBeth regression			-0.268***	(0.039)
(4)	Weighted-least-squares (WLS)			-0.396***	(0.095)
(5)	Median regression			-0.311***	(0.048)
(6)	Subsample: 1996-2006			-0.310***	(0.086)
(7)	Cluster standard errors at the bank-year level			-0.347***	(0.067)
(8)	Cluster standard errors at the country-year level			-0.347***	(0.069)
(9)	Controlling for the interaction between *Foreign* and *Advanced*			-0.329***	(0.085)
(10)	Controlling for the interaction between *Foreign* and *Financial development*			-0.279**	(0.118)
(11)	Controlling for the interaction between *Foreign* and *Stock market cap/GDP*			-0.380***	(0.091)
(12)	Controlling for the interaction between *Foreign* and *GDP Growth*			-0.345***	(0.072)
(13)	Controlling for the interaction between *Foreign* and *Civil law*			-0.328***	(0.097)

TABLE 4
Endogeneity Tests

This table presents the instrumental variable estimation using the two-stage least squares (2SLS) approach and the dynamic panel system generalized method of moments (DPS GMM) approach. For the 2SLS regression, the dependent variables are the foreign bank ownership indicator (*Foreign*) for the first-stage regression (in model 1) and bank stock price synchronicity (*SYNCH*) for the second-stage regression (model 2). *Ln(latitude)* is the natural logarithm of transformed latitude (in decimal form), which measures the geographical distance between the bank's city (in the host country) and the equator; *Ln(1+Distance from bank city to capital city)* is the natural logarithm of 1 plus the geographical distance (in miles) from the bank's city of location to the host country's capital city. All bank controls are identical to those in the baseline model and are defined in the appendix. We control for the five country characteristics and year fixed effects and cluster the standard errors at the bank level. Model 3 presents the results estimated using the two-step dynamic panel system GMM estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998). Following Wintoki, Linck, and Netter (2012), we control for the first-period (*SYNCH (-1)*) and second-period lagged dependent variables (*SYNCH (-2)*) in the regression. We treat all explanatory variables except the year dummies as endogenous and instrument them with the *t-3* to *t-5* lagged dependent and independent variables for the difference equation and their respective lagged differences for the level regression. We report the tests of first-order and second-order serial correlations in the residuals and the Hansen test of overidentification under the null of instrument validity. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Estimation approaches	2SLS IV		DPS GMM
	1st stage	2nd stage	
Dependent variables	*Foreign*	*SYNCH*	*SYNCH*
	(1)	(2)	(3)
Ln(Latitude)	0.074***		
	(0.022)		
Ln(1+Distance from bank city to capital city)	-0.015**		
	(0.007)		
Foreign (Fitted Foreign for model 2)		-1.301**	-0.692**
		(0.662)	(0.294)
ROA	-1.097	4.127	-17.981
	(1.043)	(2.544)	(12.012)
Noninterest income/TA	0.010	3.091**	-5.612
	(0.590)	(1.551)	(6.935)
Deposits/TA	0.166***	0.304*	0.016
	(0.058)	(0.172)	(0.694)
Ln(TA)	0.010	0.384***	0.130
	(0.010)	(0.023)	(0.222)
Capital	0.482*	1.437**	3.215*
	(0.275)	(0.640)	(1.742)
Loan loss provisions/TA	0.715	7.898**	14.268
	(1.291)	(3.069)	(13.301)
Cross-listing indicator	-0.038	0.304***	0.300*
	(0.029)	(0.075)	(0.163)
SYNCH (-1)			0.424*
			(0.251)
SYNCH (-2)			-0.221
			(0.216)
Country controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Obs.	5132	5132	4272
Adj. R^2	0.121	0.278	
F-statistics of the excluded IVs	7.750***		
Cragg-Donald *F*-statistics of the excluded IVs	54.320***		
AR(1) test *p*-value			0.004
AR(2) test *p*-value			0.194
Hansen test of overidentification *p*-value		0.258	0.603

TABLE 5
Foreign Bank Ownership and Earnings Innovations

This table reports the results of regressions examining the extent to which current stock prices reflect future earnings information. The dependent variable is buy-and-hold bank stock annual returns (R_t). E/MV_{t-1} is the net income in year *t-1*, scaled by market capitalization at the end of year *t-1*. ΔE_t is the annual growth rate in net income from year *t-1* to *t*, scaled by market capitalization at the end of year *t-1* (i.e., at the beginning of return calculation). $R_{(t+1 \text{ to } t+3)}$ is the buy-and-hold stock returns from the beginning of year *t+1* to the end of year *t+3*; we expect it to be negatively related to stock returns. $\Delta E_{i(t+1 \text{ to } t+3)}$ is the sum of the annual changes in net income over year *t+1* to *t+3*, scaled by market capitalization at the end of year *t-1*. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	R_t	
	(1)	(2)
E/MV_{t-1}	0.043***	0.038***
	(0.016)	(0.014)
ΔE_t	-0.044	-0.017
	(0.047)	(0.036)
ΔE_{t+1}	0.017	
	(0.053)	
ΔE_{t+2}	0.029	
	(0.045)	
ΔE_{t+3}	-0.056	
	(0.037)	
$\Delta E_{(t+1 \text{ to } t+3)}$		-0.005
		(0.017)
$R_{(t+1 \text{ to } t+3)}$	0.111***	0.107***
	(0.020)	(0.020)
Foreign × E/MV_{t-1}	-0.309*	-0.213**
	(0.161)	(0.084)
Foreign × ΔE_t	-0.032	-0.039
	(0.035)	(0.030)
Foreign × ΔE_{t+1}	-0.007	
	(0.126)	
Foreign × ΔE_{t+2}	0.316**	
	(0.132)	
Foreign × ΔE_{t+3}	-0.004	
	(0.088)	
Foreign × $\Delta E_{(t+1 \text{ to } t+3)}$		0.122**
		(0.053)
Foreign × $R_{(t+1 \text{ to } t+3)}$	0.015	0.006
	(0.031)	(0.030)
Foreign	0.034	0.018
	(0.031)	(0.030)
Interaction between earnings innovations and all other controls	Yes	Yes
Country FE	Yes	Yes
Obs.	6,140	6,140
Adj. R^2	0.462	0.448

Table 6
Does Home Country's Governance and Banking Regulatory Environment Matter?

This table presents the results of the regressions examining whether foreign ownership's effect on bank stock price synchronicity depends on the home country's governance quality and banking regulatory environment. The dependent variable is bank stock price synchronicity (*SYNCH*). We measure country governance using three proxies: the revised anti-director-rights index (*Anti-director-rights index*), the anti-self-dealing index (*Anti-self-dealing index*), and the World Governance Index (*WGI*). We measure banking regulatory environment in three aspects, corresponding to Basel II Pillar One, Pillar Two, and Pillar Three, respectively, using worldwide survey data from Barth et al. (2004, 2006, 2008, and 2013a). *Capital regulatory index* is an index of overall capital stringency and is the sum of the answers to several survey questions relating to the extent of regulatory requirements in bank capital and to the sources of funds that count as regulatory capital. *Official supervisory power* is a measure of the power of supervisory agencies, measured using answers to 14 questions on the extent to which supervisory authorities have the authority to take actions in preventing and correcting problems. *Private monitoring index* is a measure of the extent of bank disclosure requirements and incentives to increase private monitoring. We divide the foreign ownership (*Foreign*) variable into two variables based on the sample median of the governance indexes and banking regulatory variables (in the foreign bank sample). To illustrate, *Foreign (High [Low] governance index)* equals 1 when a bank has 50% or more foreign ownership and its home country has an above-median (below-median) governance index; it equals zero otherwise. The bank controls are identical to those used in the baseline model, defined in the appendix, and their coefficients are suppressed for brevity. Year fixed effects are included. Standard errors are clustered at the bank level. The *p*-values of the Wald tests of coefficient equality between the divided foreign ownership variables are reported. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent variables	*SYNCH*					
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign (High Anti-director index)	-0.359**					
	(0.163)					
Foreign (Low Anti-director index)	-0.010					
	(0.112)					
Foreign (High Anti-self-dealing index)		-0.365***				
		(0.125)				
Foreign (Low Anti-self-dealing index)		0.035				
		(0.121)				
Foreign (High World Governance Index)			-0.192**			
			(0.091)			
Foreign (Low World Governance Index)			-0.129			
			(0.096)			
Foreign (High Capital regulatory index)				-0.353		
				(0.219)		
Foreign (Low Capital regulatory index)				-0.092		
				(0.100)		
Foreign (High Official supervisory power)					-0.245*	
					(0.130)	
Foreign (Low Official supervisory power)					-0.041	
					(0.114)	
Foreign (High Private monitoring index)						-0.165
						(0.143)
Foreign (Low Private monitoring index)						-0.090
						(0.103)
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	7550	7550	7550	7,550	7,550	7,550
Adj. R^2	0.235	0.236	0.233	0.233	0.234	0.233
Wald test of coefficient equality: *H_0: High-Low=0*	0.069	0.014	0.788	0.262	0.183	0.600

