

Does a firm's global business structure affect earnings quality?

Katharine D. Drake

University of Arizona
kddrake@email.arizona.edu

Nathan C. Goldman *

University of Arizona
ngoldman@email.arizona.edu

Frank C. Murphy

University of Arizona
francismurphy@email.arizona.edu

January 2016

Working paper, comments welcome

*Corresponding Author

Nathan Goldman

McClelland Hall

1130 East Helen Street Suite #301

Tucson, AZ, 85719

704-898-7446

ngoldman@email.arizona.edu

We gratefully appreciate helpful comments from Lisa De Simone, Scott Dyreng, Brad Hepfer, Khin Phyo Hliang (AAA discussant), Stephen Lusch, Jim Stekelberg, the University of Arizona Tax Readings Group, the University of Georgia Tax Readings Group, workshop participants at the University of Arizona, and the 2015 AAA Annual Meeting. The authors appreciate funding from the University of Arizona Eller College of Management.

Does a firm's global business structure affect earnings quality?

Abstract: Our study considers how a firm's global business structure affects earnings quality and whether investors impound differential expectations of earnings quality into stock prices. We model foreign employment as a function of various economic predictors and use the residual from our first-stage regression to identify firms with high and low levels of abnormal foreign labor (*AFL*). Using earnings persistence as a measure of earnings quality, we find that firms with low *AFL* have lower overall and foreign earnings quality than firms with high *AFL*. Next, we use a Mishkin (1983) test to examine whether investors jointly anticipate and price differences in earnings persistence across our groups. For our low *AFL* observations, we find that investors have difficulties understanding the persistence of earnings. However, we find that investors appear to correctly anticipate and rationally price the persistence of earnings and its geographic components for our high *AFL* firms. These results suggest that foreign operations supported with foreign employees reduce some of the difficulty market participants have pricing earnings. Taken together, we find a meaningful relation between a firm's global employment structure and financial accounting externalities. Specifically, our results suggest greater accounting costs for firms that structure MNC operations with lower levels of foreign employees than operations would dictate.

Does a firm's global business structure affect earnings quality?

I. INTRODUCTION

As the global economy evolves, U.S. multinational corporations (MNCs) expand overseas to take advantage of new product and labor markets while simultaneously benefiting from lower tax regimes. U.S. headquartered firms increase their global footprint by growing foreign operations through foreign affiliates and acquisitions of foreign targets (Hanlon, Lester, and Verdi 2015). This trend has drawn the attention of the Organisation for Economic Co-operation and Development (OECD)'s base erosion and profit shifting project. One of the OECD's key recommendations focuses on aligning the taxation of income with value creation and the location of employees. While the OECD is concerned with tax parity and distortion of global tax liabilities, U.S. policymakers debate the causes and solutions to U.S. firms' expansion overseas at the expense of domestic employment and tax revenues. However, another consequence of this trend of globalization may be that investors have increasing difficulty interpreting and evaluating the quality of reported earnings. Thomas (2000) suggests that it is "difficult for investors to understand fully the origin of firms' foreign earnings" (page 265). We extend Thomas (2000) by investigating how different approaches to structuring foreign operations, that result in unusually high or low foreign employment, differentially affect earnings quality.

MNC's face a myriad of global business decisions, including where to locate employees, how to manage supply chains, and how to structure intercompany transactions. All of these decisions may affect accounting quality by altering the ability of investors to identify and interpret these strategic choices. When firms expand operations or relocate certain functions outside of the U.S., management weighs the cost savings and revenue growth opportunities, with

increased coordination, administrative, and restructuring costs. Anecdotal evidence suggests that certain industries or task are more easily offshored than others; however, theory predicts MNCs alter their global employment if doing so results in a positive net present value project. Grossman and Rossi-Hansberg (2008) suggest that technological improvements have facilitated rapid growth of offshoring in a variety of industries, and for both skilled and unskilled labor. Given that the economics of firm operations is changing, we consider the effect on earnings quality. The quality of reported earnings is a function of the underlying economics, accounting rules, and accounting systems used to generate the financial statements (Schipper and Vincent 2003), all of which may be influenced by how a firm structures its global operations. This leads us to investigate earnings quality consequences to global expansion based on an MNC's labor location decisions.

To examine how different global labor strategies affect financial reporting outcomes, we first identify a method for partitioning firms based on deviations from an expected level of foreign employment. We hand collect disclosures of foreign and domestic employment for a sample of S&P 500 firms with material foreign operations from 2003 to 2013 and model firms' labor location decisions. We predict the degree a firm's global workforce is located outside of the U.S. using factors associated with foreign employment, such as foreign sales, intangible intensity, and industry membership. We regress these factors on the firm's foreign employment percentage and classify a firm as high (low) abnormal foreign labor (*AFL*) if the residual from this foreign employment model is in the top (bottom) quintile of all observations in our sample.

We interpret a large positive residual as indicative of higher levels of foreign employment than operations would justify, and a large negative residual as a sign that levels of foreign labor are lower than operations may dictate. This classification scheme identifies firms

that are in either tail of the foreign labor spectrum that we then use to examine how the firm's foreign employment structure affects earnings quality.¹ Using a regression residual to create binary classification variables allows us to control for economic factors associated with the level of foreign employment and identify firms that choose different foreign operational structures. Importantly, we document variation in our *AFL* measures across and within industries, suggesting firms' choice of MNC structure is not limited to high-tech or R&D intensive firms.

Examining how labor location decisions affect a firm's earning quality is important for several reasons. First, many policymakers are interested in not just the direct costs to offshoring domestic labor, but also any unintended externalities of domestic firms increasing their non-U.S. labor force. Second, the recent focus on multinational tax-motivated income shifting highlights accounting-based shifting transactions without substantial labor as lacking economic substance (Grubert and Slemrod 1998). Lastly, labor location decisions are deeply rooted in economic theory and interesting in their own right. U.S. MNCs perpetually evaluate and restructure internal operations. The results of our study provide some of the first evidence that strategically allocating global employment may be integral to reporting quality and investor evaluation of earnings.

