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Foreign Institutional Ownership and the Global Convergence of Financial Reporting Practices

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ABSTRACT

This paper investigates whether foreign institutional investors affect the global convergence of financial reporting practices. Using several measures of reporting convergence, we show that U.S. institutional ownership is positively associated with subsequent changes in emerging market firms' accounting comparability to their U.S. industry peers. We identify this association using an instrumental variable approach that exploits exogenous variation in U.S. institutional investment generated by the JGTRRA Act of 2003. Further, we provide evidence of a specific mechanism—the switch to a Big Four audit firm—through which U.S. institutional investors affect reporting convergence. Finally, we show that, for emerging market firms, an increase in

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comparability to U.S. firms is associated with an improvement in the properties of foreign analysts' forecasts.

JEL codes: G32; G34; G38; M41; M42; M48

Keywords: institutional investors; mutual funds; corporate governance; U.S. GAAP; financial statement comparability; auditor selection; analyst forecasts

1. Introduction

We examine the role of foreign institutional investors in the global convergence of financial reporting practices.[1] Regulators frequently espouse comparability as a desirable characteristic of financial reporting to facilitate efficient investment decision-making and allocation of capital (Financial Accounting Standards Board [1980], U.S. Securities and Exchange Commission [2000]). Over the past 15 years, significant regulatory effort has gone into promoting comparability, the most prominent example of which is the International Accounting Standards Board's (IASB) push for global adoption of International Financial Reporting Standards (IFRS). However, recent research (e.g., Daske et al. [2008], Christensen, Hail, and Leuz [2013]) shows that mandating the use of a common set of accounting standards alone is unlikely to achieve financial reporting convergence.

The documented ineffectiveness of regulatory mandates suggests that alternative mechanisms capable of altering firms' equilibrium reporting practices likely contribute to the significant global reporting convergence observed over the past three decades (e.g., Land and Lang [2002]). One potential mechanism is investor demand for more comparable reporting. Prior research argues that foreign institutional investors prefer comparable financial reporting because it reduces information processing costs and improves investment efficiency (e.g., Bradshaw, Bushee, and Miller [2004], Covrig, Defond, and Hung [2007], DeFond et al. [2011]). These studies suggest that institutional investors primarily take a passive approach, seeking out firms that already have high levels of accounting comparability, rather than actively promoting reporting convergence. It remains unclear whether, and to what extent, foreign institutional investors directly affect the convergence of reporting practices.

We focus on U.S. institutional investors because they make up a substantial portion of all worldwide investment and represent the largest group of foreign investors. As of December 2005, U.S. institutions held over $2 trillion in non-U.S. equities, more than twice as much as U.K. institutions, the second largest group of foreign investors (Ferreira and Matos [2008]).

[1] We define "global convergence of financial reporting practices" as an increase in the extent to which firms from different countries account for similar economic events similarly and dissimilar events differently. For parsimony, we use "convergence of financial reporting practices" and "increased comparability" interchangeably.

Also, because U.S. institutions originate from a strong legal regime, they serve as a powerful market force in improving the governance of their non-U.S. investees (Aggarwal et al. [2011]).

As one measure of comparability, we use the output-based approach suggested by De Franco, Kothari, and Verdi [2011] (hereafter, DKV). In the absence of effective incentive alignment and/or enforcement mechanisms, comparable inputs (such as shared accounting standards) might not lead to comparable outputs. By focusing directly on outputs from the accounting system (i.e., earnings), the DKV measure allows us to assess whether foreign institutional investors change reporting practices in substance rather than simply in form. We adapt the DKV measure to capture a non-U.S. firm's comparability to its U.S. industry peers.

Using a sample of firms from 18 emerging markets and 20 developed markets from 1998 to 2009, we find that both higher levels and larger changes in ownership by U.S. mutual funds are positively associated with subsequent increases in firms' comparability to U.S. firms, but primarily only for firms domiciled in emerging markets—a finding we attribute to the importance of external, market-based monitoring in the face of weak regulatory infrastructures. A one standard deviation increase in U.S. ownership is associated with a 14% increase in the average one-year change in comparability, which corresponds to 1.5% of the difference between the average comparability to U.S. firms of emerging market firms and their U.S. industry peers. This result is robust to estimating the DKV measure using several alternative approaches (including quarterly estimation, accounting for the asymmetric timeliness of earnings, and using cash flows rather than stock returns as a proxy for economic events), as well as to alternative measures of comparability to U.S. firms (including a firm's likelihood of choosing an accounting treatment that conforms to U.S. reporting standards, the voluntary adoption of an internationally recognized set of accounting standards, a firm's likelihood of producing English-language financial statements, and a firm's accrual quality and earnings smoothness).

To identify the causal effect of U.S. institutional investors on comparability to U.S. firms, we employ an instrumental variable approach that exploits an exogenous shock to the level of U.S. investment—the passage of the Jobs and Growth Tax Relief Reconciliation Act (hereafter, JGTRRA) in 2003. Desai and Dharmapala [2011] document that, following JGTRRA, U.S. institutional investors reallocated their portfolios toward the equities of firms eligible for the Act's dividend tax cut and, as a result, U.S. ownership in these firms increased significantly compared to that in ineligible firms. We find that JGTRRA-eligible firms experienced a significant improvement in their comparability to U.S. firms subsequent to the passage of the Act. Additional analyses, including two placebo tests, a firm-fixed effects specification, the inclusion of several proxies for the similarity of firms' underlying economics, and controlling for changes in earnings quality, further bolster a causal interpretation of our results. Collectively, these tests provide

evidence of a direct effect of U.S. institutional investors on comparability to U.S. firms.

Next, we investigate a specific mechanism—a firm's choice of auditor—through which U.S. institutional investors might affect firms' reporting comparability. Because the Big Four audit firms play a significant role in shaping U.S. firms' reporting behavior (e.g., DeAngelo [1981], DeFond and Zhang [2014]), if an institutional investor induces a firm to switch to a Big Four auditor, this will likely enhance the firm's comparability to U.S. firms. Consistent with this prediction, we find that non-U.S. firms with higher U.S. institutional investment are more likely to switch to a Big Four auditor and that this switch is associated with a subsequent improvement in these firms' comparability to U.S. firms.

Finally, we examine the economic consequences of increased international comparability for foreign financial statement users. DKV show that, in the U.S. market, increased comparability enhances the usefulness of accounting information to U.S. analysts and improves their earnings forecast properties. Consistent with their finding, both the level and the change in comparability to U.S. firms are positively associated with an increase in foreign analyst following and a decrease in foreign analyst forecast error and dispersion.

Our study makes several contributions to the existing literature. Foremost, our paper is the first (to our knowledge) to establish a direct effect of foreign institutional investors on the global convergence of financial reporting practices. Prior research typically focuses on either the effect of regulatory efforts to promote comparability through mandating similar reporting standards (e.g., DeFond et al. [2011]) or the role of accounting comparability in attracting foreign institutional investors (e.g., Bradshaw, Bushee, and Miller [2004], Covrig, Defond, and Hung [2007]); as a result, we know little about the capital market-based determinants of reporting comparability. Yet, because several studies cast doubt on the effectiveness of country-level mandates in changing firm-level reporting attributes (e.g., Ball, Robin, and Wu [2003], Holthausen [2009], Leuz [2010], Christensen, Hail, and Leuz [2013]), identifying alternative, market-based mechanisms is likely critical to understanding firms' observed reporting behavior. Using a credible identification strategy, we establish U.S. institutional investment as an economically important determinant of global financial reporting convergence. More broadly, our paper highlights the importance of market forces in shaping financial reporting practices, particularly in the face of a weak regulatory infrastructure.

Second, we provide evidence of a specific channel—the choice of audit firm—through which institutional investors directly affect reporting convergence. Finally, we add to the growing literature examining the economic consequences of foreign investment (e.g., Bekaert and Harvey [2000], Ferreira and Matos [2008], Ferreira, Massa, and Matos [2010]) by documenting a positive effect of U.S. institutional investors on the informativeness of non-U.S. firms' financial statements for foreign users.

We organize the paper as follows. Section 2 discusses related literature and develops our primary predictions. Section 3 describes the data. Section 4 presents the empirical evidence, and section 5 concludes.

2. *Prior Literature and Hypothesis Development*

Prior research typically focuses on the effect of regulatory efforts to promote comparability through mandating similar reporting standards (e.g., DeFond et al. [2011]). Recent research (e.g., Daske et al. [2008], Christensen, Hail, and Leuz [2013]) suggests that mandating the use of a common set of accounting standards alone is unlikely to achieve reporting convergence. This is because a firm's observed level of comparability, similar to other attributes of financial reporting, is a trade-off between costs and benefits that is ultimately shaped by "the underlying economic and political factors influencing managers' and auditors' incentives, and not by accounting standards per se" (Ball, Robin, and Wu [2003, p. 236]). A firm's (or country's) financial reporting practices develop endogenously and any meaningful change likely arises only in conjunction with a shift in reporting incentives (Holthausen [2009]).[2] Daske et al. [2013] document substantial heterogeneity in the capital market consequences of IFRS adoption depending on whether an increased commitment to greater reporting transparency accompanies the standard implementation. Christensen, Hail, and Leuz [2013] find little benefit from mandatory IFRS adoption in the absence of substantive changes in enforcement.

Global accounting practices appear to have converged over the past three decades despite the questionable effectiveness of regulatory mandates to promote comparability. One possible driver of this convergence is investor demand for more comparable reporting. Corporate finance theory suggests that institutional investors can effect meaningful changes in their investees' operations and create value, either by voting their shares (e.g., Shleifer and Vishny [1986], Burkart, Gromb, and Panunzi [1997], Kahn and Winton [1998]) or by selling them (e.g., Admati and Pfleiderer [2009], Edmans [2009]).[3] Gillan and Starks [2003] argue that *foreign* institutional investors, because of their independent positions and international

[2] Holthausen [2009, p. 450–451] further states that, "Market and incentive forces are indeed powerful and hence it is not surprising that financial reporting outcomes will be strongly influenced by incentives of managers and auditors, the nature of the ownership structure of corporations, other market and political forces in the home country, and the degree of enforcement in the home country, even if accounting standards are held constant."

[3] The prospect of other investors' free riding lowers monitoring incentives. However, numerous studies document shareholder activism despite the existence of a free-rider problem (see the survey by Yermack [2010] for further discussion), suggesting that, at least in some instances, the benefits of monitoring outweigh the costs. Separately, Bharath, Jayaraman, and Nagar [2013] and Edmans, Fang, and Zur [2013] show that threat of exit can lead to higher firm value and better governance. Although we mainly base our tests on voice theories, we acknowledge that a positive effect of U.S. institutions on comparability can be consistent with exit theories as well.

visibility, likely play a particularly important role in prompting governance changes.[4] Moreover, activist investors need not focus directly on changing a firm's reporting practices to affect comparability. Aggarwal et al. [2011] document that increased investment by foreign institutions leads to an improvement in firms' governance practices.

Not all foreign institutional investors have the incentive or ability to influence firms' reporting practices. Short-term foreign institutional investors who seek to profit from pricing errors might prefer that firms remain opaque to facilitate informed trading (e.g., Maffett [2012]). Because ownership in international firms tends to be highly concentrated, controlling domestic shareholders may have incentives to intentionally obscure the firm's financial reporting to conceal their private benefit extraction and for this reason resist otherwise beneficial changes in reporting practices (Bertrand, Mehta, and Mullainathan [2002], Fan and Wong [2002], Leuz, Lins, and Warnock [2009]).

We expect the strength of any observed association between foreign institutional investors' monitoring and financial reporting convergence to depend on the development of a country's regulatory infrastructure (e.g., its securities laws, investor protection, and corporate governance). In developed markets where regulatory institutions provide strong incentives for firms to voluntarily commit to high-quality reporting, market forces likely play a relatively less important role in altering firms' reporting incentives (e.g., Leuz, Lins, and Warnock [2009]). In emerging markets, investor oversight could serve as an important substitute for a weak regulatory infrastructure, providing the incentives and oversight necessary to spur meaningful reporting changes. However, a weak yet rigid regulatory infrastructure could also hamper effective external oversight. For example, weak investor protection in emerging markets leads to a higher level of insider ownership, which may limit the influence of foreign investors (Kho, Stulz, and Warnock [2009]). Whether market forces bring about significant changes in any setting ultimately depends on their effectiveness in overcoming existing institutional arrangements that insulate controlling shareholders from external disciplinary forces (Bertrand, Mehta, and Mullainathan [2002], Morck, Wolfenzon, and Yeung [2005]).