Table 7
Does the Relative Difference in Governance and Banking Regulatory Environment Matter?

This table presents the regressions that examine whether differences in governance and banking regulatory environment between home and host countries explain bank stock price synchronicity on the foreign bank sample. The dependent variable is bank stock price synchronicity (*SYNCH*). We measure country governance using three proxies: the revised anti-director-rights index (*Anti-director-rights index*), the anti-self-dealing index (*Anti-self-dealing index*), and the World Governance Index (*WGI*). Banking regulatory environment is measured in three aspects, corresponding to the Basel II Pillar One, Pillar Two, and Pillar Three, respectively, using worldwide survey data from Barth et al. (2004, 2006, 2008, and 2013a). *Capital regulatory index* is an index of overall capital stringency and defined as the sum of the answers to several survey questions relating to the extent of regulatory requirements in bank capital and to the sources of funds that count as regulatory capital. *Official supervisory power* is a measure of the power of supervisory agencies; we measure it using 14 questions on the extent to which supervisory authorities have the authority to take actions to prevent and correct problems. *Private monitoring index* is a measure of the extent of bank disclosure requirements and incentives to increase private monitoring. We calculate the relative difference in the governance indexes and banking regulatory variables between the home and host countries by subtracting each of these indexes and variables for the host country from those of the home country. We calculate geographical distance (in miles) between the bank's city of location (in the host country) and its home country's capital city (both measured at the center) by applying spherical geometry and trigonometric math functions to the latitudes and longitudes of the locations. The bank controls are identical to those used in the baseline model, and their coefficients are suppressed for brevity. Year fixed effects are included in all specifications. Country fixed effects are included only when *WGI* is used. Standard errors are clustered at the bank level. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent variables	*SYNCH*									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Anti-director-rights index (Home-Host)	-0.001						-0.240			
	(0.055)						(0.328)			
Anti-self-dealing index (Home-Host)		-0.681**						-3.087**		
		(0.338)						(1.502)		
WGI (Home-Host)			-0.206*						-1.622***	
			(0.119)						(0.489)	
Capital regulatory index (Home-Host)				0.031						-0.190
				(0.029)						(0.211)
Official supervisory power index (Home-Host)					-0.039*					-0.500*
					(0.023)					(0.260)
Private monitoring index (Home-Host)						-0.055				-0.031
						(0.044)				(0.403)
Anti-director-rights index (Home-Host)×Ln(Geographical distance)							0.032			
							(0.041)			
Anti-self-dealing index (Home-Host)×Ln(Geographical distance)								0.348*		
								(0.199)		
WGI (Home-Host)×Ln(Geographical distance)									0.190***	
									(0.064)	
Capital regulatory index (Home-Host)×Ln(Geographical distance)										0.035
										(0.032)
Official supervisory power index (Home-Host)×Ln(Geographical distance)										0.069**
										(0.034)
Private monitoring index (Home-Host)×Ln(Geographical distance)										-0.016
										(0.052)
Ln(Geographical distance)							-0.038	-0.054		0.011
							(0.050)	(0.054)		(0.065)
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE			Yes						Yes	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	865	865	1,047	519	707	868	865	865	1,047	370
Adj. R^2	0.218	0.234	0.418	0.196	0.168	0.178	0.219	0.231	0.431	0.181

APPENDIX A.1
Variable Definitions

Variables	Description	Source
SYNCH	A bank's stock price synchronicity measure, calculated based on the R^2 estimated from an expanded market model using weekly bank stock returns. We apply a logistic transformation to the estimated R^2 as follows: $SYNCH_{it} = log\ [\ R^2_{it} / (\ 1 - R^2_{it}\ )]$.	DataStream
Foreign	An indicator variable that equals 1 when a bank has 50% or more foreign ownership, and zero otherwise, in a given year.	Claessens and van Horen (2014)
ROA	Net income to total assets.	Bankscope
Noninterest income/TA	Noninterest income to total assets.	Bankscope
Deposits/TA	Total deposits to total assets.	Bankscope
Ln(TA)	Natural logarithm of total assets in millions of U.S. dollars.	Bankscope
Capital	Total equity capital to total assets.	Bankscope
Loan loss provisions/TA	Loan loss provisions to total assets.	Bankscope
Cross-listing indicator	An indicator variable equal to 1 when a bank stock has at least one cross-listing, and zero otherwise, in a given year.	Worldscope
CPI	Rate of change in the national consumer price index.	World Bank
GDP growth	Rate of change in real gross domestic product (GDP).	World Bank
Stock market cap/GDP	The ratio of market capitalization to GDP.	World Bank
Stock market turnover ratio	The annualized turnover ratios of domestic stocks. Turnover ratio is the value of domestic stocks traded divided by their market capitalizations.	World Bank
Ln(Population)	The natural logarithm of the total population in a country in a given year.	World Bank
Financial development	The ratio of total private credit to gross domestic product (GDP).	World Bank
Anti-director-rights index	The revised anti-director-rights index, which ranges from 0 to 6. This index measures how well a country protects its minority shareholders based on six legal rights granted to them. It is formed by adding 1 to the index for each legal right, including (1) shareholders can mail proxy votes; (2) shareholders are not required to deposit their shares prior to the general shareholders meeting; (3) cumulative voting or proportional representation of minorities on the board of directors is allowed; (4) there is an oppressed minorities mechanism; (5) shareholders have preemptive rights that can only be waived by a shareholders meeting; and (6) the minimum percentage of share capital that entitles a shareholder to call for an extraordinary shareholders meeting is less than or equal to 10%.	Djankov, La Porta, López-de-Silanes, and Shleifer (2008)
Anti-self-dealing index	The anti-self-dealing index, which measures a country's legal protections for minority shareholders against corporate insiders' self-dealing. It is the average of *ex ante* and *ex post* private control of self-dealing indexes. The index of *ex ante* control of self-dealing transactions is the average of approval by disinterested shareholders and *ex ante* disclosure. The index of *ex post* control of self-dealing transactions is the average of disclosures in periodic filings and ease of proving wrongdoing.	Djankov, La Porta, López-de-Silanes, and Shleifer (2008)