Our first set of tests examines overall earnings quality differences, measured by earnings persistence, between firms with high and low *AFL*. Dechow, Ge, and Schrand (2010) suggest that earnings that are more persistent are more permanent and, therefore, more useful to investors when valuing an organization. Thomas (2000) and Callen, Hope, and Segal (2005) decompose earnings based on the geographic source of the income to assess investors' expectations of domestic and foreign earnings. Both studies document that foreign earnings are more persistent

¹ We classify firms not designated as either high or low abnormal foreign labor as our baseline firms.

than domestic earnings, but investors tend to underestimate the persistence of foreign earnings. We build from these studies and consider how earnings quality relates to the nature of a firm's global operational structure.

Using the persistence models from Sloan (1996) and Xie (2001), we examine how foreign labor decisions affect earnings persistence of both pre-tax and after-tax earnings for our firms classified as high and low *AFL*. We find that the earnings of our high *AFL* firms are more persistent than the low *AFL* and similar persistence to those in our baseline sample. We document that low *AFL* firms have pre-tax earnings that are approximately 15 percent less persistent than our baseline sample, which is economically and statistically significant. This finding suggests that how a firm structures its global operations, including the location of labor, affects the quality of reported earnings and, by extension, the usefulness of reported accounting earnings for investors.

We further examine differences in earnings quality by decomposing pre-tax earnings into domestic and foreign earnings. Overall, we do not identify significant differences between the persistence of foreign earnings with high *AFL* and our baseline group. However, we find that foreign earnings are less persistent when associated with lower foreign employment, suggesting lower earnings quality for foreign earnings not supported with foreign employment and operations. Interestingly, we find that high *AFL* firms have higher pre-tax domestic earnings persistence than our baseline firms, suggesting that these firms may structure their global operations such that both foreign and domestic earnings are higher quality. Our study extends the research of Srivastava (2014) who documents that the growth of intangible-intensive firms has resulted in lower earnings quality, as accounting standards may not capture the nature of earnings in the ever-changing business environment. Our results imply that the decline in

earnings quality may not be associated with intangibility alone and that a firm's global business structure is associated with the quality of reported earnings. Specifically, we find that foreign earnings associated with higher levels of foreign employment are of higher quality.

While our results are indicative of lower earnings quality for low *AFL* firms, they cannot speak directly to the usefulness of earnings as a summary measure for investors. We next consider the extent to which investors anticipate and price differences in earnings quality. Following prior literature, we perform tests developed by Mishkin (1983) to examine whether investors are able to predict and properly impound any differences in earnings quality into stock prices. For our baseline and high *AFL* firms, we find that investors appear to impound earnings persistence into stock prices consistent with actual persistence. However, we find investors are not able to anticipate the lower earnings persistence of low *AFL* firms and systematically overestimate the persistence of earnings. When we further examine whether investors rationally price the domestic and foreign components of earnings, consistent with prior literature, we find that investors systematically underestimate the persistence of foreign earnings for the baseline group, but correctly price the lower persistence of foreign earnings for low and high *AFL* firms. We note significant variance in investor perception of earnings persistence of low *AFL* firms. Our results suggest that for these low *AFL* firms, investor underestimation of foreign earnings persistence aligns with the actual lower earnings persistence of foreign earnings.

The results of our study contribute to several streams of literature. First, our results contribute to the literature examining disclosures and accounting earnings in a complex information environment. For example, Dichev and Tang (2008) document that accounting earnings have become less meaningful over time because revenues are no longer well matched with corresponding expenses. Thomas (2000) concludes that MNCs are not required to "provide

sufficient details on their foreign operations for investors to assess the risk and return characteristics of these operations” (page 406) and calls for future research to investigate whether the source of foreign earnings is associated with investor underestimation of earnings persistence. We heed the call of Thomas and investigate whether investors’ expectations of earnings quality is conditional on the nature of the firm’s foreign operations. In an attempt to increase the financial reporting transparency of MNCs, the SEC and FASB continue to increase required financial statement disclosures; yet this increased disclosure may be difficult for market participants to interpret (Callen et al. 2005). Our results contribute to the broad earnings quality literature by documenting that the current financial reporting systems may not be well suited to inform investors of different types of foreign transactions, especially those transactions that involved less foreign employment (e.g., transfer pricing agreements), suggesting these transactions are associated with the greatest accounting quality cost.

Additionally, we contribute to the income-shifting literature by examining the consequences to *different* foreign operational structures. Shevlin, Tang, and Wilson (2012) encourage further analysis comparing income shifting via real operations versus accounting-based transactions. Prior literature primarily focuses on intercompany transactions as means of income shifting (e.g., Dyreng and Markle 2013), or tax rate differential between the U.S. corporate rate and foreign rates as an ex-ante incentive to shift income (e.g., Klassen and Laplante 2012b). Williams (2015) extends this research by using Department of Labor data to document that corporate tax rates contribute to the decision to shift jobs overseas even after controlling for known factors of outsourcing. We suggest that examining different foreign structures is broader than examining intercompany transactions or outsourcing in isolation and provides an interesting setting to examine earnings quality. Additionally, we build on Chen,

Hepfer, Quinn, and Wilson (2015), who examine tax-motivated income shifting and the information environment, by using employment data to separate firms based on their global business structure and examining the earnings quality implications for these differing global structures.