In summary, it is unclear whether (and in which markets) U.S. institutional investors play a role in the convergence of their investees' reporting practices. Our analysis centers on this question, the mechanisms through which such an effect might manifest, and the implications of such effects for the users of financial statements.

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[4] Anecdotal evidence on the enhanced monitoring role played by U.S. institutional investors abroad is consistent with this notion. For example, a 2003 *Wall Street Journal* article states that, "When it comes to shareholder activism, mutual-fund titan Fidelity Investments has favored a Teddy Roosevelt-like approach in the U.S., speaking softly while carrying a big stick. But in Europe, where fund managers face pressure to play a more-active role in corporate affairs, Fidelity is speaking up—loudly" (Reilly [2003]).

TABLE 1
Sample Distribution by Country Within Emerging and Developed Markets

Emerging Markets		Developed Markets	
Country	Number of Firm-Year Obs.	Country	Number of Firm-Year Obs.
Argentina	552	Australia	7,457
Brazil	1,416	Austria	674
Chile	1,512	Belgium	1,040
China	9,516	Canada	6,503
Greece	2,339	Denmark	1,506
India	4,510	Finland	1,193
Indonesia	2,127	France	5,990
Israel	989	Germany	5,336
Malaysia	6,316	Hong Kong	6,457
Mexico	901	Ireland	437
Philippines	1,516	Italy	2,064
Poland	1,067	Japan	26,295
Portugal	503	Netherlands	1,392
South Africa	2,472	New Zealand	747
South Korea	5,421	Norway	1,265
Taiwan	5,463	Singapore	3,491
Thailand	3,261	Spain	1,208
Turkey	1,720	Sweden	2,531
		Switzerland	2,094
		United Kingdom	11,246
Total	51,601	**Total**	88,926

This table reports the sample distribution by country, separately for the 18 emerging and 20 developed markets in our final sample. Emerging and developed markets are identified using the MSCI Barra classifications. The sample period is between 1998 and 2009.

3. Sample Selection and Variable Measurement

3.1 SAMPLE SELECTION

We obtain: (a) worldwide mutual fund holdings from Thomson Reuters International Mutual Funds database, (b) accounting and financial data from Datastream and Worldscope, (c) choices of accounting methods from Worldscope, (d) details on auditor appointments from Compustat and Worldscope, (e) analyst forecast properties from I/B/E/S, and (f) analyst location data collected by Bae, Tan, and Welker [2008].

To align mutual fund holdings with firms' financials, we conduct our analysis at an annual frequency. Table 1 reports the sample distribution by country.[5] The final sample, spanning from 1998 to 2009, includes 51,601 firm-year observations representing 8,074 firms from 18 emerging

[5] We identify "emerging" and "developed" market countries using the MSCI Barra classifications based on http://www.msci.com/products/indices/country_and_regional/em/. Table IA1 of the Online Appendix reports the sample distribution by industry-year. As shown, our sample firms are spread broadly across industries, with the majority of emerging market firms coming from the industrial and consumer goods industries and the majority of developed market firms coming from the industrial, financial, and consumer goods industries.

markets and 88,926 firm-year observations representing 13,752 firms from 20 developed markets.

3.2 VARIABLE MEASUREMENT

In this section, we discuss the main variables used in our study. Detailed definitions of all variables are in appendix A.

3.2.1. Financial Reporting Comparability to U.S. Firms. We follow the approach of DKV to construct our primary empirical measure of financial reporting comparability. DKV develop an empirical measure of comparability based on the closeness with which two firms' accounting functions map economic events (as reflected by stock returns) into the financial statements (as reflected by earnings). If firms have comparable accounting systems, given similar economic events, they should produce similar earnings.

The DKV measure is particularly suitable for our study for two reasons. First, as an "output-based" measure it does not require collection of data on firms' specific accounting choices or assumptions about how to integrate these choices into a single empirical proxy. Second, in the absence of effective incentive alignment and/or enforcement mechanisms, more comparable financial reporting inputs do not necessarily result in more comparable outputs (e.g., Daske et al. [2013]). By focusing directly on outputs from the accounting system (i.e., earnings), the DKV measure allows us to assess whether foreign institutional investors are capable of changing reporting practice in substance rather than simply in form.

As in Barth et al. [2012] and Yip and Young [2012], we modify the DKV measure to capture the comparability of a non-U.S. firm's financial reporting to its U.S. industry peers. We estimate the following rolling-window time-series regression using the past five years of data from $t-4$ to t for each non-U.S. firm i-year t:

$$NI_{it} = \alpha_i + \beta_i R_{it} + \varepsilon_{it}, \tag{1}$$

where NI_{it} is the annual net income before extraordinary items in fiscal year t scaled by market capitalization at the beginning of year t and R_{it} is the annual stock return computed from three months after the end of fiscal year $t-1$ to three months after the end of fiscal year t.[6]

We use the predicted coefficients from equation (1), $\hat{\alpha}_i$ and $\hat{\beta}_i$, as a proxy for the accounting function of firm i. We similarly estimate $\hat{\alpha}_j$ and $\hat{\beta}_j$, the accounting function of each U.S. firm j. Based on firm i's and firm j's estimated accounting functions, we calculate $E(NI)_{iit}$ and $E(NI)_{ijt}$, the

[6] DKV use the past 16 quarters of earnings and stock returns to estimate equation (1). Because the majority of the firms in our sample do not report earnings on a quarterly basis, we estimate equation (1) using the past five years of data. In section 4.1.1, we discuss the robustness of our results to using a measure constructed using quarterly data.

expected earnings for firms i and j in year t using firm i's stock return, R_{it}, as follows:

$$E(NI)_{iit} = \hat{\alpha}_i + \hat{\beta}_i R_{it}, \tag{2a}$$

$$E(NI)_{ijt} = \hat{\alpha}_j + \hat{\beta}_j R_{it}. \tag{2b}$$

We then define accounting comparability, $COMP_{ij}$, as the negative of the average absolute difference between the expected earnings for firm i under firm i's and firm j's estimated accounting functions over the five-year period from $t-4$ to t, as follows:

$$COMP_{ijt} = -\frac{1}{5}\sum_{t-4}^{t} \left| E(NI)_{iit} - E(NI)_{ijt} \right|, \tag{3}$$

where larger values of $COMP_{ijt}$ indicate greater accounting comparability. We estimate comparability to U.S. firms, $COMP\_US_{ijt}$, for each possible combination of non-U.S. firm i and U.S. firm j within the same one-digit ICB industry group during a given year t. Finally, we calculate our firm-year measure of comparability to U.S. firms, $COMP\_US_{it}$, as the average of the full set of $COMP\_US_{ijt}$ multiplied by 100 (as in DKV).

3.2.2. U.S. Institutional Ownership and Basic Control Variables. We identify U.S. mutual funds based on the fund's country of incorporation recorded in the Thomson Reuters database. Following Lau, Ng, and Zhang [2010], we calculate each firm's total annual U.S. mutual fund holdings, *US_OWN*, as the sum of each U.S. mutual fund's latest reported holding of the firm scaled by the number of shares outstanding. As control variables, we include the firm characteristics suggested by DKV: logarithm of market capitalization (*SIZE*), book-to-market ratio (*BM*), return-on-assets ratio (*ROA*), and annualized stock return volatility (*RETVOL*). In addition, we include several variables likely to be correlated with both U.S. institutional ownership and comparability, including an indicator variable for cross-listing on a U.S. stock exchange (*ADR*), firm age (*AGE*), and closely held ownership (*CH*).

3.3 DESCRIPTIVE STATISTICS

Table 2 provides descriptive statistics for our main variables of interest separately for emerging and developed markets. Comparability to U.S. firms is lower for firms from emerging markets than developed markets based on the adapted DKV measure (−17.24 vs. −15.22). Average U.S. mutual fund ownership as a percentage of shares outstanding is 1.0% for emerging markets versus 1.7% for developed markets.[7]

[7] Total U.S. institutional ownership is likely understated for two reasons. First, we include only mutual fund holdings because data on the international holdings by other types of institutional investors (such as hedge funds and pension funds) are limited. Second, the data on

TABLE 2

Descriptive Statistics for the Main Variables within Emerging and Developed Markets

Variable	*N*	Mean	*SD*	5%	25%	Median	75%	95%
Emerging Markets								
$COMP\_US_{t+1}$	51,601	−17.24	7.650	−33.20	−20.42	−15.31	−12.11	−7.942
$\Delta COMP\_US_{t \text{ to } t+1}$	51,601	−0.387	3.790	−5.979	−1.765	−0.288	0.959	5.240
US_OWN_t	51,601	0.010	0.041	0.000	0.000	0.000	0.003	0.050
$SIZE_t$	51,601	11.71	1.851	8.778	10.41	11.70	12.87	14.88
BM_t	51,601	1.157	1.162	0.159	0.430	0.797	1.458	3.381
ROA_t	51,601	0.053	0.086	−0.063	0.018	0.048	0.088	0.179
$RETVOL_t$	51,601	0.519	0.362	0.180	0.311	0.443	0.630	1.066
ADR_t	51,601	0.027	0.163	0.000	0.000	0.000	0.000	0.000
AGE_t	51,601	11.95	5.293	4.000	8.000	11.00	16.00	21.00
CH_t	51,601	0.336	0.308	0.000	0.000	0.322	0.599	0.851
Developed Markets								
$COMP\_US_{t+1}$	88,926	−15.22	6.970	−29.66	−17.77	−13.54	−10.90	−6.970
$\Delta COMP\_US_{t \text{ to } t+1}$	88,926	−0.350	3.318	−5.037	−1.452	−0.277	0.712	4.358
US_OWN_t	88,926	0.017	0.051	0.000	0.000	0.002	0.012	0.083
$SIZE_t$	88,926	11.98	2.032	8.919	10.56	11.80	13.25	15.64
BM_t	88,926	1.000	0.895	0.174	0.434	0.759	1.260	2.633
ROA_t	88,926	0.016	0.132	−0.211	0.003	0.031	0.069	0.156
$RETVOL_t$	88,926	0.450	0.341	0.151	0.252	0.366	0.541	1.010
ADR_t	88,926	0.036	0.187	0.000	0.000	0.000	0.000	0.000
AGE_t	88,926	15.59	9.499	4.000	8.000	13.00	21.00	35.00
CH_t	88,926	0.355	0.273	0.000	0.087	0.355	0.569	0.802

This table reports the number of observations (*N*), mean, standard deviation (*SD*), 5th percentile (5%), 25th percentile (25%), median, 75th percentile (75%), and 95th percentile (95%) for the variables used in our primary analyses, separately for emerging and developed markets. The variables include the adapted DKV measure of non-U.S. firms' reporting comparability to their U.S. industry peers (*COMP_US*), one-year change in comparability ($\Delta COMP\_US$), U.S. mutual fund ownership (*US_OWN*), the logarithm of market capitalization (*SIZE*), book-to-market ratio (*BM*), return-on-assets ratio (*ROA*), stock return volatility (*RETVOL*), an indicator variable for cross-listing on a U.S. stock exchange (*ADR*), firm age (*AGE*), and closely held ownership (*CH*). Prefix Δ denotes the change in a variable as indicated by its subscripts. Detailed variable definitions are in appendix A. The sample period is between 1998 and 2009. All continuous variables are winsorized at the top and bottom 1%.

Table 2 also reports descriptive statistics for our basic control variables. Emerging market firms have a higher return-on-assets ratio (5.3% vs. 1.6%) and a younger age (11.95 vs. 15.59) than developed market firms. The two groups of firms exhibit similar market capitalizations, book-to-market ratios, annualized stock return volatility, probabilities of being ADR-listed, and levels of closely held ownership.

Table IA2 of the Online Appendix reports descriptive statistics for the sample of U.S. firms from which we select non-U.S. firms' industry peers to calculate *COMP_US*. As expected, U.S. firms are larger, older, and more comparable to other U.S. firms in the same industry. Table IA3 presents correlation coefficients for the variables used in our primary analyses. The

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mutual fund international holdings are likely incomplete because U.S. institutions are only required to report their holdings of U.S. exchange-listed non-U.S. issuers, so much of the U.S. funds' non-U.S. holdings are provided on a voluntary basis.

correlations between *COMP_US* and *SIZE*, *BM*, and *RETVOL* are similar in sign and significance to those reported in table 5 in DKV (p. 916), providing comfort that our comparability measure behaves similarly to one constructed in a U.S. setting.

4. Empirical Results

4.1 THE EFFECT OF U.S. INSTITUTIONS ON COMPARABILITY TO U.S. FIRMS

To test our primary empirical prediction, we employ a changes-on-levels specification, a changes-on-changes specification, and an instrumental variables approach. We discuss each test in detail below.