WGI	The World Governance Index, which is the average of six country-level governance indicators, measures (1) government effectiveness; (2) political stability; (3) regulatory quality; (4) rule of law; (5) voice and accountability; and (6) control of corruption. For more details about the construction of these six governance indicators, please see Kaufmann, Kraay, and Mastruzzi (2006).	Kaufmann, Kraay, and Mastruzzi (2006)
Capital regulatory index	*Capital regulatory index* is an index of overall capital stringency and is the sum of the answers to several survey questions relating to the extent of regulatory requirements in bank capital and to the sources of funds that count as regulatory capital. See Barth et al. (2004, 2013a) for more details.	Barth et al. (2004, 2006, 2008, and 2013a)
Official supervisory power	*Official supervisory power* is a measure of the power of supervisory agencies, measured using answers to 14 questions on the extent to which supervisory authorities have the authority to take actions to prevent and correct problems. See Barth et al. (2004, 2013a) for more details.	Barth et al. (2004, 2006, 2008, and 2013a)
Private monitoring index	*Private monitoring index* is a measure of the extent of bank disclosure requirements and incentives to increase private monitoring. See Barth et al. (2004, 2013a) for more details.	Barth et al. (2004, 2006, 2008, and 2013a)
Ln(Geographical distance)	The geographical distance (in miles) between the foreign-owned bank's city of location in the host country and its home country's capital city. We make use of spherical geometry and trigonometric math functions to calculate the accurate distance between the two locations. Specifically, we first convert each pair of latitude and longitude from decimal degrees into radians by dividing their values by 180/π or 57.296. *Lat1* (*Lat2*) and *Long1* (*Long2*) represent the latitudes and longitudes in radians of the foreign bank's city of location (home country's capital city). We then use the great circle distance formula to calculate the distance in miles between two pairs of latitudes and longitudes as follows: $$Distance = 3963 \times Arccos[Sin(Lat1)Sin(Lat2) + Cos(Lat1)Cos(Lat2)Cos(Long2-Long1)],$$ where 3,963 is the radius of the Earth in miles.	www.mapsofworld.com; CEPII
Ln(Latitude)	Natural logarithm of the absolute value of latitude in decimal degrees. It measures the distance of the bank's city of location (in the host country) from the equator.	www.mapsofworld.com; CEPII
Ln(1+Distance from bank city to capital city)	Natural logarithm of 1 plus the distance (in miles) from the bank's city of location (in the host country) from the capital city of the host country.	www.mapsofworld.com; CEPII
E/MV_{t-1}	Net income in year *t-1*, scaled by market capitalization at the end of year *t-1*.	Bankscope; DataStream
ΔE_t	The annual change in net income from year *t-1* to *t*, scaled by market capitalization at the end of year *t-1* (i.e., at the beginning of return calculation).	Bankscope; DataStream
$R_{(t+1 \text{ to } t+3)}$	The buy-and-hold stock returns from the beginning of year *t+1* to the end of year *t+3*.	DataStream
$\Delta E_{i(t+1 \text{ to } t+3)}$	The sum of the annual changes in net income over year *t+1* to *t+3*, scaled by market capitalization at the end of year *t-1*.	Bankscope; DataStream
MV/TA_{t-1}	The ratio of market capitalization to total assets at the end of year *t-1*.	Bankscope; DataStream

Appendix A-2

TABLE A-2.1

Descriptive Statistics by Year and Country

This table reports the descriptive statistics by year and country for our international bank sample.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	%
ARGENTINA	5	6	6	6	6	6	5	5	5	5	5	6	6	6	6	6	90	1.2%
AUSTRALIA	8	8	8	8	8	8	8	8	8	8	8	9	8	7	9	8	129	1.7%
AUSTRIA	5	6	6	7	7	7	8	8	9	9	9	9	9	9	9	9	126	1.7%
BAHRAIN	0	0	0	0	0	0	0	5	5	6	6	6	6	6	6	5	51	0.7%
BELGIUM	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	11	0.1%
BRAZIL	12	12	13	13	13	16	16	16	15	13	17	20	17	18	18	17	246	3.3%
BULGARIA	0	0	0	0	1	1	1	2	1	2	4	3	3	4	4	4	30	0.4%
CANADA	8	8	9	9	9	9	9	9	10	10	10	10	10	10	4	10	144	1.9%
CHILE	6	7	7	7	7	6	7	6	6	6	6	6	6	7	7	7	104	1.4%
CHINA	0	0	0	0	0	0	0	0	3	4	5	8	8	8	9	9	54	0.7%
COLOMBIA	1	1	1	0	0	0	0	1	2	0	0	0	0	0	0	0	6	0.1%
CROATIA	0	0	0	0	0	0	0	0	0	12	13	13	14	15	15	14	96	1.3%
CYPRUS	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	30	0.4%
CZECH REPUBLIC	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	42	0.6%
DENMARK	35	34	35	36	36	36	36	36	36	35	37	40	38	34	33	28	565	7.5%
EGYPT	6	6	12	13	12	12	10	10	9	8	10	13	13	14	14	14	176	2.3%
FINLAND	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	0.2%
FRANCE	9	11	14	14	15	17	19	19	19	19	19	20	20	20	20	20	275	3.6%
GERMANY	5	5	6	8	9	10	9	11	11	11	11	11	10	10	10	10	147	1.9%
GREECE	1	1	2	3	3	3	3	2	3	5	5	5	5	5	1	1	48	0.6%
HONG KONG	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	124	1.6%
HUNGARY	2	2	2	2	3	3	2	2	2	2	1	1	1	1	1	1	28	0.4%
INDIA	2	7	13	15	19	20	25	24	23	23	23	24	23	23	22	23	309	4.1%
INDONESIA	12	0	0	0	0	0	0	0	3	5	7	6	9	7	7	10	66	0.9%
IRELAND	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	0	35	0.5%
ISRAEL	7	9	9	11	10	9	8	8	8	8	8	9	9	9	9	9	140	1.9%
ITALY	17	17	19	20	21	21	19	20	21	21	18	16	16	16	16	15	293	3.9%
JAPAN	54	53	54	55	55	57	57	59	60	61	63	62	63	63	60	58	934	12.4%
JORDAN	0	0	0	0	0	0	0	0	0	10	10	10	9	10	10	10	69	0.9%
KOREA, REPUBLIC OF	5	5	7	8	7	9	7	8	9	8	9	11	9	3	10	9	124	1.6%
KUWAIT	0	0	0	0	0	0	0	6	6	7	7	7	7	7	7	7	61	0.8%
LUXEMBOURG	3	3	3	4	4	4	4	3	3	3	3	4	4	4	4	4	57	0.8%
MEXICO	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	13	0.2%
MOROCCO	3	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	62	0.8%
NETHERLANDS	2	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	54	0.7%

NIGERIA	0	0	0	0	0	0	0	0	0	0	0	0	0	14	7	10	31	0.4%
NORWAY	8	9	11	13	13	14	14	14	15	16	17	17	17	17	17	16	228	3.0%
OMAN	0	0	0	0	0	0	0	0	0	4	4	5	5	5	5	5	33	0.4%
PAKISTAN	12	11	13	12	12	13	13	16	16	17	17	18	18	16	15	15	234	3.1%
PERU	0	0	0	7	6	6	6	6	5	6	7	7	7	7	7	3	80	1.1%
PHILIPPINES	9	11	13	11	12	13	13	13	12	11	9	8	9	9	9	9	171	2.3%
POLAND	11	13	14	13	12	14	13	11	14	14	15	15	15	14	14	13	215	2.8%
PORTUGAL	4	4	4	4	5	6	6	6	6	5	6	5	5	5	5	4	80	1.1%
QATAR	0	0	0	0	0	0	0	4	4	4	4	4	5	5	5	5	40	0.5%
ROMANIA	0	1	1	2	2	2	2	3	3	3	3	3	3	3	3	3	37	0.5%
RUSSIAN FEDERATION	0	0	0	1	1	1	1	1	4	9	10	15	14	11	17	11	96	1.3%
SINGAPORE	3	3	3	4	5	5	5	4	3	4	4	4	3	3	3	3	59	0.8%
SLOVAKIA	0	0	0	0	0	0	0	0	0	5	5	5	5	5	5	5	35	0.5%
SLOVENIA	0	0	0	2	2	2	2	2	2	3	3	4	5	5	5	5	42	0.6%
SOUTH AFRICA	3	3	4	8	6	6	5	4	3	5	6	5	4	4	4	4	74	1.0%
SPAIN	7	7	7	8	9	9	9	8	8	8	8	8	8	8	8	7	127	1.7%
SRI LANKA	5	5	5	6	6	6	7	7	7	9	8	8	8	8	6	9	110	1.5%
SWEDEN	2	2	2	2	3	3	4	3	3	4	3	4	3	3	3	4	48	0.6%
SWITZERLAND	6	7	8	9	9	9	8	9	8	9	10	9	10	10	7	8	136	1.8%
TAIWAN	10	12	12	13	13	13	14	14	15	15	15	16	16	16	16	0	210	2.8%
THAILAND	11	12	12	12	12	11	12	11	10	11	11	11	11	11	10	10	178	2.4%
TURKEY	0	0	0	9	9	11	11	11	10	11	15	14	14	14	13	13	155	2.1%
UNITED KINGDOM	4	5	5	5	6	7	7	6	6	6	7	7	6	6	5	5	93	1.2%
UNITED STATES	7	7	8	9	9	8	9	10	10	10	10	11	10	11	10	9	148	2.0%
VENEZUELA	2	4	6	7	9	9	10	9	12	12	12	10	9	8	8	8	135	1.8%
Total																	7,550	100%