We organize the remainder of our study as follows. In Section II, we review the prior literature on earnings quality and foreign operations and develop our hypotheses. In Section III, we develop our measure to identify a firm's global business structure. In Section IV, we discuss our research design, including variable measurement, and in Section V, we present the results of the primary tests. Section VI presents additional analysis and Section VII concludes.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Global Expansion and MNC Business Structures

A recent Congressional Report finds that U.S. firms are expanding overseas at a rapid pace, and U.S. based MNCs reported \$938 billion of profits in foreign affiliates in 2008 (Keightley 2013). Multinational operations provide firms opportunities to exchange capital, goods, and services in cross-border transactions within the firm. Lu and Beamish (2004) suggest that firms can increase performance through globalization by internalizing different opportunities in input and output markets (e.g., raw materials, labor, etc.). Managerial discretion in structuring intercompany transactions creates opportunities for firms to maximize global earnings through income shifting and arbitraging cost structures. In addition to efficiency gains through internalization, Tong and Reuer (2007) discuss some benefits of expanding international operations, including; “dynamic production, efficiency gains, downside risk reduction, and the ability to seize upside opportunities” (page 215).

While some studies highlight the benefits of international diversification, Denis, Denis, and Yost (2002) suggest that geographic diversification may be value destroying and identify an equity discount of approximately 18 percent for globally diversified firms. Yet, firms continue to expand globally. The offshoring decision involves considering communication, transportation, and administrative costs (Grossman and Rossi-Hansberg 2008). While technological advancements have reduced these costs, they remain a factor in global expansion. Impediments to foreign expansion, especially coordination costs and lack of control and oversight, also affect the financial reporting process (e.g., Doyle, Ge, and McVay (2007) find increased likelihood of internal control weaknesses associated with geographic diversification).

The Scholes, Wolfson, Erickson, Hanlon, Maydew, and Shevlin (2014) business decision framework of “all costs, all parties, all taxes” suggests that firms consider many factors in structuring global operations to best suit the firm’s idiosyncratic business needs. We focus on one aspect of global expansion, the choice to locate significant operations and labor in foreign markets. Specifically, we consider global expansion with a significant foreign workforce as a different foreign structure than global expansion with minimal foreign employment. While we expect firms expand to take advantage of alternate revenue streams, we anticipate the associated cost structure to vary based on how the firm approaches foreign expansion. For example, at one extreme, shifting revenues between locations with minimal associated costs creates reporting opacity. On the other hand, internal investment in operations with significant physical presence (both plant and equipment as well as employees) involves a clearer association between revenues and costs. In between these two structures are strategies involving subcontracting some activities, drop shipments and other mechanisms that allow for foreign growth with less investment. All

these operational choices have unique cost structures, as well as different oversight and financial reporting implications.

While there is an extensive literature about tax-motivated income shifting (see Dharmapala 2014, for a review), we suggest a firm's global business structure captures more than just tax-motivated transactions. Hines and Rice (1994) and Thomsen, Ullmann, and Watrin (2013) argue that tax incentives motivate both income shifting via accounting transactions as well as relocation of productive factors. Williams (2015) documents tax-motivated outsourcing of U.S. jobs overseas; however, an attractive alternative to relocating or establishing a large global workforce is reallocating income to low-tax jurisdictions through transfer pricing as a means of reducing tax expense. Klassen and Laplante (2012a) examine income shifting and document that U.S. MNCs are becoming increasingly aggressive income shifters, shifting greater amounts out of the U.S. We take a different approach and consider investment in foreign labor as a partitioning mechanism to identify a firm's global business structure. While taxes may represent one key input in a firm's global business strategy, we suggest that the level of foreign employment offers broader insight into the source of foreign earnings. We examine financial accounting externalities associated with how firms structure their global operations with foreign labor.

Earnings Quality

We first consider whether the quality of a firm's reported earnings is associated with the firms' global business structure. Earnings quality is a function of the underlying economics, accounting rules, and accounting systems used to generate financial statements (Schipper and Vincent 2003). Dechow and Schrand (2004) suggest that high-quality earnings accurately reflect current performance, are a clear indicator of future operating performance, and map into the

intrinsic value of the firm. We posit that different global business structures, which rely on varying degrees of labor, may alter the fundamental relation between the earnings reported in the financial statements and economic earnings.

Penman and Zhang (2002) suggest earnings quality captures how well economic earnings map into reported earnings or are “a good indicator of future earnings” (page 237). Dichev and Tang (2008) document that over the past 40 years accounting quality has decreased, and present evidence that this trend is due to a lack of matching between revenues and expenses, and thus current earnings are now a poorer indicator of future earnings. Srivastava (2014) builds on this literature and finds that the trend in lower earnings quality is partially due to the increasing intangibility of U.S. firms. He theorizes that income from intangible property does not map well into accounting earnings and as firms become more intangible intense, accounting earnings become less useful to investors. We differ from Srivastava (2014) by considering foreign earnings associated with high- and low- levels of foreign employment, rather than intangibility. While some income shifting strategies that do not involve relocating significant labor operations often include income from intangible assets, not all income shifting stems from intangible assets (e.g., a 2014 Congressional hearing investigated how Caterpillar, Inc. shifted sales of machine parts, but not employees, to Switzerland). Similarly, not all high-employment foreign operations stem from tangible assets. Thus, we propose the decision to support foreign operations with employment affects the quality of accounting earnings.

In addition to the trend of increased intangibility, prior literature robustly documents that firms are increasingly engaging in tax-motivated income shifting transactions via accounting-based transactions. These transactions alter the location and timing of income and may affect the quality of reported earnings. Accounting-based transactions that facilitate income shifting are

often associated with lower levels of employment and rely on transfer pricing manipulation of income associated with intangible property. In this case, we expect the underlying earnings to map poorly into accounting earnings, thus leading to a lower earnings quality. On the other hand, accounting-based income-shifting transactions allow firms flexibility in reporting current and future earnings, and may lead to more stable revenues. In that case, we may not expect the absence of a physical workforce to be associated with lower quality earnings.