4.1.1. Baseline Results. We first model the *change* in comparability to U.S. firms as a function of the lagged *level* of U.S. institutional ownership, as in equation (4) below.[8] This specification is closely linked to theory because both voice (e.g., Maug [1998]) and exit models (e.g., Edmans [2009]) predict that an investor's incentive to monitor depends on the *level* of her ownership stake.

$$\Delta COMP\_US_{i,\,t\,\text{to}\,t+1} = \alpha_0 + \beta_1 US\_OWN_{i,t} + \beta_2 CONTROLS_{i,t} + FIXED\ EFFECTS_{t,j,k} + \varepsilon_{i,t}, \quad (4)$$

where subscript i indexes firm, t indexes time, j indexes industry, and k indexes firm i's country of domicile. We calculate $\Delta COMP\_US_{t\ \text{to}\ t+1}$, the change in firm i's comparability, by subtracting $COMP\_US_t$ from $COMP\_US_{t+1}$, where we estimate $COMP\_US_t$ from year $t-4$ to t and $COMP\_US_{t+1}$ from year $t-3$ to $t+1$. *US_OWN* is the aggregate U.S. mutual fund ownership in firm i at the end of year t. *CONTROLS* are the comprehensive list of controls discussed in Section 3.2.2, also measured at the end of year t.[9] We separately include fixed effects at the year, industry, and country level but, for brevity, do not report the coefficients. We adjust standard errors for heteroskedasticity and cluster them at the firm level.

Column (1) of table 3 panel A reports the ordinary least squares (OLS) regression results of estimating equation (4) for the pooled sample of all non-U.S. firms. *US_OWN* is statistically insignificant, suggesting that, for the pooled sample, U.S. institutional ownership is not associated with reporting convergence. Estimates for the control variables indicate that firms with a higher book-to-market ratio (*BM*), lower return-on-assets (*ROA*), more

[8] We do not use a levels-on-levels specification because we estimate $COMP\_US_{t+1}$ over the past five years, and thus, regressing the level of *COMP* in year $t+1$ on lagged *US_OWN* in year t makes it difficult to conclude whether institutional ownership drives comparability or the reverse.

[9] Given there is some overlap in the timing of the measurement of $\Delta COMP\_US_{t\ to\ t+1}$ and US_OWN_t, we repeat our analyses instead measuring all independent variables in year $t-1$. The results, tabulated in table IA4, are consistent with our main analyses.

TABLE 3

The Effect of U.S. Institutions on Comparability to U.S. Firms

Panel A: Changes-on-Levels Specifications

	(1) Pooled Sample	(2) Developed Markets	(3)	(4)	(5)	(6)
			Emerging Markets			
Dependent Variables	$\Delta COMP\_US_{t \text{ to } t+1}$	$\Delta COMP\_US_{t \text{ to } t+1}$	$\Delta COMP\_US_{t \text{ to } t+1}$	$\Delta COMP\_US\_Q_{t \text{ to } t+1}$	$\Delta COMP\_US\_AS_{t \text{ to } t+1}$	$\Delta COMP\_US\_CFO_{t \text{ to } t+1}$
US_OWN_t	**0.155**	**−0.289**	**1.313*****	**0.409***	**1.286*****	**0.810****
	(0.242)	(0.272)	(0.501)	(0.213)	(0.474)	(0.331)
$SIZE_t$	0.010	0.000	0.047***	0.023***	0.011	0.029**
	(0.007)	(0.008)	(0.014)	(0.009)	(0.017)	(0.012)
BM_t	−0.485***	−0.462***	−0.479***	−0.084***	−0.555***	−0.297***
	(0.017)	(0.021)	(0.027)	(0.020)	(0.036)	(0.027)
ROA_t	0.594***	0.793***	0.265	0.734***	0.500	0.324
	(0.125)	(0.142)	(0.277)	(0.185)	(0.339)	(0.216)
$RETVOL_t$	−0.349***	−0.225***	−0.418***	0.087	−0.482***	−0.035
	(0.044)	(0.056)	(0.070)	(0.055)	(0.082)	(0.076)
ADR_t	−0.108**	−0.102*	−0.128	−0.029	−0.001	−0.171*
	(0.053)	(0.059)	(0.109)	(0.068)	(0.132)	(0.088)
AGE_t	−0.001	−0.004***	0.021***	0.017***	0.025***	0.015***
	(0.001)	(0.001)	(0.004)	(0.002)	(0.004)	(0.003)
CH_t	−0.061	−0.157***	−0.043	−0.066	−0.018	−0.005
	(0.037)	(0.045)	(0.067)	(0.043)	(0.078)	(0.052)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
# of Obs.	140,527	88,926	51,601	28,669	38,030	36,694
Adjusted R^2	0.0851	0.0833	0.0941	0.1279	0.1417	0.1060

Panel B: Changes-on-Changes Specifications

$\Delta US\_OWN_{t-1 \text{ to } t}$	**0.760****	**0.192**	**1.548****	**0.412***	**1.319****	**0.954*****
	(0.306)	(0.346)	(0.625)	(0.244)	(0.628)	(0.330)
$\Delta SIZE_{t-1 \text{ to } t}$	0.369***	0.491***	0.203***	0.123***	0.161***	0.293***
	(0.027)	(0.038)	(0.040)	(0.024)	(0.050)	(0.033)
$\Delta BM_{t-1 \text{ to } t}$	−0.012	−0.006	−0.016	0.009	−0.068	0.005
	(0.024)	(0.032)	(0.035)	(0.023)	(0.042)	(0.034)
$\Delta ROA_{t-1 \text{ to } t}$	0.337***	0.540***	−0.611**	0.170	−0.685**	−0.420**
	(0.130)	(0.149)	(0.272)	(0.198)	(0.346)	(0.209)
$\Delta RETVOL_{t-1 \text{ to } t}$	−0.284***	−0.279***	−0.285***	−0.136***	−0.282***	−0.134***
	(0.040)	(0.053)	(0.060)	(0.041)	(0.070)	(0.046)
$\Delta ADR_{t-1 \text{ to } t}$	0.337*	0.220	0.720*	0.890*	0.337	0.697*
	(0.200)	(0.224)	(0.420)	(0.492)	(0.529)	(0.413)
$\Delta CH_{t-1 \text{ to } t}$	0.001	0.135	−0.174	−0.081	−0.253**	0.130
	(0.068)	(0.085)	(0.113)	(0.067)	(0.124)	(0.085)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

(Continued)

TABLE 3—*Continued*

Panel B: Changes-on-Changes Specifications						
# of Obs.	130,021	81,928	48,093	27,757	36,045	34,542
Adjusted R^2	0.0739	0.0790	0.0737	0.1256	0.1193	0.0902

Panel A of this table reports the ordinary least squares (OLS) regression results on the relation between the levels of U.S. mutual fund ownership (*US_OWN*) in year *t* and the subsequent changes in non-U.S. firms' reporting comparability to their U.S. industry peers from year *t* to $t + 1$. Panel B of this table reports the OLS regression results on the relation between the changes in U.S. mutual fund ownership (Δ*US_OWN*) from year $t - 1$ to *t* and the subsequent changes in non-U.S. firms' reporting comparability to their U.S. industry peers from year *t* to $t + 1$. We measure comparability using the adapted DKV measure (*COMP_US*) and three modified DKV measures (*COMP_US_Q*, *COMP_US_AS*, and *COMP_US_CFO*). Controls in panels A and B include the levels of (changes in) the logarithm of market capitalization (*SIZE*), book-to-market ratio (*BM*), return-on-assets ratio (*ROA*), stock return volatility (*RETVOL*), an indicator variable for cross-listing on a U.S. stock exchange (*ADR*), firm age (*AGE*), and closely held ownership (*CH*). Prefix Δ denotes the change in a variable as indicated by its subscripts. Detailed variable definitions are in appendix A. The sample period is between 1998 and 2009. The regression is estimated using the pooled sample of all non-U.S. firms in column (1) of both panels, the developed markets subsample in column (2), and the emerging markets subsample in columns (3)–(6). We do not report coefficient estimates on intercepts, year, industry, and country-fixed effects for brevity. # of Obs. denotes the number of observations. We report standard errors, adjusted for heteroskedasticity and clustered by firm, in parentheses.

***, **, and * indicate significance at the 1%, 5%, and 10% two-tailed level.

volatility of returns (*RETVOL*), and a U.S. ADR listing (*ADR*) have smaller subsequent changes in comparability.[10]

In columns (2) and (3) of panel A, we reestimate equation (4) separately for the developed and emerging markets subsamples. Consistent with foreign institutional investors playing a less important role in altering firms' reporting incentives where strong regulatory institutions already promote high-quality reporting, *US_OWN* remains insignificant for developed markets in column (2). For emerging markets in column (3), *US_OWN* is positive and significant at the 1% level. The coefficient of 1.313 indicates that a one standard deviation increase in U.S. ownership is associated with an increase in comparability of 0.054. This is equivalent to 14% of the average one-year change in comparability and 1.5% of the average difference between the comparability to U.S. firms of emerging market firms and their U.S. industry peers.[11] This result suggests that monitoring by U.S. institutional investors serves as a powerful market-based substitute for the relatively weak financial reporting incentives provided by the underdeveloped regulatory infrastructures in emerging markets, despite any existing barriers to external oversight.

We assess the robustness of these initial findings to three modifications of *COMP_US*. First, we reestimate *COMP_US* using quarterly rather than annual data (*COMP_US_Q*) as in DKV. Second, to account for the asymmetric

[10] The negative coefficient on *ADR* could reflect a smaller scope for future improvements in comparability to U.S. firms for firms that are already cross-listed in the United States Consistent with our expectations, the changes-on-changes specification in table 3, panel B, indicates that the initiation of an ADR leads to a subsequent increase in comparability. Deleting all ADR-listed firms does not affect our inferences (untabulated).

[11] In our sample, the average comparability of emerging market firms to U.S. firms in the same industry is −17.2 and that of U.S. firms to other U.S. firms in the same industry is −13.7.

timeliness of earnings (e.g., Basu [1997]), we include an indicator variable for negative stock returns and the interaction between this indicator and stock returns in the estimation of *COMP_US* (*COMP_US_AS*). Third, similar to Barth et al. [2012], we replace returns with operating cash flows (*COMP_US_CFO*) to mitigate the concern that *COMP_US* may capture differences across countries in return patterns unrelated to changes in accounting functions (such as changes in investor behavior). Results using these three modified measures, reported in columns (4)–(6) of panel A, are similar.

We next estimate the relation between comparability and U.S. ownership using a changes-on-changes specification. While this specification controls for time-invariant omitted variables, it is less tightly linked to governance theories than the changes-on-levels specification because it does not capture the prior level of ownership.[12] We estimate the following model:

$$\Delta COMP\_US_{i,t\,\text{to}\,t+1} = \alpha_0 + \beta_1 \Delta US\_OWN_{i,t-1\,\text{to}\,t} + \beta_2 \Delta CONTROLS_{i,t-1\,\text{to}\,t} + FIXED\ EFFECTS_{t,j,k} + \varepsilon_{i,t}, \quad (5)$$

where the prefix Δ denotes the change in a variable as indicated by its subscripts: we calculate the change in *COMP_US* as before and the changes in *US_OWN* and controls from year $t-1$ to t.

Column (1) of table 3, panel B, reports the OLS regression results of estimating equation (5) for the pooled sample. Our primary variable of interest, Δ*US_OWN*, is positive and significant, suggesting that changes in U.S. ownership are positively associated with subsequent changes in non-U.S. firms' comparability to U.S. firms. In columns (2) and (3), we reestimate equation (5) separately for developed and emerging markets. The results indicate that the positive association between changes in U.S. ownership and one-year lead changes in comparability to U.S. firms is driven primarily by firms from emerging markets, as Δ*US_OWN* is insignificant in column (2) but positive and significant at the 5% level in column (3). The coefficient of 1.548 in column (3) indicates that a one standard deviation increase in the annual change in U.S. ownership is associated with an increase in comparability of 0.048. This is equivalent to 12.4% of the average one-year change in comparability and 1.3% of the average difference between the comparability to U.S. firms of emerging market firms and their U.S. industry peers. In columns (4)–(6), we once again replace Δ*US_OWN* with one-year changes in the three modified DKV measures (Δ*COMP_US_Q*, Δ*COMP_US_AS*, and Δ*COMP_US_CFO*). Results are similar.