TABLE A-2.2
Robustness Tests

This table reports results for our robustness tests. Model 1 uses the nontransformed R-squared as dependent variable. Models 2 and 3 report the between-effect (BE) estimator and the Fama and MacBeth (FM) cross-sectional regression. Model 4 is a weighted least squares (WLS) regression in which the weight is the inverse of the number of observations in each country. Model 5 reports a median regression that is less subject to the influences of outliers. Model 6 uses a subsample covering 1997 to 2006. Models 7 and 8 use alternative standard errors, which are clustered by bank and year, and by country and year, respectively. The standard errors are clustered at the bank level, unless stated otherwise. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent variable	R^2	*SYNCH*						
							Clustered two-way by	
	OLS	BE	FM	WLS	QREG	1996-2006	Bank & Year	Country & Year
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Foreign	-0.066***	-0.407***	-0.268***	-0.396***	-0.311***	-0.310***	-0.347***	-0.347***
	(0.013)	(0.088)	(0.039)	(0.095)	(0.048)	(0.086)	(0.067)	(0.069)
ROA	0.910***	7.588**	7.099***	2.357	8.080***	4.326**	4.620**	4.620**
	(0.303)	(3.222)	(1.498)	(2.939)	(1.436)	(1.958)	(1.964)	(1.923)
Noninterest income/TA	0.242	-1.223	0.473	1.556	0.650	1.404	1.090	1.090
	(0.218)	(1.881)	(0.800)	(1.935)	(0.890)	(1.250)	(1.228)	(1.368)
Deposits/TA	0.083***	0.739***	0.488***	0.253	0.436***	0.464***	0.452***	0.452***
	(0.028)	(0.203)	(0.090)	(0.234)	(0.096)	(0.170)	(0.136)	(0.162)
Ln(TA)	0.087***	0.433***	0.466***	0.506***	0.454***	0.459***	0.459***	0.459***
	(0.004)	(0.022)	(0.009)	(0.034)	(0.012)	(0.025)	(0.023)	(0.029)
Capital	0.566***	3.288***	2.674***	3.231***	2.588***	3.091***	3.070***	3.070***
	(0.089)	(0.684)	(0.238)	(0.665)	(0.311)	(0.582)	(0.423)	(0.436)
Loan loss provisions/TA	-0.444	-2.544	0.266	-4.367	-1.919	-0.402	-1.830	-1.830
	(0.372)	(4.829)	(2.152)	(3.220)	(1.745)	(2.491)	(2.126)	(2.287)
Cross-listing indicator	0.054***	0.377***	0.303***	0.159	0.238***	0.249***	0.250***	0.250***
	(0.011)	(0.086)	(0.032)	(0.129)	(0.036)	(0.068)	(0.059)	(0.063)
Intercept	-0.291***	-4.209***	-4.339***	-4.420***	-3.999***	-4.080***	-4.194***	-4.194***
	(0.065)	(0.373)	(0.108)	(0.465)	(0.195)	(0.365)	(0.322)	(0.303)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes			Yes	Yes	Yes	Yes	Yes
Obs.	7,550	7,550	7,550	7,550	7,550	4,262	7,550	7,550
Adj. R^2/Avg. R^2	0.483	0.600	0.615	0.492	0.477	0.476	0.487	0.487

TABLE A-2.3
Does Host Countries' Country Characteristics Matter?

This table reports regression results examining the role of certain host countries' country characteristics on the association between foreign bank ownership and stock returns synchronicity. The dependent variable is the price synchronicity of bank stocks (*SYNCH*). The main variable of interest is *Foreign*, which equals 1 when a bank has 50% or more foreign ownership, and zero otherwise. The bank controls are identical to those in the baseline model and are unreported for brevity. Intercepts are also suppressed. *Advanced* is an indicator of advanced economies for the host countries following the classification by IMF, and zero otherwise. *Civil law* is an indicator for civil law host countries, and zero for the common laws host countries or others. Standard errors are clustered at the bank level. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	SYNCH				
	(1)	(2)	(3)	(4)	(5)
Foreign	-0.329***	-0.279**	-0.380***	-0.345***	-0.328***
	(0.085)	(0.118)	(0.091)	(0.072)	(0.097)
Advanced	-1.200***				
	(0.234)				
Foreign × Advanced	-0.064				
	(0.131)				
Financial development		0.000			
		(0.000)			
Foreign × Financial development		-0.092			
		(0.119)			
Stock market cap/GDP			-0.052		
			(0.035)		
Foreign × Stock market cap/GDP			0.024		
			(0.042)		
GDP Growth				-0.889	
				(0.563)	
Foreign × GDP Growth				-0.188	
				(0.966)	
Civil law					0.316
					(0.233)
Foreign × Civil law					-0.027
					(0.129)
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Obs.	7,550	7,002	5,743	7,340	7,550
Adj. R^2	0.482	0.487	0.509	0.488	0.482

TABLE A-2.4
Propensity Score Matching Estimator

This table reports the propensity score matching estimation results. Panel A reports the coefficient estimates of the logit regression used to estimate the propensity scores and the logit regression estimates using the post-match sample. The dependent variable is *Foreign*, which equals one when a bank has 50% or more foreign ownership, and zero otherwise. The bank controls are identical to those in the baseline model and are defined in the appendix. Country and year fixed effects are included, and the standard errors are clustered at the bank level. Panel B compares the means of the bank controls across the foreign-owned banks (treatment group) and the matched banks (control group) and reports the differences and the corresponding *t*-statistics. Panel C reports the average treatment effects for the treated. *SYNCH* is bank stock price synchronicity. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Logit results

Dependent variables	*Foreign*	
	Pre-match	Post-match
	(1)	(2)
ROA	-4.731	3.664
	(6.337)	(6.312)
Noninterest income/TA	-1.548	-0.996
	(6.225)	(6.097)
Deposits/TA	0.257	0.021
	(0.695)	(0.795)
Ln(TA)	0.145	0.056
	(0.089)	(0.099)
Capital	3.379*	-0.225
	(1.891)	(2.069)
Loan loss provisions/TA	-0.764	6.522
	(7.814)	(7.727)
Cross-listing indicator	-0.361	0.044
	(0.375)	(0.331)
Intercept	-5.078***	-0.751
	(1.029)	(1.219)
Country FE	Yes	Yes
Year FE	Yes	Yes
Obs.	7,550	1,722
Pseudo R^2	0.306	0.015
Wald χ^2	290.860***	12.740