In contrast, the expansion of real operations and employment to new jurisdictions is likely associated with managerial expectations of sustainable future earnings; otherwise, a firm may choose not to bear the costs of restructuring operations. While expanding operations, including labor, to foreign jurisdictions subjects earnings to additional macroeconomic shocks, international diversification may allow the firm additional operational flexibility to reduce volatility in earnings (Dechow and Schrand 2004; Tong and Reuer 2007). While a major focus among tax researchers and practitioners involves using intangible property to strip income out of high-taxed jurisdictions, cost accountants focus on opportunities to use transfer pricing between affiliates. When making employment location decisions, management discretion in shifting costs between jurisdictions enables firms to allocate expenses across multiple jurisdictions and reporting periods. Likewise, Shackelford, Slemrod, and Sallee (2011) suggest that firms invest abroad if they value flexibility in tax and financial reporting. While Thomas (2000) documents greater earnings persistence for foreign earnings versus domestic earnings, we are interested in whether the *source* of foreign earnings, i.e., whether earnings are derived from a physical presence, affects the quality of those earnings. That is, we consider whether foreign earnings supported by foreign employment differentially affects earnings quality. Given that it is unclear

how earnings quality will vary based on a firm's global business structure, we formally state our hypothesis in the null form as:

Hypothesis 1: A firm's global business structure is not associated with differences in the quality of reported earnings.

Investor expectations of earnings quality

We next consider whether the source of foreign earnings (i.e., a firm's global business structure) alters how stock prices reflect investor expectations of future earnings. Thomas (2000) documents that foreign earnings are more persistent than domestic earnings; however, investors tend to underestimate the persistence of foreign earnings. A long stream of literature examines whether investors rationally price accounting earnings and its components (e.g., Sloan 1996; Xie 2001). Given the complexities of foreign operations, the literature generally finds that investors are unable to price foreign earnings appropriately. We examine how global business strategies lead to differences in the market pricing of earnings and its geographic components.

Khurana, Pereira, and Raman (2003) find that analysts fail to fully incorporate higher persistence of foreign earnings, suggesting that even the most advanced market participants have difficulty understanding foreign earnings. Callen et al. (2005) use variance decomposition to show that despite the greater persistence of foreign earnings, domestic earnings are more important in explaining the variance of unexpected stock returns. Collins, Kemsley, and Lang (1998) suggest that investors recognize shifted income when valuing foreign and domestic earnings components, and Agmon and Lessard (1977) find investors recognize the diversification benefits of foreign income. More recent studies find investors discount earnings associated with global diversification (Denis et al. 2002), which Nessa, Shevlin, and Wilson (2015) suggest may reflect investor anticipation of future repatriation taxes.

Thomas (2000) calls for future research to investigate whether the source of foreign earnings is associated with investor underestimation of earnings persistence. We heed the call of Thomas and investigate whether investors' expectation of earnings quality is conditional on the nature of the firm's foreign operations. Investors gain insight into MNCs' global business structures by collecting and analyzing financial and non-financial data. To the extent investors adequately understand the firm's global business environment, in equilibrium, we expect market participants will rationally price earnings. However, if investors are unable to identify a firm's global business structure, or if the information is too complex for investors to precisely predict global earnings, then we expect a large dispersion in the expectations of future earnings leading to mispricing. This leads to our second hypothesis, stated in the null:

Hypothesis 2: A firm's global business structure is not associated with market participants' pricing of earnings quality.

III. GLOBAL BUSINESS STRUCTURE

We identify firms with varying levels of foreign operations using foreign employment data as an indication of a firm's approach to structuring global operations. Economic theory suggests that production, and by association, income, is a function of capital, labor, and the means of production (e.g., a Cobb-Douglas production function). U.S. MNCs create internal capital markets, perpetually deploying internal capital to where funds are needed. However, examining a firm's internal capital is difficult using annual consolidated financial statement data because intercompany transactions are eliminated. Likewise, measuring production is difficult because firms employing intangible assets may have significantly different means of production than traditional factory operations. Therefore, we suggest employment data captures labor, and to some degree, the means of production, and is well suited to identify firms with differing

approaches to structuring global operations.² We do not suggest foreign employment specifically affects accounting earnings. Instead, we choose to use foreign employment as a partitioning mechanism because it is a quantifiable proxy for how a firm chooses to organize its global business.

The business strategies of MNCs have received attention from policymakers concerned about lost tax revenues on shifted profits. The OECD has embarked on a global tax reform project to address countries' eroding tax bases and cross-border income shifting. Likewise, a U.S. Senate Permanent Subcommittee on Investigations hearing publicized an example of how Caterpillar, Inc. artificially located income in Switzerland without moving employees. While prior Congressional scrutiny typically focused on high-tech firms, which are known for shifting intangible based profits, the Caterpillar investigation examined an income shifting strategy by a manufacturer, with significant investment in tangible assets domestically and abroad. The hearing documents reveal that Caterpillar Inc. shifted sales of replacement parts to a Swiss affiliate with few employees and little manufacturing. The Senate subcommittee noted, "though the lion's share of Caterpillar's international parts profits shifted to its Swiss affiliate, ...of Caterpillar's employees who handle parts, 4,900 work in the United States; less than 100 work in Switzerland" (page 3) and "most of Caterpillar's parts executives are here, most of its parts employees are here... Yet most of its international parts profits go to Switzerland" (Caterpillar's offshore tax strategy 2014, 4). While it is impossible for us to gain this same level of insight for a larger cross-section of U.S. MNCs, this example supports our choice to use foreign employment as a means to distinguish differences in global business structures.

² A Congressional Research Service report, "An Analysis of Where American Companies Report Profits: Indications of Profit Shifting" highlights locations with few employees and significant profits as indicative of income shifting activities (Keightley 2013).

Our interest is in whether differences in how firms structure foreign operations are associated with differences in the quality of the firm's earnings. To identify a firm's global business structure, we first model a firm's percentage of foreign employees. We use the residual from this first-stage regression to classify firms in the top quintile of the residual as high abnormal foreign labor (*HIGH_AFL*), and those in the bottom quintile of the residual as low abnormal foreign labor (*LOW_AFL*). We classify the remaining observations as our baseline firms. Our model is similar in spirit to Hines and Rice (1994) who consider whether firms locate profits and physical operations in low-tax jurisdictions to a greater extent than normal conditions dictate.