In summary, our baseline results point to an economically significant association between U.S. institutional investment and subsequent increases

[12] To see this, assume for example that an investor needs an ownership stake of 1% or more to exert a meaningful influence. Given a 0.5% increase in ownership, without knowing the initial level of ownership, there is no clear prediction about its effect on comparability (e.g., an increase from 0.25% to 0.75% implies no effect, while an increase from 0.75% to 1.25% leads to a stake sufficient to exert influence).

in the comparability of non-U.S. firms' financial reporting to U.S. firms, but only in emerging markets. This suggests that, despite the existence of potentially significant barriers to external oversight, monitoring by foreign institutional investors serves as an effective market-based substitute for a weak regulatory infrastructure, providing the incentives necessary to spur meaningful reporting changes.

4.1.2. Identification: An Instrumental Variable Approach. To address endogeneity concerns, we use an instrumental variable (IV) for U.S. ownership based on an exogenous shock to U.S. institutional investment abroad—the passage of the 2003 JGTRRA Act. JGTRRA lowered the dividend tax rate for equity investments in firms domiciled in countries with eligible U.S. tax treaties (hereafter, "JGTRRA-eligible firms"). Desai and Dharmapala [2011] show that, following the passage of the Act in 2003, U.S. institutional investment in JGTRRA-eligible firms increased significantly relative to that in ineligible firms.

Building on Desai and Dharmapala's [2011] findings, we first assess the relevance of our IV for U.S. ownership by examining whether JGTRRA-eligible firms experienced a significant increase in U.S. ownership after 2003, the enactment year of the Act, using the following model:

$$US\_OWN_{i,t} = \alpha_0 + \beta_1 POST2003_t \times QUALIFIED_{i,t} + \beta_2 QUALIFIED_{i,t} + \beta_3 CONTROLS_{i,t} + FIXED\,EFFECTS_{t,j,k} + \varepsilon_{i,t}, \quad (6)$$

where *POST2003* indicates years subsequent to 2003 and *QUALIFIED* denotes JGTRRA-eligible firms (i.e., dividend-paying firms domiciled in tax-treaty countries).[13] The IV for *US_OWN* is *POST2003* × *QUALIFIED*, which equals one if a firm is JGTRRA-eligible post 2003, and zero otherwise. *CONTROLS* is the same vector of controls as in equation (4). We include year-fixed effects (which subsume *POST2003*) to control for any time trend in U.S. ownership driven by factors other than JGTRRA. We also include country- and industry-fixed effects.

Column (1) of table 4, panel A, reports the Tobit regression results of equation (6). We use a Tobit model because the dependent variable of equation (6), *US_OWN*, represents a corner solution outcome, with a significant number of zero observations. As Wooldridge [2002] and Leuz, Lins, and Warnock [2009] point out, for corner solution models, the OLS regression estimator is generally inconsistent. The coefficient on *POST2003*×*QUALIFIED* is positive and significant at the 1% level, consistent with Desai and Dharmapala's [2011] findings that JGTRRA had a positive and significant effect on U.S. institutional investment in eligible firms.

[13] The U.S. Congress passed JGTRRA on May 23, 2003 and President George W. Bush signed the bill into law on May 28, 2003. Although we code year 2003 as pre-JGTRRA (i.e., *POST2003* = 0), our results are robust to deleting observations from 2003 from the sample. Nontreaty countries in our sample include Argentina, Brazil, Chile, Colombia, Hong Kong, Jordan, Malaysia, Peru, Singapore, Sri Lanka, and Taiwan.

TABLE 4

The Effect of U.S. Institutions on Comparability to U.S. Firms: Using the JGTRRA Act as an IV for U.S. Ownership

Panel A: Changes-on-Levels Specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pooled	Pooled	Developed	Emerging Markets				
	Sample	Sample	Markets	All Years		2002–2005	1999–2002	2004–2007
Dependent Variables	US_OWN_t	$\Delta COMP\_US_{t \text{ to } t+1}$	$\Delta COMP\_US_{t \text{ to } t+1}$			$\Delta COMP\_US_{t \text{ to } t+1}$		
$POST2003\_QUALIFIED_t$	**0.009*****	**0.098****	**0.009**	**0.451*****		**0.492*****		
	(0.001)	(0.047)	(0.059)	(0.088)		(0.128)		
$FITTED\_US\_OWN_t$					**1.218*****			
					(0.294)			
$POST2000\_QUALIFIED_t$							**0.032**	
							(0.155)	
$POST2005\_QUALIFIED_t$								**-0.055**
								(0.110)
$QUALIFIED_t$	−0.006***	−0.329***	−0.397***	−0.279***	−0.004	−0.134	−0.189	0.312***
	(0.001)	(0.041)	(0.049)	(0.082)	(0.066)	(0.133)	(0.154)	(0.114)
$Controls_t$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Obs.	131,555	131,555	87,823	43,732	43,732	16,099	10,687	17,667
Pseudo (Adjusted) R^2	0.3939	0.0880	0.0851	0.0991	0.0988	0.0714	0.0654	0.0499

(Continued)

TABLE 4—*Continued*

Panel B: Changes-on-Changes Specifications								
POST2003_QUALIFIED$_t$	**0.008*****	**0.208*****	**0.066**	**0.699*****		**0.623*****		
	(0.001)	(0.050)	(0.062)	(0.096)		(0.133)		
*FITTED_*Δ*US_OWN*$_{t-1 \text{ to } t}$					**1.485*****			
					(0.285)			
POST2000_QUALIFIED$_t$							**0.065**	
							(0.161)	
POST2005_QUALIFIED$_t$								**−0.064**
								(0.112)
QUALIFIED$_t$	0.014***	−0.160***	−0.167***	−0.268***	−0.242**	−0.029	0.040	0.531***
	(0.001)	(0.043)	(0.050)	(0.091)	(0.100)	(0.137)	(0.162)	(0.113)
Δ*Controls*$_{t-1 \text{ to } t}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Obs.	121,638	121,638	80,927	40,711	40,711	15,462	10,090	17,358
Pseudo (Adjusted) R^2	0.1260	0.0763	0.0794	0.0794	0.0786	0.0630	0.0456	0.0433

Panel A of this table reports the regression results on the relation between the levels of U.S. mutual fund ownership (*US_OWN*) in year t and the subsequent changes in non-U.S. firms' reporting comparability to their U.S. industry peers (Δ*COMP_US*) from year t to $t+1$, using the JGTRRA Act of 2003 as an instrumental variable (IV) for *US_OWN*. Panel B of this table reports the regression results on the relation between the changes in U.S. mutual fund ownership (Δ*US_OWN*) from year $t-1$ to t and the subsequent changes in non-U.S. firms' reporting comparability to their U.S. industry peers (Δ*COMP_US*) from year t to $t+1$, using the JGTRRA Act of 2003 as an instrumental variable (IV) for Δ*US_OWN*. We define controls in panels A and B as in table 3 panels A and B. Prefix Δ denotes the change in a variable as indicated by its subscripts. Detailed variable definitions are in appendix A. The sample period is between 1998 and 2009. Column (1) of panels A and B presents the Tobit regression results examining the effect of JGTRRA on *US_OWN* in year t (Δ*US_OWN* from year $t-1$ to t) for the pooled sample of all non-U.S. firms. Columns (2)–(4) of both panels report the reduced form regression results examining the effect of JGTRRA on Δ*COMP_US*, using the pooled sample, the developed markets subsample, and the emerging markets subsample, respectively. Column (5) of panels A and B reports the second stage regression results examining the effect of the fitted value of *US_OWN* (Δ*US_OWN*) from column (1) of panels A and B on Δ*COMP_US*. Column (6) of both panels uses 2002–2005, the four years surrounding JGTRRA. Columns (7) and (8) of both panels use 1999–2002 and 2004–2007 as two pseudo-shocks. We do not report coefficient estimates on intercepts, controls, year, industry, and country-fixed effects for brevity. # of Obs. denotes the number of observations. We report standard errors, adjusted for heteroskedasticity and clustered by firm, in parentheses. We bootstrap the standard errors in column (5) using 500 random draws with replacement.

***, **, and * indicate significance at the 1%, 5%, and 10% two-tailed level.

JGTRRA-eligible firms have 0.9% higher U.S. mutual fund ownership and experience a 0.8% larger increase in ownership than JGTRRA-ineligible firms after 2003.[14] These results suggest that our IV has a strong statistical and economic association with *US_OWN* and thus satisfies the relevance criterion.[15]

Turning to the exclusion restriction, our IV is unlikely to affect comparability, other than through its effect on U.S. ownership, for two reasons. First, it comes from an exogenously imposed institutional change—the JGTRRA Act—which was not intended to improve comparability. Second, we base our approach on Desai and Dharmapala [2011], who link the increase in U.S. ownership of JGTRRA-eligible firms directly to JGTRRA by ruling out a number of endogenous explanations. They show that the observed effect of the JGTRRA Act on U.S. equity holdings abroad is not explained by simultaneous changes in U.S. investors' preferences for stocks of JGTRRA-eligible firms, changes in tax evasion behavior, changes in market conditions and/or investment opportunities that might correlate with treaty status, or time trends in U.S. equity holdings across treaty and nontreaty countries.

We first estimate the following reduced form regression to assess the effect of our IV on comparability:

$$\begin{aligned}\Delta COMP\_US_{i,t\,\text{to}\,t+1} = {} & \alpha_0 + \beta_1 POST2003_t \times QUALIFIED_{i,t} \\ & + \beta_2 QUALIFIED_{i,t} + \beta_3 CONTROLS_{i,t} \\ & + FIXED\,EFFECTS_{t,j,k} + \varepsilon_{i,t}. \end{aligned} \tag{7}$$

Because *QUALIFIED* equals one only for dividend paying firms in tax-treaty countries, we continue to include country-fixed effects in equation (7), which helps to rule out alternative country-level explanations.

Columns (2)–(4) of table 4, panel A, present the results of estimating equation (7) separately for the pooled sample, the developed markets subsample, and the emerging markets subsample. *POST2003* × *QUALIFIED* is positive and significant in column (2), suggesting that the passage of JGTRRA increased eligible firms' comparability to U.S. firms. On average,

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[14] We base the reported economic significance on the effect of JGTRRA on the latent U.S. ownership variable. The marginal effect conditional on *US_OWN* being greater than zero in panel A (panel B) is 0.3% (0.2%). The marginal effect of JGTRRA on the unconditional expected value of *US_OWN* is 0.5% (0.3%).

[15] As an alternative means of assessing the relevance of our IV, we estimate a two-stage least squares (2SLS) model. As in the Tobit model, the IV exhibits a coefficient estimate that is positive and significant at the 1% level in the first stage. However, the magnitude of the coefficient, 0.005, is smaller than the 0.009 produced by the Tobit model, consistent with the OLS yielding a downwardly biased estimator for corner solution models. The IV also passes the weak instrument test: the Cragg-Donald *F*-statistic is 95.48, significantly higher than the Stock and Yogo [2005] critical value of 16.38 for a 10% maximal bias of the IV estimator relative to OLS.

the one-year lead change in comparability to U.S. firms is 0.098 higher for JGTRRA-eligible firms than for JGTRRA-ineligible firms. Looking separately at firms from developed and emerging markets (columns (3) and (4)), this result is again due to emerging market firms. In column (5), as an alternative to the reduced form, we report results for emerging market firms using the fitted value of U.S. ownership, *FITTED_US_OWN*, calculated based on the Tobit estimation in column (1). Because *FITTED_US_OWN* is itself an estimate, we report bootstrapped standard errors in column (5). Consistent with the results in column (4), *FITTED_US_OWN* is positive and significant at the 1% level. The magnitude of the coefficient estimate, 1.218, is similar to that in our baseline analyses.

Next, we assess the sharpness of the JGTRRA effect by narrowing the testing window and reestimating equation (7) only for the years immediately before and after JGTRRA (i.e., 2002–2005). The results, reported in column (6), confirm that the effect of JGTRRA on comparability occurs soon after the Act's passage.

We conduct two falsification tests to further establish the validity of our IV. Specifically, we shift the testing window of 2002–2005 backwards to 1999–2002 and then forward to 2004–2007 and pick the second year of both windows as the pseudo-Act passage year (i.e., 2000 and 2005). We use *POST2002* and *POST2005* to denote the years subsequent to the pseudo passage of the Act, and define *QUALIFIED* as before. The pseudo-IV is thus *POST2002*(*2005*) $\times$ *QUALIFIED*. If the passage of JGTRRA, rather than a time trend in comparability correlated with our IV, drives the observed effects, we expect the coefficient on the pseudo-IVs to be statistically indistinguishable from zero. The results, reported in columns (7) and (8) show that both pseudo-IVs are insignificant.