Panel B: Differences in observables

	Treatment	Control	Difference	*t*-stat
ROA	0.011	0.011	0.000	0.030
Noninterest income/TA	0.018	0.019	-0.001	-0.630
Deposits/TA	0.721	0.723	-0.001	-0.136
Ln(TA)	8.582	8.512	0.070	0.780
Capital	0.105	0.105	0.000	0.042
Loan loss provisions	0.007	0.007	0.000	0.844
Cross-listing indicator	0.305	0.282	0.023	1.058

Panel C: Average treatment effects for the treated

	Treated	Controls	Difference	S.E.	*t*-stat
SYNCH	-0.271	0.011	-0.282	0.061	-4.600

Table A-2.5

Endogenous Treatment-Regression Model for the Earnings Innovation Tests (Table 5 in the main paper)

This table reports the estimation results of the endogenous treatment-regression models for the two earnings innovation tests in Table 5 of the main paper. The earnings innovation tests examine the extent to which future earnings information is reflected in current stock prices. In the treatment equation (probit regression) (columns 1 and 4), we model the likelihood of foreign-bank status (*Foreign*) as a function of two instrumental variables, bank and country controls, and year fixed effects. The two instrumental variables are *Ln(latitude)*, which is the natural logarithm of transformed latitude (in decimal form) measuring the geographical distance between the bank's city of location (in the host country) and the equator, and *Ln(1+Distance from bank city to capital city)*, which is the natural logarithm of 1 plus the geographical distance (in miles) from the bank's city of location to the host country's capital city. The dependent variable is the price synchronicity of bank stocks (*SYNCH*). The bank and country controls are identical to those used in the baseline models. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively. In columns (2) to (3), the dependent variable is buy-and-hold bank stock annual returns (R_t). E/MV_{t-1} is the net income in year *t-1*, scaled by market capitalization at the end of year *t-1*. ΔE_t is the annual growth rate in net income from year *t-1* to *t*, scaled by market capitalization at the end of year *t-1* (i.e., at the beginning of return calculation). $R_{(t+1 \text{ to } t+3)}$ is the buy-and-hold stock returns from the beginning of year *t+1* to the end of year *t+3*; we expect it to be negatively related to stock returns. $\Delta E_{i(t+1 \text{ to } t+3)}$ is the sum of the annual changes in net income over year *t+1* to *t+3*, scaled by market capitalization at the end of year *t-1*. In columns (5) to (7), the dependent variable is the ratio of net income to total assets, measured at year *t*, *t+1*, and *t+2*. MV/TA_{t-1} is the ratio of market capitalization to total assets. The bank control variables are identical to those used in the baseline models. For brevity, we only report the estimates for the variables of interest and all intercepts are suppressed. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Treatment equation	*Stock returns*$_t$		Treatment equation	ROA_t	ROA_{t+1}	ROA_{t+2}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln(Latitude)	0.340***			0.320***			
	(0.127)			(0.117)			
Ln(1+Distance of bank city to capital city)	-0.038			-0.036			
	(0.040)			(0.037)			
E/MV_{t-1}		0.039*	0.034				
		(0.023)	(0.023)				
ΔE_t		-0.156**	-0.099*				
		(0.068)	(0.054)				
ΔE_{t+1}		0.064					
		(0.073)					
ΔE_{t+2}		0.064					
		(0.081)					
ΔE_{t+3}		-0.094					
		(0.073)					
$\Delta E_{(t+1 \text{ to } t+3)}$			-0.045				
			(0.028)				
$R_{(t+1 \text{ to } t+3)}$		0.120***	0.134***				

		(0.026)	(0.027)				
Foreign × E/MV_{t-1}		-0.011	0.005				
		(0.042)	(0.024)				
Foreign × ΔE_t		-0.281*	-0.334***				
		(0.160)	(0.091)				
Foreign × ΔE_{t+1}		0.285					
		(0.332)					
Foreign × ΔE_{t+2}		0.504					
		(0.382)					
Foreign × ΔE_{t+3}		-0.214					
		(0.271)					
Foreign × $\Delta E_{(t+1 \text{ to } t+3)}$			0.120**				
			(0.058)				
Foreign × $R_{(t+1 \text{ to } t+3)}$		-0.058*	-0.005				
		(0.034)	(0.032)				
Foreign		-0.016	-0.010		0.001	-0.002	-0.000
		(0.027)	(0.029)		(0.002)	(0.002)	(0.002)
Foreign × MV/TA_{t-1}					-0.004	0.022***	0.019***
					(0.006)	(0.007)	(0.007)
MV/TA_{t-1}					-0.022***	0.004	0.010
					(0.008)	(0.009)	(0.010)
Inverse Mills ratio		-0.181***	-0.091		-0.005**	-0.023***	-0.013***
		(0.059)	(0.059)		(0.002)	(0.003)	(0.003)
Interaction between earnings innovations (or *MV/TA*) and all bank controls		Yes	Yes		Yes	Yes	Yes
Bank controls	Yes			Yes			
Country controls	Yes			Yes			
Country FE		Yes	Yes		Yes	Yes	Yes
Year FE	Yes			Yes			
Observations		4,232			5,048		

Table A-2.6

Endogenous Treatment-Regression Model for the Host Country Characteristics Tests (in Panel B of Table 3 in the main paper)

This table reports the estimation of the endogenous treatment-regression models for our robustness tests in Panel B of Table 3 in the main paper. In the treatment equation (probit regression) (column 1), we model the likelihood of foreign-bank status (*Foreign*) as a function of two instrumental variables, bank and country controls, and year fixed effects. The dependent variable is the price synchronicity of bank stocks (*SYNCH*). The main variable of interest is *Foreign*, which equals 1 when a bank has 50% or more foreign ownership, and zero otherwise. The bank controls are identical to those in the baseline model and are reported in appendix A-2. Intercepts are also suppressed. *Advanced* is an indicator of advanced economies for the host countries following the classification by IMF, and zero otherwise. *Civil law* is an indicator for civil law host countries, and zero for the common laws host countries or others. Standard errors are clustered at the bank level. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Treatment equation	*SYNCH*				
	(1)	(2)	(3)	(4)	(5)	(6)
Ln(Latitude)	0.327***					
	(0.048)					
Ln(1+Distance of bank city to capital city)	-0.040***					
	(0.012)					
Foreign		-1.083***	-1.061***	-1.119***	-0.993***	-1.000***
		(0.158)	(0.157)	(0.179)	(0.172)	(0.179)
Advanced		-0.039				
		(0.130)				
Foreign × Advanced		-0.050				
		(0.088)				
Financial development			0.000			
			(0.000)			
Foreign × Financial development			-0.090			
			(0.084)			
Stock market cap/GDP				-0.020		
				(0.036)		
Foreign × Stock market cap/GDP				0.048		
				(0.031)		
GDP Growth					-1.653**	
					(0.705)	
Foreign × GDP Growth					0.223	
					(1.104)	
Civil law						0.399***

						(0.110)
Foreign × Civil law						-0.080
						(0.089)
ROA	-3.037	4.082***	4.057***	4.015***	4.299***	4.113***
	(2.370)	(1.368)	(1.372)	(1.368)	(1.359)	(1.364)
Non-interest income/TA	-1.556	0.578	0.588	0.549	0.641	0.543
	(1.691)	(0.827)	(0.829)	(0.826)	(0.819)	(0.824)
Deposits/TA	0.919***	0.365***	0.371***	0.362***	0.358***	0.359***
	(0.167)	(0.087)	(0.087)	(0.087)	(0.086)	(0.086)
Ln(TA)	0.068***	0.450***	0.450***	0.449***	0.447***	0.449***
	(0.018)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Capital	2.589***	2.859***	2.872***	2.864***	2.803***	2.853***
	(0.535)	(0.316)	(0.317)	(0.318)	(0.314)	(0.314)
Loan loss provisions/TA	2.419	1.842	1.806	1.829	1.587	1.874
	(3.128)	(1.763)	(1.767)	(1.763)	(1.750)	(1.757)
Cross-listing indicator	-0.082	0.261***	0.259***	0.264***	0.263***	0.264***
	(0.059)	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Inverse Mills ratios		0.373***	0.391***	0.362***	0.309***	0.346***
		(0.087)	(0.088)	(0.094)	(0.085)	(0.084)
Country controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE		Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations			5,132			