We first calculate the percentage of a firm's employees located outside of the U.S. divided by the total number of worldwide employees by firm-year (*PctForeignEmployees*). While our sample from the S&P 500 is a relatively homogenous group of firms, we note substantial inter-temporal and within-industry variation of the location of labor. We model foreign employment using variables that influence the foreign employment decision, or are associated with income shifting and a firm's foreign income. This leads to the following model:

$$(1) \quad PctForeignEmployees_t = \alpha_0 + \beta_1 Size_t + \beta_2 PctForeignSales_t + \beta_3 PctForeignIncome_t \\ + \beta_4 R\&D_t + \beta_5 Tech_t + \beta_6 ROA_t + \beta_7 FTR5_t + \beta_8 AD_t + \beta_9 PPE_t \\ + Year\ Indicators + Industry\ Indicators + \varepsilon_{t+1}$$

We model an expected level of foreign employment based on a number of observable economic characteristics that are associated with a firm's global business structure. Thus, to identify our firms of interest, we include both the percentage of foreign sales (*PctForeignSales*)

and the percentage of pre-tax foreign income (*PctForeignIncome*) in the regression model.³ We predict that, *ceteris paribus*, firms with greater foreign sales and earnings will employ more foreign employees. Next, we capture the intangible intensity of a firm, which may systematically alter labor decisions by allowing firms to allocate income via transfer pricing without moving significant numbers of employees (De Simone, Mills, and Stomberg 2015; De Simone and Sansing 2015). Additionally, firms with greater levels of intangible assets may rely heavily on expertise and human capital that inherently requires a smaller, but more highly skilled workforce. We include three regressors to capture differences in intangible intensity, research and development expense (*R&D*), advertising expenses (*AD*), and an indicator for firms that operate in technology-intensive industries (three-digit SIC codes: 283, 357, 361, 362, 363, 364, 365, 366, 367, 368, 481, 737, and 873). Next, we include a variable that captures the level of property, plant and equipment assuming that firms tradeoff between automating tasks and using labor. The income shifting literature documents that firms respond to tax incentives to shift income from high- to low- taxed jurisdictions. Many low-tax jurisdictions offer subsidies for firms to relocate their labor force; therefore, we control for this incentive using *FTR5*, which captures the difference between the U.S. statutory rate and the five-year average foreign ETR (Klassen and Laplante 2012b).

In addition to these variables, we include profitability (*ROA*) and size, which capture the firm's efficient use of assets and the ability of a firm to create economies of scale. Size also captures the firm's potential reputational costs to outsourcing employees. We include year indicators to mitigate the influence of the trend of firms increasing their foreign workforce. Due

³ Donohoe, McGill, and Outslay (2012) highlight the differences in reported foreign sales and foreign income. Revenues are based on the customer location, and foreign income is tracked based on the location of the entity selling the product or service.

to concerns that labor decisions may cluster based on industry classification, we include industry fixed effects and use one-digit SIC to ensure that we have an adequate number of observations per fixed effect indicator.

We estimate Equation (1) on a pooled sample of firms and use the residual from this model as the abnormal percentage of foreign employees after controlling for the determinants of the global labor location decision. We present the results of our first-stage model in Appendix C. Our models yield an adjusted R^2 of over 45 percent, suggesting that it explains a meaningful portion of a firm's decision to locate global workforce. We classify firms with a residual in the bottom (top) quintile as low (high) abnormal foreign labor (*LOW_AFL* and *HIGH_AFL*) and report that we have 200 observations for each category. Observations not classified in either group are our baseline firms (N=603). We note that the sign of the coefficients on our explanatory variables are largely in the direction predicted.

IV. RESEARCH DESIGN

Sample Selection

We present our sample selection criteria in Table 1. We begin with the entire sample of firms that report foreign income in the S&P 500 in fiscal year 2013. Membership of the S&P 500 changes depending on the market value of equity and we identify firms as of December 31, 2013, representing a majority of the market value of equity traded on the New York Stock Exchange. From this sample of firms, we collect data on employment for 2013 and the previous ten years (i.e., from 2003-2013) or beginning whenever the firm first became publicly traded.⁴ We require foreign employment data to partition our sample using the percentage of labor located in foreign

⁴ Data is not available for all firms in all years as some firms enter the market during our sample period. This methodology produces a survivor bias in our sample. However, we expect this bias is small and preferable to losing a significant portion of the sample in the economic downturn. Additionally, our sample firms are those currently facing scrutiny by taxing authorities making them the most relevant to this discussion.

jurisdictions, and thus we eliminate firm-year observations without disclosed foreign employment data. We also eliminate firm-year observations with pre-tax losses because loss firms may have different pre- and after-tax reporting incentives. Lastly, we eliminate observations missing adequate data to compute our control variables in both our first- and second-stage models. This results in a final sample of 1,003 firm-year observations.⁵

[Insert Table 1 Here]

Employment Data

We hand collect employment data disclosures and use equation (1) to model a firm's foreign employment percent and use the regression residual to partition our sample firms into those with an abnormally high and low degree of foreign employment. Item 101 of Regulation S-K mandates that firms provide an overview of their business operations and environment in their annual SEC filings. In the business overview section, firms often discuss new product lines, major customers, opening and closing of stores, and employment information. Regulation S-K specifically requires a firm to identify "Number of persons employed by the registrant."⁶ While the rule does not specify additional requirements or details, some firms voluntarily disclose additional information such as the location of employees, the number of employees by business unit, and other key information. In Appendix B, we include several examples of firm business overview disclosures and note variation in the information presented.

Approximately 29 percent of firms in our initial sample disclose foreign employment data. Beatty and Liao (2013) use employment data from Compustat to examine determinants of foreign employment disclosure practices and find foreign employment data for approximately 20

⁵ Our sample size is consistent with a number of other income shifting studies. Additionally, we note that the employment data we use to identify a firm's global income allocation strategies is not well populated for firms outside the S&P 500.