A remaining concern with our IV analyses is that JGTRRA-eligible firms may have simultaneously improved their reporting comparability to attract U.S. investors surrounding the passage of JGTRRA. We address this concern by examining whether emerging market firms changed their dividend policies after 2003. In table IA5 of the Online Appendix, we regress a dividend payment indicator on *POST2003*, an indicator to denote tax-treaty countries, the interaction between the two, and controls. The interaction is insignificant, suggesting that emerging market firms in tax-treaty countries did not significantly alter their dividend policies relative to those in non-tax-treaty countries in the period surrounding JGTRRA adoption. Because JGTRRA offered a preferential dividend tax rate for firms in the tax-treaty countries, the fact that these firms did not significantly alter their dividend policies to attract U.S. investment makes it less plausible that they would have altered comparability for this same reason.

Finally, we repeat the IV analyses using a changes-on-changes specification. The results, which we analogously tabulate in panel B of table 4, are similar to those reported in panel A. Overall, our IV analyses provide further evidence that increases in U.S. institutional investment lead to subsequent increases in comparability to U.S. firms and mitigate the concern

that the positive effect of U.S. institutions on comparability is attributable to endogeneity.

4.1.3. Alternative Measures of Comparability to U.S. Firms. In this section, we assess the robustness of our results to several alternative measures of reporting convergence. First, U.S. institutional investors could potentially improve the reporting comparability of their non-U.S. investees by compelling them to adopt accounting methods in compliance with U.S. GAAP (assuming these investors could also ensure enforcement of the rules). We construct an indicator variable, *USACCT*, which equals one if a non-U.S. firm adopts at least one of five distinct U.S. accounting methods permitted, but not required, under the firm's domestic GAAP, and zero otherwise (we provide further details in appendix A). We expect a positive association between *US_OWN* and *USACCT*.

Second, for U.S. institutional investors, compelling their non-U.S. investees to adopt U.S. GAAP in its entirety could also enhance comparability. Because the voluntary adoption of U.S. GAAP is infrequent in our sample, we combine it with the voluntary adoption of IFRS to increase the power of our tests. IFRS is more similar to U.S. GAAP than most emerging markets' domestic GAAPs.[16] We denote the voluntary adoption of the two internationally recognized standards as *ADOPTION* and expect a positive association between *US_OWN* and *ADOPTION*.

Third, we conjecture that the decision of a firm from a non-English speaking country to issue financial statements in English indicates a desire to increase the accessibility of the statements to foreign investors (Jeanjean et al. [2014]). We define an indicator, *ENGLISH*, to denote the choice to issue English language statements for the first time using data from Lang and Stice-Lawrence [2014]. We expect a positive relation between *US_OWN* and *ENGLISH*.

Finally, we examine whether U.S. institutional ownership is associated with an increase in non-U.S. investees' earnings quality. Because U.S. GAAP is one of the highest quality sets of accounting standards (e.g., Alford et al. [1993], Dye and Sunder [2001]), an increase in earnings quality is consistent with an increase in comparability with U.S. GAAP.[17] We use two

[16] Bae, Tan, and Welker [2008] show that U.S. GAAP and IFRS only differ in 4 of the 21 accounting methods they examine, and that U.S. GAAP is more similar to IFRS than to the domestic GAAPs of most emerging markets and developed markets within which the adoption of IFRS is not mandatory. Barth et al. [2012] show that adoption of IFRS by a non-U.S. firm improves its comparability to its U.S. industry peers.

[17] This analysis is subject to two important caveats. First, it presumes that U.S. GAAP is of higher quality than emerging markets' domestic GAAPs, which may not be true in all contexts. Second, earnings quality and comparability are distinct concepts with potentially different implications for different groups of financial statement users. An increase in earnings quality arguably benefits *all* financial statement users by more accurately conveying information about firm performance. However, an increase in comparability to U.S. firms may benefit foreign users more than domestic users if the firm's comparability to its domestic industry peers decreases (or is unchanged).

TABLE 5

The Effect of U.S. Institutions on Alternative Measures of Comparability to U.S. Firms

Panel A: Changes-on-Levels Specifications

Dependent Variables	(1) $USACCT_{t+1}$	(2) $ADOPTION_{t+1}$	(3) $ENGLISH_{t+1}$	(4) ΔAQ_{t+1}	(5) $\Delta SMOOTH_{t+1}$
US_OWN_t	**0.899***	**0.831*****	**0.787*****	**0.012****	**0.147*****
	(0.528)	(0.227)	(0.257)	(0.006)	(0.043)
	[0.042]	[0.001]	[0.030]		
$Controls_t$	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
# of Obs.	17,713	42,860	31,617	35,490	35,490
Pseudo (Adjusted) R^2	0.4534	0.5010	0.2199	0.0122	0.0113

Panel B: Changes-on-Changes Specifications

$\Delta US\_OWN_{t-1 \text{ to } t}$	**2.001*****	**−0.744**	**2.012*****	**0.001**	**0.131***
	(0.761)	(0.481)	(0.403)	(0.009)	(0.067)
	[0.098]	[−0.001]	[0.092]		
$\Delta Controls_{t-1 \text{ to } t}$	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
# of Obs.	16,173	39,804	29,255	33,107	33,107
Pseudo (Adjusted) R^2	0.4667	0.5340	0.1882	0.0080	0.0122

Panel A of this table reports the regression results on the relation between the levels of U.S. mutual fund ownership (*US_OWN*) in year *t* and five alternative measures of non-U.S. firms' reporting comparability to their U.S. industry peers in year *t*+1. Panel B of this table reports the regression results on the relation between the changes in U.S. mutual fund ownership (Δ*US_OWN*) from year *t*−1 to *t* and five alternative measures of non-U.S. firms' reporting comparability to their U.S. industry peers in year *t*+1. We define controls in panels A and B as in table 3 panels A and B. Prefix Δ denotes the change in a variable as indicated by its subscripts. Detailed variable definitions are in appendix A. The sample period is between 1998 and 2009. The regression is estimated using the emerging markets subsample in all columns. In columns (1)–(3) of both panels, a Probit model is used and in columns (4) and (5), an OLS model is used. In column (1) of both panels, we include only firms not already adopting a U.S. accounting method of interest in year *t*. In column (2) of both panels, we exclude mandatory IFRS adopting firm-years and include only firms not adopting IFRS in year *t*. In column (3) of both panels, we include only non-English speaking country firms not issuing English statements in year *t*. We do not report coefficient estimates on intercepts, controls, year, industry, and country-fixed effects for brevity. # of Obs. denotes the number of observations. We report standard errors, adjusted for heteroskedasticity and clustered by firm, in parentheses. For *US_OWN* in columns (1)–(3) of panel A and Δ*US_OWN* in columns (1)–(3) of panel B, the marginal effects (dF/dx) are displayed below the standard errors.

***, **, and * indicate significance at the 1%, 5%, and 10% two-tailed level.

distinct proxies for earnings quality—the Dechow and Dichev [2002] measure of accrual quality (*AQ*) and earnings smoothness as in Leuz, Nanda, and Wysocki [2003] and Lang, Lins, and Maffett [2012] (*SMOOTH*). We construct both measures so that larger values indicate higher earnings quality (we provide further details in appendix A). In this analysis, we include the basic controls from equation (4) as well as three additional determinants of earnings quality: operating cycle, an indicator for a reporting loss, and sales growth (e.g., Lang, Lins, and Maffett [2012]).

Table 5, panel A, reports the results of estimating equation (4) with the five alternative comparability measures as dependent variables. We use a

Probit model if a measure is a binary variable and an OLS model if it is continuous. The positive and significant coefficients on *US_OWN* in all five columns suggest that an emerging market firm with higher U.S. institutional ownership is more likely to adopt accounting treatments in compliance with U.S. GAAP, to voluntarily adopt an internationally recognized set of accounting standards, to issue financial statements in English, and to experience an increase in earnings quality.[18]

Table 5, panel B, repeats the analyses using a changes-on-changes specification. The results are mostly consistent with those reported in panel A, albeit weaker in columns (2), (4), and (5), where *ADOPTION* and the two earnings quality measures are the dependent variables. The weaker results are consistent with these measures being less precise measures of output-based comparability. Nonetheless, taken together, the results based on these alternative comparability measures provide further evidence of a significant influence of U.S. institutional investors on their non-U.S. investee firms' comparability to U.S. firms and provide assurance that our conclusions are not limited to the DKV comparability measure.

4.2 MECHANISM THROUGH WHICH U.S. INSTITUTIONS AFFECT REPORTING COMPARABILITY

In this section, we investigate whether auditor selection is a mechanism through which U.S. institutional investors affect comparability. External auditors play a significant role in shaping firms' reporting behavior (e.g., DeAngelo [1981], Khurana and Raman [2004], Behn, Choi, and Kang [2008], DeFond and Zhang [2014]). In the U.S., "Big Four" audit firms (i.e., PricewaterhouseCoopers, Deloitte, Ernst & Young, and KPMG) handle the vast majority of the audits of publicly traded companies.[19] The auditing models in these large audit firms are highly standardized to ensure audit quality and maintain reputation. If an institutional investor can induce a non-U.S. firm to switch to a Big Four auditor, it should increase the firm's comparability to U.S. firms. In our sample, 6.6% (4.7%) of emerging (developed) market firms switch from a non-Big Four to a Big Four auditor.

We examine whether greater U.S. investment increases the likelihood of a non-U.S. firm hiring a Big Four auditor by estimating the following Probit model in both levels and changes:

$$BIG4AUDITOR_{i,\,t\,\text{to}\,t+1} = \alpha_0 + \beta_1 US\_OWN_{i,t} + \beta_2 CONTROLS2_{i,t} + FIXED\ EFFECTS_{t,j,k} + \varepsilon_{i,t}, \quad (8)$$

[18] In untabulated analyses, we repeat these tests for the developed markets, except for *US-ACCT*, which has very little variation in this subsample. As in our primary analyses, U.S. institutional ownership is not significantly associated with any of the alternative measures of comparability to U.S. firms.

[19] The U.S. Government Accountability Office (GAO [2008]) reports that the Big Four audits 97% of all U.S. public companies with sales between $250 million and $5 billion.

where *BIG4AUDITOR* equals one if a firm switches from a non-Big Four auditor to a Big Four auditor in year $t+1$ and zero otherwise.[20] In addition to the basic controls in equation (4), following prior research (e.g., Francis, Maydew, and Sparks [1999], DeFond and Zhang [2014]), we also include debt-to-assets ratio (*LEV*), an indicator for a reporting loss (*LOSS*), and dollar amount of equity issuance scaled by market capitalization (*EQUITY*) in *CONTROLS2*.

Columns (1)–(3) of table 6, panel A (panel B), report the levels (changes) regression results of equation (8) separately for the pooled sample, developed markets, and emerging markets. *US_OWN* (Δ*US_OWN*) is positive and significant only in column (3) for the emerging markets subsample, suggesting that an emerging market firm is more likely to hire a Big Four auditor the larger is the lagged level (change) in U.S. ownership. The marginal effect of 0.385 (1.462) in column (3) of table 6, panel A (panel B), indicates that a one standard deviation increase in U.S. ownership in this subsample is associated with a 1.1% (4.1%) higher likelihood of switching to a Big Four auditor.

Next, we link the observed positive association between the likelihood of switching to a Big Four auditor and U.S. ownership to the improvement in comparability to U.S. firms. We first examine whether this likelihood is associated with an increase in comparability in an OLS model. Columns (1)–(3) of table 6, panel C, report the OLS results separately for the pooled sample, developed markets, and emerging markets. The association between *BIG4AUDITOR* and Δ*COMP_US* is positive and significant, but only for the emerging markets. The *BIG4AUDITOR* coefficient in column (3) indicates that a switch to a Big Four auditor is associated with an increase in comparability of 0.306, which is equivalent to 1.6% of the average comparability of emerging market firms to U.S. firms in this subsample.

We then seek to better identify this effect using the strategy discussed in section 4.1.2. If JGTRRA creates exogenous variation in U.S. institutional investment, and U.S. institutional investors affect a firm's decision to switch to a Big Four auditor, then *POST2003* $\times$ *QUALIFIED* should also be suitable as an IV for this decision. As shown in column (4) of table 6, panels A and B, the IV strongly predicts emerging market firms' likelihood of switching to a Big Four auditor, confirming its relevance. We then assess whether the variation in the likelihood of this switching, as generated by JGTRRA, affects comparability. In column (4) of panel C, *FITTED_BIG4AUDITOR*, the fitted value of *BIG4AUDITOR* estimated from the regression in column (4) of panel A, is significantly positive, suggesting that the decision to switch to a Big Four auditor is indeed a mechanism through which U.S. institutional investors affect emerging market firms' comparability to U.S. firms.