Table A-2.7
Endogenous Treatment-Regression Model for the baseline model

This table reports the estimation results of an endogenous treatment-regression model. In the treatment equation (probit regression), we model the likelihood of foreign-bank status (*Foreign*) as a function of two instrumental variables, bank and country controls, and year fixed effects. The two instrumental variables are *Ln(latitude)*, which is the natural logarithm of transformed latitude (in decimal form) measuring the geographical distance between the bank's city of location (in the host country) and the equator, and *Ln(1+Distance from bank city to capital city)*, which is the natural logarithm of 1 plus the geographical distance (in miles) from the bank's city of location to the host country's capital city. The dependent variable is the price synchronicity of bank stocks (*SYNCH*). The bank and country controls are identical to those used in the baseline models. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Treatment equation	*SYNCH*
	(1)	(2)
Ln(Latitude)	0.327***	
	(0.048)	
Ln(1+Distance of bank city to capital city)	-0.040***	
	(0.012)	
Foreign		-0.306**
		(0.136)
ROA	-3.037	5.349***
	(2.370)	(1.398)
Non-interest income/TA	-1.556	2.789***
	(1.691)	(0.846)
Deposits/TA	0.919***	0.145*
	(0.167)	(0.081)
Ln(TA)	0.068***	0.368***
	(0.018)	(0.010)
Capital	2.589***	1.006***
	(0.535)	(0.310)
Loan loss provisions/TA	2.419	7.203***
	(3.128)	(1.780)
Cross-listing indicator	-0.082	0.352***
	(0.059)	(0.032)
Inverse Mills ratios	-0.016	
	(0.077)	
Intercept	-2.273***	-2.183***
	(0.465)	(0.190)
Country controls	Yes	Yes
Year FE	Yes	Yes
Observations	5,132	

Table A-2.8
Endogenous Treatment-Regression Model for the Disclosure Quality Tests (in Table 8 of the main paper)

This table reports the estimation results of endogenous treatment-regression models examining the link between foreign bank ownership and disclosure quality. In the treatment equation (probit regression), we model the likelihood of foreign-bank status (*Foreign*) as a function of two instrumental variables, bank and country controls, and year fixed effects. The two instrumental variables are *Ln(latitude)*, which is the natural logarithm of transformed latitude (in decimal form) measuring the geographical distance between the bank's city of location (in the host country) and the equator, and *Ln(1+Distance from bank city to capital city)*, which is the natural logarithm of 1 plus the geographical distance (in miles) from the bank's city of location to the host country's capital city. the dependent variables are *ALLP 1* and *ALLP 2*, which are the estimated discretionary loan loss provisions. *ALLP 2* is the absolute of the negative residuals from the first-step regression of equation (4). The bank controls used are identical to those of the baseline models. The estimates for the bank controls are reported in appendix A-2. We cluster standard errors at the bank level. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Treatment equation	*ALLP 1*	*Treatment equation*	*ALLP 2*
	(1)	(2)	(3)	(4)
Ln(Latitude)	0.349***		0.309***	
	(0.064)		(0.082)	
Ln(1+Distance of bank city to capital city)	-0.006		0.001	
	(0.014)		(0.018)	
Foreign		-1.193***		-0.857**
		(0.359)		(0.370)
ROA	-9.559**	-8.644**	-10.274**	-11.897***
	(3.824)	(3.510)	(4.894)	(3.866)
Non-interest income/TA	4.837*	16.348***	9.779***	12.355***
	(2.675)	(3.360)	(3.357)	(4.293)
Deposits/TA	0.482**	-0.535*	0.521**	-0.715**
	(0.217)	(0.281)	(0.264)	(0.310)
Ln(TA)	0.047**	-0.081	0.084***	0.097
	(0.024)	(0.060)	(0.030)	(0.062)
Capital	3.112***	-0.924	2.524**	1.573
	(0.854)	(1.060)	(1.097)	(1.107)
Loan loss provisions/TA	0.801	7.538*	3.108	-12.775**
	(4.703)	(4.103)	(7.223)	(4.976)
Cross-listing indicator	-0.147**	-0.075	-0.271***	-0.088
	(0.073)	(0.077)	(0.090)	(0.074)
Inverse Mills ratios		0.526***		0.276*
		(0.170)		(0.167)
Intercept	-1.819***	-3.670***	-1.560**	-5.475***
	(0.616)	(0.691)	(0.765)	(0.709)
Country controls	Yes		Yes	
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	3,499		2,389	

Table A-2.9
Alternative Earnings Innovation Tests Following Bai et al. (2016)

This table reports the results for an alternative test of earnings innovations following the specification of Bai et al. (2016). Specifically, we estimate the following cross-sectional regression model (estimated using the between-effects estimator):

$$ROA_{it+h} = \beta_0 + \beta_1 MV/TA_{it-1} + \beta_2 Foreign_{it-1} + \beta_3 MV/TA_{it-1} \times Foreign_{it-1} + \delta_1 X_{it-1} + \delta_2 (X_{it-1} \times MV/TA_{it-1}) + Country\ FE + \varepsilon_{it},$$

where ROA_{it+h} is net income to total assets of bank *i* at year *t+h* where *h* ranges from 0 to 2. MV/TA_{it-1} is market capitalization to total assets for bank *i* at year *t-1*. We control for the interaction between MV/TA_{it-1} and the set of baseline bank controls.

In the table, the dependent variable is the ratio of net income to total assets (*ROA*), measured at year *t*, *t+1*, and *t+2*. MV/TA_{t-1} is the ratio of market capitalization to total assets. The bank control variables are identical to those used in the baseline models. We only report the estimates for the variables of interests for brevity. Standard errors are clustered at the bank level. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	ROA_t	ROA_{t+1}	ROA_{t+2}
	(1)	(2)	(3)
$Foreign \times MV/TA_{t-1}$	0.001	0.021***	0.013**
	(0.005)	(0.006)	(0.007)
Foreign	0.002	0.002	0.004**
	(0.001)	(0.002)	(0.002)
MV/TA_{t-1}	-0.021***	0.002	0.005
	(0.006)	(0.008)	(0.009)
Interaction between MV/TA_{t-1} and other controls	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Obs.	7,361	7,212	7,070
Adj. R^2	0.653	0.600	0.511

Table A-2.10
Foreign Bank Ownership and Disclosure Quality

This table examines the relationship between foreign bank ownership and disclosure quality. The main variable of interest is *Foreign*, which equals one when a bank has 50% or more foreign ownership, and zero otherwise. Panel A reports the estimation on our current sample consisting of 60 countries of all listed banks. Panel B reports the estimation using an extended sample consisting of 134 countries with both listed and unlisted banks.

Following Beatty and Liao (2014) and Jiang et al. (2016), we use a two-step procedure to estimate a bank's "abnormal" loan loss provisions. In the first-step, we estimate a model to separate "normal" loan loss provisions (explained by bank fundamentals) from "abnormal" or discretionary loan loss provisions (unaccounted for by bank fundamentals) written as follows:

$$LLP/TL_{ijt} = \beta_0 + \beta_1 \Delta NPL/TL_{ijt+1} + \beta_2 \Delta NPL/TL_{ijt} + \beta_3 \Delta NPL/TL_{ijt-1} + \beta_4 Ln(TA)_{ijt-1} + \beta_5 \Delta TL/TL_{ijt-1} + Country\ FE + Year\ FE + \varepsilon_{ijt},$$

where *LLP/TL* is the ratio of loan loss provisions to total loans, Δ*NPL/TL* is the change in nonperforming loans scaled by total loans, and Δ*TL/TL* is the change in total loans scaled by total loans. Following Bushman and Williams (2012) and Jiang et al. (2016), we include the lead, contemporaneous, and lag terms of Δ*NPL/L* because banks may make loan loss provisions based on forward-looking, current, or historical information about nonperforming loans. We include country and year fixed effects in the model to account for the effects of time-invariant country characteristics and market-wide shocks on loan loss provisions. On the current sample (extended sample), we estimate this pooled OLS model using all publicly listed (all publicly listed and private) banks from the 60 (134) countries over the sample period.