⁶ Regulation S-K Item 101(c)(xiii).

percent of total observations. We credit our significantly higher percentage of disclosing firms to our hand collection, which provides additional observations beyond the Compustat database.⁷ Additionally, we focus on larger firms that are more likely to disclose this information. While our employment data limits our sample to larger firms, similar to other studies we suggest these firms are the most active internationally and thus the most fruitful avenue for examination.

Limiting our sample to the S&P 500 has several advantages. First, these firms make up a significant portion of the market capitalization, suggesting their financial statements are of greater importance to market participants than smaller firms. Second, to the extent complex foreign structures are costly to implement, large firms with access to substantial capital are able to take advantage of these techniques (Dyreng and Markle 2013; Rego 2003). Lastly, the S&P 500 provides us a relatively homogeneous sample of firms across a variety of industries. Thus, while this data limits our sample, we believe it provides us a well-specified setting for distinguishing the extent of firm's real foreign operations.

Hypotheses Testing

To test our earnings quality hypothesis, we use earnings persistence as our measure of earnings quality because it provides a broad description of how well accounting earnings capture economic earnings and map into future earnings.⁸ We consider whether a firms' global business

⁷ We note that Compustat does not report employees by location for many firms in our hand-collected sample. This may be a function of the numerous different ways firms disclose the information. For example, some firms disclose that they have a certain number of total employees and a given percent of those employees are located domestically. Compustat identifies the correct number of total employees, but does not calculate the number of domestic and foreign employees. Since the Compustat database is not reliable for the purposes of our research question, we deem hand collection appropriate for this study. We encourage future researchers to use caution when using the Compustat Segments employee statistics in future research.

⁸ The literature considers a number of other measures of earnings quality, such as discretionary accruals, earnings response coefficients, restatements, and AAERs. See Dechow et al. (2010) for a summary of earnings quality measures from the literature. We focus on earnings persistence as a measure of earnings quality because we are interested in the nature of the underlying business transactions of various foreign strategies and because earnings persistence can be measured using both foreign and domestic earnings.

structure, proxied by our measures of low and high *AFL*, is associated with the persistence of earnings using models from Sloan (1996) and Xie (2001). We model the persistence of earnings as:

$$(2) \quad \begin{aligned} EARNINGS_{t+1} = & \gamma_0 + \gamma_1 EARNINGS_t + \gamma_2 HIGH_AFL_t \\ & + \gamma_3 LOW_AFL_t + \gamma_4 HIGH_AFL_t * EARNINGS_t \\ & + \gamma_5 LOW_AFL_t * EARNINGS_t + \varepsilon_{t+1} \end{aligned}$$

For purposes of our first test of earnings quality, we separately define *EARNINGS* as both profits before tax (*PI*) and after-tax net income (*NI*). We specifically test net income because we are interested in whether any differences in persistence remain after considering tax expense, which may be a motivating factor for income shifting. Similar to prior research we scale *PI* and *NI* by total assets to mitigate the effect of size and make variables comparable. *LOW_AFL* and *HIGH_AFL* are indicator variables defined above. We interact our high and low abnormal foreign labor indicators with current earnings and focus on the interaction terms, γ_4 and γ_5 , to determine whether the persistence of earnings varies based the firm's global business structure. Because we state our hypothesis in the null form, we make no signed predictions for γ_4 and γ_5 . We include year- and industry- fixed effects for all regressions. We winsorize earnings and all continuous variables in our study at the 1st and 99th percentiles to reduce the impact of outliers. Lastly, we cluster standard errors at the firm level to account for serial correlation in the error term.

Equation (2) examines overall differences in earnings quality between firms with high and low abnormal foreign labor. To provide a more refined evaluation of our hypothesis, we also identify potential sources of differences in earnings quality between these groups. Specifically, in

Equation (3), we disaggregate current year pre-tax earnings into domestic earnings and foreign earnings and interact these measures with indicators for high- and low- abnormal foreign labor.

$$\begin{aligned}
 (3) \quad PI_{t+1} = & \gamma_0 + \gamma_1 PI_DOM_t + \gamma_2 PI_FOR_t + \gamma_3 HIGH_AFL_t \\
 & + \gamma_4 LOW_AFL_t + \gamma_5 HIGH_AFL_t * PI_DOM_t \\
 & + \gamma_6 HIGH_AFL_t * PI_FOR_t + \gamma_7 LOW_AFL_t * PI_DOM_t \\
 & + \gamma_8 LOW_AFL_t * PI_FOR_t + \varepsilon_{t+1}
 \end{aligned}$$

We define foreign earnings (PI_FOR) as foreign income before taxes and domestic earnings (PI_DOM) as the difference between total income and foreign income, both scaled by total assets as above. Focusing on the interaction terms with our indicator variables for high- and low-abnormal foreign labor allows for a more nuanced understanding of earnings persistence across our employment partitions. While we make no signed predictions, we expect that bifurcating income based on geographic lines may allow for more robust inferences from our tests. Because our interest is in a firm's global business structure, we expect that foreign earnings may be more sensitive to global business strategies than domestic income.

Tests of Market Pricing

To test our second hypothesis, we test whether share prices correctly reflect the persistence of earnings for firms with different global business structures using the methodology developed in Mishkin (1983). The Mishkin test has been extensively used in prior literature such as Sloan (1996), Xie (2001), and others. Specifically, we jointly estimate the following systems of equations using iterative non-linear generalized least squares procedure for each subsample (high AFL , low AFL , and our baseline group).