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[20] To increase the power of our tests, we include only firms not already audited by Big Four auditors in year *t*. In this subsample, the 17.4% (14.2%) of emerging (developed) market firms switch to a Big Four auditor in year $t+1$.

TABLE 6

Mechanism Through Which U.S. Institutions Affect Comparability to U.S. Firms

Panel A: The Effect of U.S. Institutions on Auditor Choice: Changes-on-Levels Specifications

	(1)	(2)	(3)	(4)
	Pooled Sample	Developed Markets	Emerging Markets	
Dependent Variables		$BIG4AUDITOR_{t+1}$		
US_OWN_t	**0.488**	**0.185**	**1.510***	
	(0.315)	(0.349)	(0.795)	
	[0.085]	[0.029]	[0.385]	
$POST2003\_QUALIFIED_t$				**0.137***
				(0.081)
				[0.037]
$QUALIFIED_t$				−0.087
				(0.073)
$SIZE_t$	0.184***	0.203***	0.149***	0.156***
	(0.009)	(0.011)	(0.019)	(0.019)
BM_t	0.040***	0.116***	−0.040*	−0.038*
	(0.013)	(0.018)	(0.020)	(0.020)
ROA_t	−0.086	−0.075	−0.145	−0.163
	(0.095)	(0.104)	(0.280)	(0.280)
$RETVOL_t$	−0.000	0.009	−0.033	−0.035
	(0.029)	(0.038)	(0.046)	(0.047)
ADR_t	0.059	0.015	0.217	0.241
	(0.096)	(0.110)	(0.215)	(0.215)
AGE_t	−0.001	−0.003	0.004	0.004
	(0.002)	(0.002)	(0.005)	(0.005)
CH_t	0.117***	0.085	0.161**	0.160**
	(0.043)	(0.052)	(0.074)	(0.075)
LEV_t	0.115*	0.164*	0.042	0.028
	(0.068)	(0.085)	(0.120)	(0.121)
$LOSS_t$	0.040	0.070*	−0.026	−0.034
	(0.033)	(0.040)	(0.058)	(0.059)
$EQUITY_t$	−0.005	−0.012	0.013	0.012
	(0.025)	(0.031)	(0.042)	(0.043)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
# of Obs.	25,978	18,214	6,878	6,821
Pseudo R^2	0.1624	0.1781	0.1032	0.1023

Panel B: The Effect of U.S. Institutions on Auditor Choice: Changes-on-Changes Specifications

$\Delta US\_OWN_{t-1 \text{ to } t}$	**1.117****	**0.750**	**5.636*****	
	(0.553)	(0.627)	(2.022)	
	[0.200]	[0.125]	[1.462]	
$POST2003\_QUALIFIED_t$				**0.180****
				(0.082)
				[0.049]
$QUALIFIED_t$				0.132*
				(0.072)
$\Delta SIZE_{t-1 \text{ to } t}$	0.035	0.050*	0.075	0.086*
	(0.022)	(0.026)	(0.047)	(0.046)
$\Delta BM_{t-1 \text{ to } t}$	0.007	0.062***	−0.036	−0.038*
	(0.016)	(0.023)	(0.023)	(0.023)

(*Continued*)

TABLE 6—*Continued*

Panel B: The Effect of U.S. Institutions on Auditor Choice: Changes-on-Changes Specifications				
$\Delta ROA_{t-1 \text{ to } t}$	−0.055	0.037	−0.477**	−0.559**
	(0.079)	(0.086)	(0.228)	(0.226)
$\Delta RETVOL_{t-1 \text{ to } t}$	0.029	0.072***	−0.071**	−0.081**
	(0.019)	(0.024)	(0.033)	(0.034)
$\Delta ADR_{t-1 \text{ to } t}$	0.212	0.171	0.837	0.935*
	(0.265)	(0.299)	(0.521)	(0.504)
$\Delta CH_{t-1 \text{ to } t}$	−0.013	−0.012	−0.009	0.010
	(0.062)	(0.080)	(0.098)	(0.099)
$\Delta LEV_{t-1 \text{ to } t}$	0.169	0.295**	−0.135	−0.162
	(0.112)	(0.134)	(0.208)	(0.210)
$\Delta LOSS_{t-1 \text{ to } t}$	0.014	0.048	−0.081*	−0.097*
	(0.027)	(0.033)	(0.049)	(0.050)
$\Delta EQUITY_{t-1 \text{ to } t}$	−0.020	−0.048*	0.047	0.041
	(0.022)	(0.027)	(0.038)	(0.038)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
# of Obs.	23,960	16,751	6,346	6,343
Pseudo R^2	0.1270	0.1398	0.0722	0.0740
Panel C: Linking Auditor Choice to Comparability to U.S. Firms				
Dependent Variables		$\Delta COMP\_US_{t+1 \text{ to } t+2}$		
$BIG4AUDITOR_{t+1}$	**−0.046**	**−0.274*** **	**0.306*** **	
	(0.069)	(0.086)	(0.118)	
$FITTED\_BIG4AUDITOR_{t+1}$				**11.262***
				(5.884)
$QUALIFIED_{t+1}$				−0.031
				(0.159)
$SIZE_{t+1}$	0.088***	0.095***	0.093**	−0.332
	(0.019)	(0.022)	(0.040)	(0.234)
BM_{t+1}	−0.461***	−0.463***	−0.467***	−0.438***
	(0.041)	(0.057)	(0.061)	(0.064)
ROA_{t+1}	0.371	0.520*	−0.607	−0.017
	(0.258)	(0.279)	(0.760)	(0.808)
$RETVOL_{t+1}$	−0.105	−0.098	−0.158	0.027
	(0.082)	(0.097)	(0.156)	(0.184)
ADR_{t+1}	−0.433**	−0.310	−0.568	−2.161**
	(0.190)	(0.209)	(0.452)	(0.975)
AGE_{t+1}	0.003	−0.002	0.041***	0.033***
	(0.003)	(0.004)	(0.010)	(0.010)
CH_{t+1}	−0.349***	−0.269**	−0.575***	−0.794***
	(0.094)	(0.108)	(0.188)	(0.224)
LEV_{t+1}	−0.954***	−0.938***	−0.793**	−0.657**
	(0.169)	(0.204)	(0.316)	(0.321)
$LOSS_{t+1}$	−0.185**	−0.165*	−0.303*	−0.374**
	(0.082)	(0.093)	(0.161)	(0.163)

(*Continued*)

TABLE 6—*Continued*

Panel C: Linking Auditor Choice to Comparability to U.S. Firms				
$EQUITY_{t+1}$	0.093	0.088	0.093	0.133
	(0.058)	(0.069)	(0.106)	(0.110)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
# of Obs.	27,482	19,189	8,293	8,224
Adjusted R^2	0.0785	0.0734	0.0995	0.1004

Panel A of this table reports the Probit regression results on the relation between the levels of U.S. mutual fund ownership (*US_OWN*) in year t and non-U.S. firms' choices of auditors (*BIG4AUDITOR*) in year $t + 1$. Panel B of this table reports the Probit regression results on the relation between the changes in U.S. mutual fund ownership (Δ*US_OWN*) from year $t - 1$ to t and non-U.S. firms' choices of auditors (*BIG4AUDITOR*) in year $t + 1$. We define controls in panels A and B as in table 3 panels A and B, plus the levels in year t (changes from year $t - 1$ to t) of debt-to-assets ratio (*LEV*), an indicator for a reporting loss (*LOSS*), and dollar amount of equity issuance scaled by market capitalization (*EQUITY*). The regression is estimated using the pooled sample of all non-U.S. firms in column (1) of both panels, the developed markets subsample in column (2), and the emerging markets subsample in columns (3)–(4). Panel C, columns (1)–(3), reports the OLS regression results linking non-U.S. firms' auditor choices (*BIG4AUDITOR*) in year $t + 1$ to the changes in the firms' reporting comparability to their U.S. industry peers (Δ*COMP_US*) from year $t + 1$ to t + 2, using the pooled sample of all non-U.S. firms, the developed markets subsample, and the emerging markets subsample, respectively. Column (4) reports the second stage regression results examining the effect of the fitted value of *BIG4AUDITOR* in year $t + 1$ on Δ*COMP_US* from year $t + 1$ to $t + 2$. Controls are defined as in panel A.

The prefix Δ denotes the change in a variable as indicated by its subscripts. Detailed variable definitions are in appendix A. The sample period is between 1998 and 2009. We include only firms not audited by Big Four auditors in year t. We do not report coefficient estimates on intercepts, industry, and country fixed effects for brevity. # of Obs. denotes the number of observations. We report standard errors, adjusted for heteroskedasticity and clustered by firm, in parentheses. We bootstrap standard errors in panel C, column (4), using 500 random draws with replacement. For *US_OWN* in panel A and Δ*US_OWN* in panel B, we display the marginal effects (dF/dx) below the standard errors.

***, **, and * indicate significance at the 1%, 5%, and 10% two-tailed level.

In summary, the analyses in this section, by identifying a specific mechanism through which U.S. institutions affect comparability, provide further support for our primary prediction. They show that U.S. investors influence their non-U.S. investees' choice of auditor and that this choice is associated with a subsequent improvement in these firms' comparability to U.S. firms.

4.3 ECONOMIC IMPLICATIONS OF INCREASED COMPARABILITY TO U.S. FIRMS

In this section, we examine the economic implications of increased comparability to U.S. firms for a non-U.S. firm's foreign financial statement users. DKV suggest an improvement in the properties of analysts' forecasts as an indication of the economic benefits of greater comparability. Bae, Tan, and Welker [2008] find that foreign analyst following and forecast accuracy are higher for firms located in countries with accounting standards that are more comparable to those of the analysts' home countries. Building on these findings, we predict that an increase in comparability to U.S. firms improves foreign analysts' forecasts.[21]

[21] It would be more direct to examine whether increases in U.S. ownership benefit U.S. analysts in particular instead of foreign analysts in general. However, relatively few U.S. analysts follow our sample firms so we combine them with other foreign analysts. We assume that, on

We estimate the following model:

$$ANALYST\_VAR\_F_{i,t+1} = \alpha_0 + \beta_1 COMP\_US_{i,t} + \beta_2 CONTROLS3_{i,t} + FIXED\ EFFECTS_{t,j,k} + \varepsilon_{i,t}, \quad (9)$$

where *ANALYST_VAR_F* is one of the following three analyst forecast properties: (1) the total number of unique foreign analysts following a firm in a given year (*ANALYST_N_F*), (2) foreign analysts' forecast errors, calculated as the absolute difference between the foreign analyst consensus forecast and reported EPS, scaled by the stock price on the earnings announcement date (*ANALYST_ERR_F*), or (3) foreign analyst forecast dispersion, calculated as the standard deviation of foreign analyst forecasts, scaled by the stock price on the earnings announcement date (*ANALYST_DISP_F*). *CONTROLS3* includes the controls from equation (4) as well as additional factors shown to affect the properties of analysts' forecasts (e.g., DKV), including an indicator for a reporting loss (*LOSS*), an indicator for issuing new debt or equity in the prior year (*ISSUE*), the volatility of earnings (*EVOL*), stock turnover (*TURNOVER*), and R&D expenditures (*R&D*).

Table 7, panel A, reports the results of estimating equation (9) for the pooled sample.[22] Consistent with our prediction, *COMP_US* is positive (negative) and significantly associated with foreign analyst following (forecast error and forecast dispersion). Table 7, panel B, reports consistent results repeating these analyses using a changes-on-changes specification, with the sole exception of column (3) in which $\Delta COMP\_US$ is not associated with the change in forecast dispersion.[23] Overall, these results suggest that increased comparability to U.S. firms increases the usefulness of non-U.S. firms' reporting information for foreign financial statement users.

4.4 ADDITIONAL ANALYSES

4.4.1. The Magnitude of U.S. Institutional Ownership. In this section, we discuss the plausibility of our findings given the seemingly low magnitude of U.S. ownership in our sample. First, compared to U.S. firms, international firms, and particularly those domiciled in emerging markets, tend to have highly concentrated ownership and infrequently traded shares (La Porta, Lopez-De-Silanes, and Shleifer [1999], Dahlquist et al. [2003]). In these

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average, foreign analysts are more familiar with U.S. GAAP than non-U.S. countries' domestic GAAPs.

[22] We present this analysis for the pooled sample because, unlike our primary analyses, there is no reason to expect the benefits of international comparability to vary across emerging and developed markets. The results are similar if we estimate equation (9) separately for the emerging and developed markets (see table IA6 in the Online Appendix).