In the second step, we take the natural logarithm of the absolute residuals from the model and use this measure (*ALLP 1*) to capture discretionary loan loss provisions that are unaccounted for by the regressors in the above equation. A potential concern is that the positive residuals (which reduce earnings) may represent accounting discretion that enhances transparency and, hence, the absolute-residuals measure may be subject to measurement errors. To this end, we exclude the positive residuals and take the natural logarithm of the absolute negative residuals to construct an alternative disclosure-quality measure (*ALLP 2*).

For models (1) and (2), the dependent variables are *ALLP 1* and *ALLP 2*, which are the estimated discretionary loan loss provisions. *ALLP 2* is the absolute of the negative residuals from the first-step regression of equation (4). In models (3) to (5) of panel A (panel B), we construct strong and weak (strong, medium, and low) governance indicators based on sample medians (using the 30th and 70th breakpoints) for the anti-director rights index, anti-self-dealing index, and the WGI. We interact *Foreign* with these governance indicators to explain *ALLP 2*. The bank controls used are identical to those of the baseline models. The estimates for the bank controls are reported in appendix A-2. We cluster standard errors at the bank level. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Our Current Sample of 60 Countries – All Listed Banks

Dependent variables	*ALLP 1*	*ALLP 2*	*ALLP 2*		
Governance indexes			*Anti-director rights index*	*Anti-self-dealing index*	*WGI*
	(1)	(2)	(3)	(4)	(5)
Foreign	-0.239**	-0.382***			
	(0.121)	(0.136)			
Foreign×Strong governance			-0.439*	-0.546*	-0.773***
			(0.249)	(0.279)	(0.181)
Foreign×Weak governance			-0.403	-0.314	-0.204*
			(0.272)	(0.219)	(0.112)
Bank controls	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Obs.	4914	3305	3305	3305	3305
Adj. R^2	0.323	0.412	0.412	0.412	0.414

Panel B: An Extended Sample Consisting of 134 Countries, Including Both Listed and Unlisted Banks

Dependent variables	*ALLP 1*	*ALLP 2*	*ALLP 2*		
Governance indexes			*Anti-director rights index*	*Anti-self-dealing index*	*WGI*
	(1)	(2)	(3)	(4)	(5)
Foreign	-0.297***	-0.288***			

	(0.090)	(0.109)			
Foreign×Strong Governance (>70%)			-0.498***	-0.482***	-0.451***
			(0.193)	(0.186)	(0.145)
Foreign×Medium Governance (>30% and <=70%)			-0.293**	-0.372***	-0.312***
			(0.139)	(0.137)	(0.119)
Foreign×Weak Governance (<=30%)			-0.376***	-0.279*	-0.163
			(0.146)	(0.158)	(0.124)
Bank controls	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Obs.	14378	9536	9536	9536	9536
Adj. R^2	0.373	0.432	0.432	0.432	0.432

Table A-2.11
Foreign Bank Ownership vs. Alternative Governance Mechanisms

This table examines whether foreign bank ownership and alternative governance mechanisms are complements or substitutes in explaining price synchronicity. The dependent variable is the price synchronicity of bank stocks (*SYNCH*). The main variable of interest is *Foreign*, which equals 1 when a bank has 50% or more foreign ownership, and zero otherwise. *Capital regulatory index* is an index of overall capital stringency and defined as the sum of the answers to several survey questions relating to the extent of regulatory requirements in bank capital and to the sources of funds that count as regulatory capital. *Official supervisory power* is a measure of the power of supervisory agencies, measured using 14 questions on the extent to which supervisory authorities have the authority to take actions in preventing and correcting problems. *Private monitoring index* is a measure of the extent of bank disclosure requirements and incentives to increase private monitoring. *External governance index* is the sum of six indicators of external governance, in the four worldwide surveys, relating to the strength of external audit, banks' financial disclosure requirements, accounting practices, and external ratings and creditor monitoring. *Board major reform (Independence)* is a dummy that equals one after a country has adopted a major board reform relating to board independence, and zero prior to the reform. *Board major reform (Audit committee)* is a dummy that equals one after a country has adopted a major board reform relating to audit committee and auditor independence, and zero prior to the reform. The timing of the board reforms is collected from Fauver et al. (2017). The bank controls are identical to those used in the baseline model. Country and year fixed effects are included in all models. Standard errors are clustered at the bank level. The *, **, and *** symbols denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	SYNCH					
	External governance				*Internal governance - Board major reforms*	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign	-0.183	-0.157	-0.438	-0.306	-0.256***	-0.324***
	(0.304)	(0.355)	(0.399)	(0.478)	(0.096)	(0.117)
Capital regulatory index	-0.020					
	(0.026)					
Foreign × Capital regulatory index	-0.022					
	(0.040)					
Official supervisory power		0.027*				
		(0.015)				
Foreign × Official supervisory power		-0.017				
		(0.030)				
Private monitoring index			0.007			
			(0.019)			
Foreign × Private monitoring index			0.007			
			(0.047)			

External governance index				0.033		
				(0.022)		
Foreign × External governance index				0.000		
				(0.032)		
Board major reform (Independence)					0.049	
					(0.055)	
Foreign × Board major reform (Independence)					-0.195*	
					(0.118)	
Board major reform (Audit committee)						0.016
						(0.052)
Foreign × Board major reform (Audit committee)						-0.060
						(0.135)
ROA	4.592*	4.698***	3.945**	5.874**	4.180**	4.095**
	(2.393)	(1.710)	(1.601)	(2.313)	(1.659)	(1.660)
Non-interest income/TA	1.765	0.911	1.192	-0.547	-0.012	0.055
	(1.855)	(1.223)	(1.153)	(1.681)	(1.200)	(1.198)
Deposits/TA	0.574***	0.390**	0.429***	0.470**	0.514***	0.511***
	(0.197)	(0.165)	(0.155)	(0.193)	(0.159)	(0.159)
Ln(TA)	0.483***	0.462***	0.465***	0.448***	0.456***	0.457***
	(0.028)	(0.025)	(0.024)	(0.030)	(0.024)	(0.024)
Capital	3.642***	3.080***	3.166***	3.366***	3.305***	3.321***
	(0.617)	(0.514)	(0.491)	(0.695)	(0.515)	(0.514)
Loan loss provisions/TA	-2.000	-1.569	-2.299	-1.498	-1.309	-1.304
	(3.245)	(2.137)	(2.018)	(3.051)	(2.220)	(2.241)
Cross-listing indicator	0.219***	0.262***	0.255***	0.278***	0.277***	0.280***
	(0.076)	(0.061)	(0.058)	(0.070)	(0.058)	(0.058)
Intercept	-4.258***	-4.453***	-4.329***	-4.651***	-4.227***	-4.214***
	(0.431)	(0.405)	(0.390)	(0.488)	(0.341)	(0.347)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	3,526	5,898	6,668	3,765	6,216	6,216
Adj. R^2	0.499	0.489	0.495	0.478	0.531	0.530

Additional References

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NOTES

[1] Many posit that foreign banks benefit local markets and trade by boosting credit supply, local banking competition, financial development, and exports (see, e.g., Clarke et al., 2005; Giannetti and Ongena, 2009, 2012; Bruno and Hauswald, 2014; Bronzini and D'Ignazio, 2017; Claessens et al., 2017). Others find that foreign banks transmit adverse shocks from home to host countries and threaten stability (see, e.g., Detragiache et al., 2008; Gormley, 2010; Cetorell and Goldberg, 2012; Houston et al., 2012).