The models test the market rationality with respect to total earnings:

$$(4) \quad PI_{t+1} = \gamma_0 + \gamma_1 PI_t + \varepsilon_{t+1}$$

$$(5) \quad SAR_{t+1} = \alpha_0 + \beta_1(PI_{t+1} = \gamma_0 + \gamma_1^* PI_t) + \mu_{t+1}$$

where SAR_{t+1} is the annual size-adjusted return, inclusive of dividends, calculated as the raw buy-and-hold return for the security minus the buy-and-hold return for the same size decile portfolio of firms. The return accumulation period begins four months after the end of the fiscal year to allow for dissemination of financial statement information. All other variables are as defined above. If investors rationally impound the persistence of earnings, then we expect $\gamma_1^* = \gamma_1$ in Equations (4) and (5). We use a likelihood ratio statistic to test the restrictions that $\gamma_1^* = \gamma_1$ (Mishkin 1983). The statistic is asymptotically distributed $\chi^2(q)$ where q is the number of restrictions tested. If the nature of foreign operations facilitates the accurate pricing of earnings, then γ_1^* will be statistically indistinguishable from γ_1 in the system of Equations (4) and (5). We separately consider pre-tax earnings, and the pre-tax foreign and domestic components of earnings. When we decompose earnings into foreign and domestic earnings, we separately test whether investors rationally price foreign and domestic earnings separately. Because we state our hypothesis in the null form, we make no signed predictions for our interaction coefficients.

V. RESULTS

Descriptive Statistics

In Table 2, we present descriptive statistics for our data. Panel A presents summary data for the full sample, and Panel B presents statistics for our sample partitioned into *HIGH_AFL*, *LOW_AFL*, and our baseline observations. In Panel A, we note the average firm in our sample is profitable with a return on assets of over 7 percent. Despite the economic downturn in the midst of our sample period, the average size-adjusted returns is 10 percent. These two attributes are likely due to our sample selection criteria focusing on S&P 500 firms and eliminating loss years. Additionally, we note approximately 22 percent of our sample observations are in tech

industries, suggesting there is substantial heterogeneity in the overall business model of firms in our sample. In Panel B, we do not note any statistically significant differences on any of the dimensions controlled for in the first-stage regression between firms in our high and low *AFL* samples. Additionally, we do not observe any statistically significant differences in size-adjusted returns between our different groups. This is important because if our classification simply captures mature industries that rely heavily on labor, we might expect market participants to differentially adjust their expectation of future cash flows.

[Insert Table 2 Here]

In Table 3, we consider industry differences in our sample, partitioned into *HIGH_AFL* firms, *LOW_AFL* firms, and baseline firms by industry classification. We note significant variation in industry classification, mitigating concerns that our results are a function of unobservable traits common to all firms within a given industry and that our classification of abnormal foreign labor may not generalize across industries. This is largely a result of including industry fixed effects in the first stage model and thus we interpret our classification as deviations from the industry average.

[Insert Table 3 Here]

Multivariate Results

We test our hypothesis of whether there is a difference in earnings quality between *HIGH_AFL* and *LOW_AFL* firms using various measures of earnings and present these results in Table 4. By using indicator variables in our model, we can interpret the coefficient on earnings, γ_1 , as the persistence of the baseline group and the interaction coefficients, γ_4 and γ_5 , as the incremental persistence of the low and high *AFL* group relative to the baseline group. In Panel A, we present the results of Equation (2) testing the persistence of earnings using both pre-tax and

after-tax income. We find a negative and statistically significant coefficient on the interaction between *LOW_AFL* and both pre-tax and after-tax income (γ_5), suggesting that firms with low foreign employment have less persistent earnings than our baseline group. However, the coefficient on the interaction between *HIGH_AFL* and both pre-tax and after-tax income (γ_4) is not statistically different from zero. Our results suggest that the global business structure of low *AFL* firms leads to 12.5(13.9) percent less persistent pre-tax (after-tax) earnings than the baseline group. An F-test of the difference between the coefficients on our interaction terms with *HIGH_AFL* and *LOW_AFL* indicates that the pre-tax earnings persistence of *LOW_AFL* firms is lower than our baseline group ($p < 0.05$). In the tests examining the persistence of after-tax earnings, we find that the statistical significance of the coefficient on *LOW_AFL* interaction and the F-test comparing the coefficients on our two interaction terms remain significant ($p < 0.10$). Additionally, we note the after-tax model has less explanatory power than the pre-tax model. The adjusted R^2 decreases from 62 percent in column one to 53 percent in column two, with the same degrees of freedom, representing a 14 percent reduction in explanatory power. We speculate that this may result from our low *AFL* firms using income shifting to smooth net income; however, we do not directly test this conjecture.

In Panel B, we present the results of testing Equation (3) which considers differences in the persistence of foreign and domestic pre-tax earnings based on a firm's global business structure. Consistent with prior literature (e.g., Thomas 2000), we note the coefficient on *PI_FOR* is greater than the coefficient on *PI_DOM*, suggesting that foreign earnings are more persistent than domestic earnings. By decomposing earnings geographically, we are able to examine whether there are differences in persistence based on a firm's global business structure. First, we document that low *AFL* firms have lower foreign earnings persistence than both the

baseline group ($p < 0.01$) and the high *AFL* sample ($p < 0.05$). This difference in persistence is economically significant – the low *AFL* firms have foreign income that is approximately 27 percent less persistent than both the baseline and high *AFL* subsamples. Additionally, we find that the domestic earnings are more persistent for high *AFL* firms. We interpret this to suggest that firms with greater levels of foreign employees may also implement a business structure that produces higher quality earnings stemming from domestic operations.

Together, the results in Table 4 suggest that a global business structure that has fewer foreign employees leads to a deterioration in earnings quality. Interestingly, employing greater than the expected level of foreign employees, based on our first-stage regression, appears to have little impact on overall earnings persistence. While there is some evidence that having a larger overseas labor force increases domestic earnings persistence, overall, we fail to find significant differences in earnings quality benefits for firms supporting global operations with an abnormally large global workforce.