[23] To facilitate comparisons across the different specifications, we standardize each of the analyst variables to have a mean of zero and a variance of one. The coefficients indicate that a one standard deviation increase in *COMP_US* ($\Delta COMP\_US$) is associated with an increase in the corresponding analyst property of 1–15% of one standard deviation, depending on the specification.

TABLE 7

Comparability to U.S. Firms and Foreign Analyst Forecast Properties

Panel A: Levels-on-Levels Specifications

Dependent Variables	(1) $ANALYST\_N\_F_{t+1}$	(2) $ANALYST\_ERR\_F_{t+1}$	(3) $ANALYST\_DISP\_F_{t+1}$
$COMP\_US_t$	**0.006*****	**−0.010*****	**−0.020*****
	(0.001)	(0.002)	(0.004)
$SIZE_t$	0.307***	−0.027***	−0.038***
	(0.005)	(0.006)	(0.011)
BM_t	0.081***	0.171***	0.313***
	(0.004)	(0.031)	(0.034)
ROA_t	−0.217***	−0.645***	−0.353
	(0.033)	(0.226)	(0.307)
$RETVOL_t$	0.058***	0.122*	0.343***
	(0.007)	(0.072)	(0.125)
ADR_t	0.839***	0.011	0.137***
	(0.056)	(0.022)	(0.037)
AGE_t	−0.004***	0.003***	0.002*
	(0.001)	(0.001)	(0.001)
CH_t	−0.362***	0.081**	0.070
	(0.017)	(0.036)	(0.048)
$LOSS_t$	0.064***	0.513***	0.862***
	(0.007)	(0.051)	(0.069)
$ISSUE_t$	−0.026***	−0.013	−0.035
	(0.007)	(0.018)	(0.032)
$EVOL_t$	0.074**	0.700***	1.298***
	(0.031)	(0.249)	(0.446)
$TURNOVER_t$	0.003	0.002	−0.002
	(0.002)	(0.016)	(0.020)
$R\&D_t$	0.265***	−0.326	−0.865**
	(0.096)	(0.434)	(0.379)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
# of Obs.	146,409	23,141	9,303
Adjusted R^2	0.4408	0.1093	0.2258

Panel B: Changes-on-Changes Specifications

Dependent Variables	$\Delta ANALYST\_N\_F_{t\text{ to }t+1}$	$\Delta ANALYST\_ERR\_F_{t\text{ to }t+1}$	$\Delta ANALYST\_DISP\_F_{t\text{ to }t+1}$
$\Delta COMP\_US_{t-1\text{ to }t}$	**0.002*****	**−0.011****	**−0.014**
	(0.001)	(0.005)	(0.011)
$\Delta SIZE_{t-1\text{ to }t}$	0.059***	−0.141***	−0.246***
	(0.008)	(0.042)	(0.060)
$\Delta BM_{t-1\text{ to }t}$	0.013***	−0.012	−0.063
	(0.005)	(0.049)	(0.098)
$\Delta ROA_{t-1\text{ to }t}$	−0.018	−0.397*	0.445
	(0.029)	(0.236)	(0.686)
$\Delta RETVOL_{t-1\text{ to }t}$	−0.012*	0.039	0.513***
	(0.007)	(0.084)	(0.160)
$\Delta ADR_{t-1\text{ to }t}$	0.435***	–0.138	0.179
	(0.109)	(0.169)	(0.180)
$\Delta CH_{t-1\text{ to }t}$	−0.059***	0.033	−0.044
	(0.022)	(0.078)	(0.088)
$\Delta LOSS_{t-1\text{ to }t}$	0.004	0.361***	0.537***
	(0.007)	(0.058)	(0.087)

(*Continued*)

TABLE 7—*Continued*

Panel B: Changes-on-Changes Specifications			
$\Delta ISSUE_{t-1 \text{ to } t}$	0.019***	−0.052**	−0.054
	(0.007)	(0.022)	(0.052)
$\Delta EVOL_{t-1 \text{ to } t}$	0.009	2.063***	5.083***
	(0.051)	(0.446)	(1.072)
$\Delta TURNOVER_{t-1 \text{ to } t}$	−0.007***	−0.004	0.090
	(0.002)	(0.017)	(0.088)
$\Delta R\&D_{t-1 \text{ to } t}$	0.181	1.661	1.720*
	(0.128)	(1.593)	(0.996)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
# of Obs.	122,341	16,064	6,627
Adjusted R^2	0.0051	0.0434	0.0882

Panel A of this table reports the OLS regression results on the relation between the levels of non-U.S. firms' reporting comparability to their U.S. industry peers (*COMP_US*) in year t and the levels of forecast properties of the foreign analysts following the firms in year t+1. Panel B of this table reports the OLS regression results on the changes in non-U.S. firms' reporting comparability to their U.S. industry peers (Δ*COMP_US*) from year t−1 to t and the changes in forecast properties from year t to t+1. We define controls in panels A and B as in table 3 panels A and B, plus the levels in year t (changes from year $t-1$ to t) of an indicator for a reporting loss (*LOSS*), an indicator for issuing debt or equity (*ISSUE*), the volatility of earnings (*EVOL*), stock turnover (*TURNOVER*), and R&D expenditures (*R&D*). Prefix Δ denotes the change in a variable as indicated by its subscripts. Detailed variable definitions are in appendix A. The sample period is between 1998 and 2009. The regression is estimated using the pooled sample of all non-U.S. firms in all columns. We do not report coefficient estimates on intercepts, year, industry, and country-fixed effects for brevity. # of Obs. denotes the number of observations. We report standard errors, adjusted for heteroskedasticity and clustered by firm, in parentheses.

***, **, and * indicate significance at the 1%, 5%, and 10% two-tailed level.

markets, buying or selling even a relatively small equity stake can have a large price impact. If we express U.S. ownership as a percentage of actively traded shares (i.e., free-float), average *US_OWN* increases to 2.6% for the emerging markets, with a 95th percentile of 12.8%.[24] In column (1) of table IA7 of the Online Appendix, we reestimate equation (4) using float-adjusted U.S. ownership and find results consistent with those reported in table 3.[25]

Second, some of the emerging market firms have zero U.S. ownership throughout our sample period. Looking only at the subset of emerging market firms with positive ownership, average *US_OWN* increases to 6.4%.

[24] Free-float is equal to one minus the percentage of closely held shares (*CH*). For this analysis, we eliminate firms with missing *CH*. In our primary analyses, we scale U.S. ownership by shares outstanding rather than free-float and only include *CH* as a control (with missing values set to zero) because *CH* is less widely available. Results are similar if we exclude *CH* as a control from the primary analyses.

[25] A one standard deviation increase in float-adjusted *US_OWN* is associated with an increase in comparability to U.S. firms of 0.074. This is equivalent to 24.8% of the average one-year change in comparability and 2.1% of the average difference between the comparability to U.S. firms of emerging market firms and their U.S. industry peers.

In column (2) of table IA7, we restrict the sample to these firms and find results consistent with those reported in table 3.[26]

Third, U.S. institutions, because of their international visibility, can have a significant influence on their non-U.S. investees even with a relatively small ownership stake. Trades by large well-known funds, such as Fidelity or Vanguard, are likely strong signals in themselves and can encourage similar buying or selling by other market participants.[27] For example, Atticus, a U.S. institution with just 1% ownership of Barclay's, purportedly triggered a stock price reaction of nearly 3% after stating publicly that it would vote against (and also encourage other shareholders to vote against) Barclay's bid for ABN AMRO (Cohen and Burgess [2007]). This influence is likely more significant if the U.S. institutions are activist funds that intervene in the payout policy, governance, corporate restructuring, and takeover decisions of their non-U.S. investees. Becht et al. [2014] document widespread shareholder activism internationally and significant market returns to the announcement of such activism.

4.4.2. Additional Identification Analyses. We conduct several additional identification analyses in this section to address specific sources of endogeneity. First, we reestimate equation (4) including firm-fixed effects and report the results in column (1) of table IA8 of the Online Appendix. The *US_OWN* coefficient is larger in magnitude than in table 3, suggesting that any time-invariant omitted firm-level factors likely work against us finding a positive relation between U.S. ownership and comparability.

Second, we address the concern that increased economic integration between emerging and U.S. markets, rather than convergence in their reporting practices, explains our findings. We augment equation (4) with six additional controls for the similarity of firms' underlying economic operations, including the Pearson correlation coefficient between a non-U.S. firm's annual stock returns and its U.S. industry peers' annual stock returns, the Pearson correlation coefficient between a non-U.S. firm's cash flows and its U.S. industry peers' cash flows, the comovement between a non-U.S. firm's monthly stock return and the monthly return on the Datastream U.S. market index, asset turnover, the percentage of foreign sales, and operating cycle. Column (2) of table IA8 reports results similar to those in table 3 including these controls.

Third, we control for earnings quality. Consistent with Lel [2013], in section 4.1.3, we show that higher U.S. ownership is associated with higher earnings quality. Firms with higher earnings quality could be more comparable to U.S. firms. To ensure our results are not solely due to the effect of

[26] A one standard deviation increase in *US_OWN* in this subsample is associated with an increase in comparability to U.S. firms of 0.110. This is equivalent to 56.4% of the average one-year change in comparability and 3.1% of the average difference between the comparability to U.S. firms of emerging market firms and their U.S. industry peers.

[27] Many large U.S. institutions also employ analysts, whose recommendations can further magnify the institutions' influence.

US_OWN on earnings quality, in column (3) of table IA8, we include controls for contemporaneous changes in *AQ* and *SMOOTH*. *US_OWN* remains positive and significant.

Fourth, we consider the effects of mandatory IFRS adoption. We retain mandatory IFRS adopting firm-years in our primary analyses because more comparable inputs (due to the adoption of IFRS) do not necessarily lead to more comparable outputs (e.g., Daske et al. [2013]). However, mandatory IFRS adoption, if unaccounted for, could mechanically affect the relation between earnings and returns (i.e., in equation (1)) and thus confound our estimates of the changes in comparability. We address this concern in two ways. First, we repeat equation (4) including country-year fixed effects. Second, we repeat equation (4) for the emerging markets excluding the 4,328 mandatory IFRS-adopting firm-years (8.39% of this subsample). Columns (4)–(5) of table IA8 report the results of these two analyses. Both are consistent with those reported in table 3.

Fifth, because we construct *COMP_US* using the past five years of data, it is possible that changes in comparability in or before year t affect $\Delta COMP\_US_{t \text{ to } t+1}$. To address this possibility, we include the lagged level of comparability as an additional control, as well as reestimate $\Delta COMP\_US$ over longer horizons. The effect of changes in comparability in or before year t, if any, should dissipate as the number of future periods over which we measure $\Delta COMP\_US$ increases, and is absent if we measure $\Delta COMP\_US$ from t to $t + 5$. The results of these two analyses, reported in table IA9 of the Online Appendix, are consistent with those reported previously.

Sixth, we replace *US_OWN* with a variable to indicate the initiation of U.S. ownership. As shown in table IA10 of the Online Appendix, ownership initiation is not associated with changes in comparability in the first year. However, the effect of initiation increases monotonically and is significantly associated with comparability changes measured over three years or longer. This suggests that the effect of U.S. institutions on comparability to U.S. firms takes several years to manifest and is inconsistent with these institutions investing in anticipation of an increase in comparability.

Finally, we repeat our analysis with U.K. institutions (the second largest group of foreign investors) to examine whether the effect of foreign investors on the global convergence of financial reporting practices is limited to U.S. institutions. Results, reported in table IA11 of the Online Appendix, are consistent with those for U.S. institutions and indicate a positive relation between U.K. ownership and subsequent improvements in comparability to U.K. firms—albeit only for the subsample of firms with positive U.K. ownership.[28]

4.4.3. Cross-Sectional Analyses. In this section, we conduct several cross-sectional analyses to shed light on the types of institutions that most

[28] The weaker results might be attributable to the relatively low level of U.K. ownership compared to the United States.

affect non-U.S. firms' comparability to U.S. firms and the types of firms most susceptible to the changes in reporting practices prompted by U.S. institutions.

First, in column (2) of table IA12 of the Online Appendix, we repeat equation (4) replacing U.S. ownership with non-U.S. ownership. Results indicate that the positive association between ownership and comparability to U.S. firms is limited to U.S. institutions, consistent with non-U.S. institutions having fewer incentives to improve comparability to U.S. firms.