[2] Market-based oversight includes the use of stock market information by regulators or supervisors to assess bank financial conditions, gauge managerial performance, and inform disciplinary actions and intervention policies (see, e.g., Flannery, 1998, 2001; Greenspan, 2001; Distinguin et al., 2006; Nier and Baumann, 2006; Kang and Liu, 2008; Knaup and Wagner, 2012).

[3] The increasing trends in banking globalization are best described in Claessens and van Horen (2014), who manually compile a database of bank ownership covering over 5,000 banks from 137 countries over 1995-2009. Their statistics show that the number of local banks decreases by about 18%, whereas the number of foreign-owned banks increases by 69% over the period. Such increases in foreign-owned banks are more pronounced in developing markets (111% increase) than in OECD countries (38% increase). Most foreign-owned banks are from OECD countries, and this composition remains similar over the years. Moreover, the local share of foreign bank assets increased from 20% in 1995 to 34% in 2009 (Claessens and van Horen, 2015).

[4] Foreign bank ownership could be viewed as an internal governance mechanism in which foreign owners directly monitor management and control their operational and accounting choices. In principle, different governance mechanisms could complement or substitute each other (see John and Senbet, 1998; Aguilera et al., 2015). For instance, greater monitoring by blockholders such as foreign bank owners may reduce the need for monitoring by bank directors. On the other hand, the foreign owners' monitoring may become more effective as a result of advisory board directors who possess strong industry-specific skills and experience. Moreover, foreign bank owners may be more efficient in monitoring management in host countries with strong legal systems, shareholder protections, and banking disclosure regulations. In section 4.6, we use untabulated analysis to explore potential interactions between foreign bank ownership and several country-level proxies of external and internal governance mechanisms.

[5] We thank the authors for making the data publicly available.

[6] Our results are qualitatively similar if we instead denominate the variables in the local currencies (unreported).

[7] Because the independent variables are lagged one year, the independent variables of 1996 explain the dependent variable of 1997. Therefore, our final sample covers 1997-2012.

[8] The distance database is available via http:// www.cepii.fr/anglaisgraph/bdd/distances.htm.

[9] The use of Wednesday-to-Wednesday returns helps mitigate problems of thin trading as well as other confounding seasonal effects, such as the Monday effect. Following Francis et al. (2015), we trim bank stock weekly returns that are below -25% or above +25% to avoid potential coding errors in DataStream.

[10] The authors exclude countries with few banks, remove smaller banks and holding companies, and adjust for bank mergers, as well as the timing of entry and exit. For more details, please refer to Claessens and van Horen (2014).

[11] After we obtain the predicted *SYNCH* from the fitted model (holding all other variables at their mean values) for both foreign and local banks, we invert equation (2) to solve for the implied R^2:

$$R^2 = exp(SYNCH)/(exp(SYNCH)+1).$$

Hutton et al. (2009) use a similar approach in quantifying economic magnitude.

[12] Common law countries have greater shareholder protections than civil law countries, which could in turn influence financial market development (La Porta et al., 1998; La Porta et al., 2008).

[13] We also use a propensity score matching approach to address potential endogeneity problems. Our results show that foreign-owned banks have on average 16.2% lower implied R^2 than domestic banks (significant at the 1% level), matched by baseline bank characteristics and country and year fixed effects using propensity score matching techniques. The details and are reported results are in Table A-2.4 of the appendix A-2.

[14] Furthermore, we estimate Heckman-type endogenous treatment-regression models following the two-step estimator of Maddala (1983). In the first stage, we obtain probit estimates from a treatment equation that models the foreign bank status as a function of the two instrumental variables (in section 4.3), bank and country controls, and year fixed effects. We augment the regression model via the inverse Mills ratio. We estimate the endogenous treatment-regression models for the baseline model specification (in table 3), the robustness tests controlling for host country characteristics (panel B of table 3), the earnings innovations tests (in table 5), and the robustness tests based on discretionary loan loss provisions (in Table A-2.10 of the appendix A-2). Although estimates for the inverse Mills

ratio are significant in most cases (except for the model under the baseline specification), the coefficients of *Foreign* remain similar in significance. These results are in tables IA.5, IA.6, IA.7, and IA.8 of the appendix A-2, respectively.

[15] We need instruments that are correlated with *Foreign* (the inclusion restriction) but are uncorrelated with *SYNCH* except through the variable (the exclusion restriction). Finding such instruments is extremely difficult; hence, we acknowledge that our instruments are far from perfect but instead represent a best effort.

[16] See, for example, Acemoglu et al. (2001), Beck et al. (2003), Bose et al. (2014), etc.

[17] To be a valid instrument, initial endowments should not directly determine price synchronicity. There is some support from the literature. For instance, Hall and Jones (1999) find evidence, later confirmed by Acemoglu et al. (2001), that distance from the equator does not determine economic performance (Hall and Jones, 1999). Though the assumption of instrument exogeneity is untestable, we shed some light by analyzing the pairwise correlation between *Ln(Latitude)* and *SYNCH* in our sample. The correlation coefficient is 0.01 and is statistically insignificant.

[18] We treat all explanatory variables except year dummies as endogenous and instrumented them with the *t-3* to *t-5* lagged dependent and independent variables for the difference equation and their respective lagged differences for the level regression.

[19] Dasgupta et al. (2010) show that stock price synchronicity is positively associated with market transparency because more informative stock prices today imply that less private information is incorporated into stock prices in the future. Lee and Liu (2011) find a U-shaped relationship between idiosyncratic return variation and several alternative measures of price informativeness. Xing and Anderson (2011) document an inversely U-shaped relationship between proxies for public firm-specific information and stock return synchronicity.

[20] Because the surveys were completed in 1999, 2003, 2007, and 2012, following Barth et al. (2013b), we use the first survey of 1999 for the regulation variables for 1997-2001. The values for the regulatory variables in 2002-2004 are from the second survey of 2003. We use the third survey of 2007 for the regulatory variables for 2005-2007. The last survey of 2012 determines the values of the regulatory variables for 2008-2012.

[21] We collect the pair of latitude and longitude coordinates (in decimals) for each foreign bank's city of location (in the host city) and its home country's capital city from www.mapsofworld.com. We use spherical geometry and trigonometric math functions to calculate accurate distances between locations. Specifically, we first convert each pair of latitudes and longitudes from decimal degrees to radians by dividing their values by 180/π or 57.296. *Lat1* (*Lat2*) and *Long1* (*Long2*) represent the latitude and longitude in radians of a foreign bank's city of location (home country's capital city). We then use the great circle distance formula to calculate the distance in miles between two pairs of latitudes and longitudes, as follows:

$$Distance = 3963 \times Arccos[Sin(Lat1)Sin(Lat2) + Cos(Lat1)Cos(Lat2)Cos(Long2-Long1)],$$

where 3,963 is the radius of the Earth in miles.

[22] Because we do not observe relative distance in governance and banking regulation variables for the non-foreign-owned banks, our sample is incidentally truncated and thus subject to a potential sample-selection bias. If the unobserved variables that determine whether a bank receives foreign ownership correlate with those that determine its price synchronicity, our regression estimates would be biased. In an unreported analysis, to control for this potential sample-selection bias, we use the Heckman (1979) two-stage procedure. Using the bank and country controls, year fixed effects, and the two instruments as defined in section 4.3, we estimate a first-stage probit regression to identify the likelihood of the bank being foreign-owned. We include the estimated inverse Mills ratio in the second-stage price synchronicity regressions to account for a potential correlation between the error of the first-stage probit and the second-stage OLS regressions. Because the inverse Mills ratios in all models are insignificant, the sample-selection bias is likely not severe, and, hence, we drop them in the main analysis. These unreported results are available upon request.