Second, we explore cross-sectional variation in the size and duration of U.S. institutions' holdings. Chen, Harford, and Li [2007] document that institutional investors with large, long-term stakes are most likely to monitor. In columns (3)–(6) of table IA12, we show that, consistent with Chen, Harford, and Li [2007], the effect of U.S. institutions on comparability is driven primarily by ownership stakes of 5% or higher and those held for one year or longer, as opposed to ownership stakes of less than 5% and those held for less than one year.

Third, we partition our sample further based on legal origin. Prior literature (e.g., La Porta, Lopez-De-Silanes, and Shleifer [1997]) suggests that a country's legal origin, in addition to its stage of economic development, is an important determinant of the development of its capital markets. We expect the governance role of foreign institutions to heighten in the markets with code law legal origins because these markets, to an even greater extent, lack the regulatory infrastructures to incentivize high-quality financial reporting. Results, reported in table IA13 of the Online Appendix, are consistent with this conjecture—the effect of U.S. institutions on comparability to U.S. firms is strongest in emerging, code law countries.[29]

5. *Conclusion*

The weak regulatory infrastructures present in many countries create little incentive for firms to voluntarily improve their financial reporting practices. In the absence of such incentives, regulatory mandates that intend to increase comparability are unlikely to be effective. In addition, country-wide reporting mandates have nontrivial implementation costs.[30] Given the questionable effectiveness and substantial costs involved with mandatory reporting changes, it is important to understand alternative mechanisms that could precipitate meaningful accounting changes. Our results demonstrate

[29] For parsimony, we discuss the sensitivity analyses using only the changes-on-levels specification. However, results are generally consistent if we repeat these analyses using the changes-on-changes specification.

[30] For example, the Securities and Exchange Commission estimated that the largest U.S. registrants would incur costs of about $32 million per company in the first year if they adopt IFRS, and that the average U.S. company would incur costs of between 0.125% and 0.13% of revenue. (This compares to a 2.7% net profit margin for a median U.S. company during our sample period). See http://www.ifrs.com/updates/aicpa/ifrs_faq.html#q14.

that U.S. institutional investors can serve as such a mechanism by altering their non-U.S. investees' reporting incentives and directly affecting the comparability of their financial reporting.

Prior research documents that institutional investors have a preference for firms with financial reporting that is more comparable to their country of origin, but leaves unanswered the question of whether institutions directly influence the convergence of firms' financial reporting practices. Our paper contributes to the extant literature by identifying foreign institutional investors as an important driver of the convergence of financial reporting practices worldwide.

Our paper opens up several prospects for future research. First, although the weight of our evidence suggests that greater U.S. investment leads to subsequent increases in non-U.S. firms' accounting comparability to U.S. firms, ascertaining causality is always difficult. Future studies could exploit other shocks to U.S. investment overseas to further establish a causal relation. Second, although we provide evidence of one specific mechanism (the switch to a Big Four auditor) through which U.S. institutions can affect reporting convergence, there are likely other mechanisms through which this effect operates (e.g., the appointment of a U.S. director to a non-U.S. firm's board or audit committee). Third, the exact nature of U.S. institutions' means of influence (i.e., their use of voice in share voting or threat of exit) remains unclear. As data become more widely available, exploring these questions will likely become feasible.

APPENDIX A

Variable Definitions

Variable Name	Definition
Measures of comparability to U.S. firms	
$\Delta COMP\_US_{t \text{ to } t+1}$	Change in *COMP_US* from year t to $t+1$, in percentage points. *COMP_US* is our primary measure of the reporting comparability between a non-U.S. firm and its U.S. industry peers, adapted from DKV. $\Delta COMP\_US_{t \text{ to } t+1}$ is $COMP\_US_{t+1}$ minus $COMP\_US_t$, where $COMP\_US_t$ is estimated from year $t-4$ to t and $COMP\_US_{t+1}$ from year $t-3$ to $t+1$.
$\Delta COMP\_US\_Q_{t \text{ to } t+1}$	Change in *COMP_US_Q* from the fourth quarter of year t to the fourth quarter of year $t+1$, in percentage points. *COMP_US_Q* is calculated similarly to *COMP_US*, but using the past 16 quarters of data (with a minimum of 12 quarters required).
$\Delta COMP\_US\_AS_{t \text{ to } t+1}$	Change in *COMP_US_AS* from year t to $t+1$, in percentage points. *COMP_US_AS* is calculated similarly to *COMP_US*, but adjusted for the asymmetric timeliness of earnings by including an indicator variable to denote negative stock returns and an interaction between this indicator and stock returns in both stages of the estimation.

(*Continued*)

Variable Name	Definition
$\Delta COMP\_US\_CFO_{t \text{ to } t+1}$	Change in *COMP_US_CFO* from year t to $t+1$, in percentage points. *COMP_US_CFO* is calculated similarly to *COMP_US*, but adjusted by replacing stock returns with operating cash flows in both stages of the estimation.
$USACCT_{t+1}$	An indicator variable that equals one if at least one of the following five accounting items ($USACCT1_{t+1}$–$USACCT5_{t+1}$) is coded as one and zero otherwise. We draw these five accounting items from the data in Bae, Tan, and Welker [2008] for our sample emerging market firms with domestic requirements that differ from what is required under U.S. GAAP and data available for the accounting items in Worldscope. These five items are: 1. $USACCT1_{t+1}$: An indicator variable that equals one if a firm begins using deferred tax accounting in year $t+1$ and zero otherwise, identified based on Worldscope item WC03263 (*Deferred Taxes*). In our sample, Argentina, China, Greece, Portugal, Thailand and Turkey do not require deferred tax accounting. 2. $USACCT2_{t+1}$: An indicator variable that equals one if a firm begins segment reporting in year $t+1$ and zero otherwise, identified based on Worldscope item WC19601 (*Geographic Segment 1 – Sales*). In our sample, Argentina, Brazil, Chile, Greece, Israel and Turkey require no or very limited segment reporting. 3. $USACCT3_{t+1}$: An indicator variable that equals one if a firm begins capitalizing leases in year $t+1$ and zero otherwise, identified based on Worldscope item WC18381 (*Property Plant & Equipment under Capitalized Leases*). In our sample, Argentina, Brazil, Greece, Philippines, and Turkey require no or very limited capitalization of leases. 4. $USACCT4_{t+1}$: An indicator variable that equals one if a firm begins expensing R&D expenditures in year $t+1$ and zero otherwise, identified based on Worldscope item WC02505 (*Development Costs Gross, from the Balance Sheet*). In our sample, Argentina, Brazil, Greece, India, Philippines, Poland, Portugal and Turkey permit capitalization of research and development costs. 5. $USACCT5_{t+1}$: An indicator variable that equals one if a firm begins preparing a statement of cash flows in year $t+1$ and zero otherwise, identified based on Worldscope item WC04860 (*Net Cash Flow – Operating Activities*). In our sample, Brazil and Greece do not require a statement of cash flows.
$ADOPTION_{t+1}$	An indicator variable that equals one if a firm voluntarily adopts U.S. GAAP or IFRS in year $t+1$ and zero otherwise.
$ENGLISH_{t+1}$	An indicator variable that equals one if a firm from a non-English-speaking country issues English financial statements for the first time in year $t+1$ and zero otherwise.
$\Delta AQ_{t \text{ to } t+1}$	Change in AQ from year t to $t+1$. AQ is an accrual quality measure adapted from Dechow and Dichev [2002], calculated as the absolute value of residual accruals from regressions of changes in working capital on past, current, and future cash flows within each country-year, with all variables scaled by lagged total assets.
$\Delta SMOOTH_{t \text{ to } t+1}$	Change in *SMOOTH* from year t to $t+1$. *SMOOTH* is the ratio of the standard deviation of operating income to the standard deviation of cash flows calculated using the past five years of data (with a minimum of three years required).

(*Continued*)

Variable Name	Definition
Key independent variable	
US_OWN_t	Fraction of a firm's shares held by U.S. mutual funds at the end of year t. $\Delta US\_OWN_{t-1 \text{ to } t}$ denotes the change in *US_OWN* from year $t-1$ to t.
Control variables used in the primary analyses	
$SIZE_t$	Size, calculated as the natural logarithm of market capitalization in U.S. dollars at the end of year t. $\Delta SIZE_{t-1 \text{ to } t}$ denotes the change in *SIZE* from year $t-1$ to t.
BM_t	Book-to-market ratio, calculated as book value of common equity divided by market capitalization at the end of year t. $\Delta BM_{t-1 \text{ to } t}$ denotes the change in *BM* from year $t-1$ to t.
ROA_t	Return-on-assets ratio, calculated as net income plus interest expense divided by book value of assets at the end of year t. $\Delta ROA_{t-1 \text{ to } t}$ denotes the change in *ROA* from year $t-1$ to t.
$RETVOL_t$	Annualized stock return volatility in year t, calculated as the standard deviation of monthly returns times $\sqrt{12}$. $\Delta RETVOL_{t-1 \text{ to } t}$ denotes the change in *RETVOL* from year $t-1$ to t.
ADR_t	An indicator variable that equals one if a firm is cross-listed on a U.S. stock exchange and zero otherwise in year t. $\Delta ADR_{t-1 \text{ to } t}$ denotes the change in *ADR* from year $t-1$ to t.
AGE_t	Age, approximated by the number of years the firm has been included in Datastream by the end of year t.
CH_t	Fraction of a firm's shares closely held by insiders and controlling shareholders at the end of year t, set to zero if missing. $\Delta CH_{t-1 \text{ to } t}$ denotes the change in *CH* from year $t-1$ to t.
Additional variables used in the IV analysis	
POSTx	An indicator variable that equals one if a year is post year x ($x =$ 2000, 2003, or 2005) and zero otherwise.
$QUALIFIED_t$	An indicator variable that equals one if a firm is in a country that has a tax treaty with the U.S. *and* has a dividend payment in year t, and zero otherwise.
$POSTx\_QUALIFIED_t$	The interaction term of *POSTx* and $QUALIFIED_t$.
Potential mechanism proxy	
$BIG4AUDITOR_{t+1}$	An indicator variable that equals one if a non-U.S. firm switches from a non-Big Four auditor to a Big Four auditor in year $t+1$ and zero otherwise.
Additional variables used in the analyst forecast analysis	
$ANALYST\_NUM\_F_{t+1}$	Number of foreign analysts following a firm in year $t+1$, standardized by first subtracting the sample mean from each *ANALYST_NUM_F* and then dividing the difference by the sample standard deviation.
$ANALYST\_ERR\_F_{t+1}$	Forecast error of the foreign analysts following a firm in year $t+1$, calculated as the mean of foreign analysts' most recent annual EPS forecasts before an earnings announcement minus the reported EPS scaled by stock price on the earnings announcement date, standardized by first subtracting the sample mean from each *ANALYST_ERR_F* and then dividing the difference by the sample standard deviation.

(*Continued*)

Variable Name	Definition
$ANALYST\_DISP\_F_{t+1}$	Forecast dispersion of the foreign analysts following a firm in year $t + 1$, calculated as the standard deviation of foreign analysts' most recent annual EPS forecasts before an earnings announcement scaled by stock price on the earnings announcement date, standardized by first subtracting the sample mean from each *ANALYST_DISP_F* and then dividing the difference by the sample standard deviation.
LEV_t	Long-term debt-to-asset ratio at the end of year t. $\Delta LEV_{t-1 \text{ to } t}$ denotes the change in *LEV* from year $t - 1$ to t.
$LOSS_t$	An indicator variable that equals one if a firm reports a loss in operating income in year t and zero otherwise. $\Delta LOSS_{t-1 \text{ to } t}$ denotes the change in *LOSS* from year $t - 1$ to t.
$EQUITY_t$	Dollar amount of total equity issuance during year t scaled by market capitalization at the end of year t. $\Delta EQUITY_{t-1 \text{ to } t}$ denotes the change in *EQUITY* from year $t - 1$ to t.
$ISSUE_t$	An indicator variable that equals one if a firm issues equity or debt in year t and zero otherwise. $\Delta ISSUE_{t-1 \text{ to } t}$ denotes the change in *ISSUE* from year $t - 1$ to t.
$EVOL_t$	Standard deviation of return-on-assets ratio, calculated over year $t - 4$ to t. $\Delta EVOL_{t-1 \text{ to } t}$ denotes the change in *EVOL* from year $t - 1$ to t.
$TURNOVER_t$	Turnover ratio, calculated as annualized daily trading volume scaled by the number of shares outstanding in year t. $\Delta TURNOVER_{t-1 \text{ to } t}$ denotes the change in *TURNOVER* from year $t - 1$ to t.
$R\&D_t$	R&D scaled by total sales in year t, set to zero if missing. $\Delta R\&D_{t-1 \text{ to } t}$ denotes the change in *R&D* from year $t - 1$ to t.

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