[Insert Table 4 Here]

Market-Based Tests

Prior literature argues that earnings persistence is an important measure of earnings quality because permanent earnings are more value relevant for investors. Our results above suggest that low *AFL* firms have lower earnings persistence compared to firms with greater investment in foreign labor. To give a more nuanced examination of the accounting costs associated with the low *AFL* subsample, we next examine whether investors are able to correctly identify and price differences in earnings persistence. Following prior literature (Sloan 1996; Hanlon 2005) we use a Mishkin (1983) test to examine whether investors rationally price the

earnings of our three subsamples of firms: low *AFL*, baseline, and high *AFL*. We report the results of this test in Table 5.

In Panel A of Table 5, we present the results of the tests of rational market pricing of pre-tax earnings. In Columns (1) through (3), we report the regression results of our baseline, low *AFL*, and high *AFL* firms separately. While we make no directional hypotheses, an assumption of semi-strong market efficiency imposes the restriction that $\gamma_l^* = \gamma_l$. Consistent with the view that investors, on average, correctly predict and price the persistence of earnings, we fail to find a statistical difference between the actual and perceived persistence of earnings for our baseline sample. Additionally, we find that the point estimate of persistence for the baseline group is very similar to that in Table 4 (0.836 vs. 0.816), with the difference likely attributable to fixed effects in the prior model. Similarly, we find that investors appear to correctly price the persistence of earnings for high *AFL* firms (L.R. statistic = 1.02, $p > 0.10$). However, we find a very different story for the low *AFL* firms; investors appear to underestimate the persistence of earnings ($p < 0.05$). Our results suggest this may be driven by a high level of dispersion in market expectations of the persistence of earnings. Compared to the other two samples, we find investor expectation of earnings persistence is measured with far more error (standard errors are almost twice as large as the high *AFL* sample).

In Panel B of Table 5, we perform the same tests but decompose pre-tax earnings into domestic and foreign pre-tax earnings. Consistent with prior literature, we find investors underestimate the persistence of foreign earnings for all three groups, albeit, insignificantly so for the low and high *AFL* firms. Additionally, consistent with the pricing of pre-tax earnings documented in Panel A, we find that investors appear to rationally price the persistence of domestic earnings in the baseline and the high *AFL* specifications. Again, we find that the market

does not have a clear picture of the earnings of the low *AFL* firms. While we find that investors underestimate the persistence of domestic earnings for low *AFL* firms ($p < 0.01$), similar to Panel A, we find that the standard errors are significantly larger for this sample. The results of our Mishkin tests confirm our prior findings that a firm's global business structure affects the usefulness of earnings. We find that firms that structure their operations using abnormally low levels of foreign labor have lower earnings persistence that market participants have difficulty pricing. Moreover, we find that investors appear to rationally price earnings and its components for high *AFL* firms. When coupled with the finding that high *AFL* firms have more persistent domestic earnings, we provide some preliminary evidence that structuring global operations with above expected levels of labor appears to increase the usefulness of earnings.

[Insert Table 5 Here]

VI. ADDITIONAL ANALYSIS

Above, we document that low *AFL* firms have lower earnings persistence and that market participants have a difficult time pricing these differences in earnings persistence. Additionally, we document that firms with greater foreign employment than our model would predict seem to have at least the same level of earnings quality, if not better than our baseline firms. Our first-stage prediction model explicitly controls for the incentive to shift income to low-tax jurisdictions. We include *FTR5*, a measure developed by Collins et al. (1998) and used in recent studies such as Klassen and Laplante (2012), that measures the difference between a firm's average foreign tax rate and the U.S. statutory tax rate to capture income shifting potential. Thus, we also consider whether our results are driven by tax-motivated income shifting by testing for differences in tax avoidance between our different global employment classifications.

Following prior literature, we use cash ETR as our empirical measure of tax avoidance activities at the firm (Dyreng, Hanlon, and Maydew 2008), and control for common firm level characteristics known to influence cash tax payments (e.g., size, depreciation expense, and advertising expense) as well as industry and year fixed effects. We report the results of this regression in Table 6. Overall, we fail to find a statistically significant difference in tax avoidance activities between our two sets of firms and the baseline sample, suggesting our main results not a function of tax-motivated income shifting, and that both high and low levels of foreign employment result in similar levels of tax avoidance.

[Insert Table 6 Here]

VII. CONCLUSION

As the global marketplace rapidly expands, it is important to understand how the globalization of U.S. MNCs' business structure changes the financial reporting environment. Prior research documents that investors do not fully understand foreign earnings (Thomas 2000; Callen et al. 2005). We build off this prior research and examine how a firm's underlying business operations alters financial reporting externalities associated with geographic diversification. We test whether differences in global business structures affect a firm's earnings quality and whether investors appear to rationally price any earnings quality differences. Using earnings persistence as our empirical proxy for earnings quality, we find that firms with abnormally low foreign labor report lower earnings persistence than all other firms in our sample. We find this lower persistence for pre-tax, after-tax, and foreign earnings. For firms that support foreign operations with higher than expected levels of employment, we find no difference in pre-tax and after-tax earnings persistence between these firms and our baseline sample; however, we find that these firms have more persistent domestic earnings.

We next use the Mishkin (1983) methodology to examine whether investors rationally price earnings persistence for our three different subsamples. For our baseline sample, we find results consistent with prior literature (i.e., the market correctly anticipates the persistence of overall earnings, but underestimates the persistence of foreign earnings), suggesting our sample of S&P 500 firms is comparable to prior studies. For our sample of firms with lower than anticipated foreign earnings, we find that investors have difficulties understanding the persistence of earnings, resulting in significant variation in anticipated persistence. However, investors appear to correctly anticipate and rationally price the persistence of earnings and its geographic components for firms with greater than anticipated foreign employment. This suggests that supporting foreign operations with foreign employees reduces some of the difficulty market participants have in pricing earnings. Taken together, we find a meaningful relation between a firm's global employment structure and financial accounting externalities. We document that firms that choose to structure their global operations with fewer employees bear the greatest accounting costs.

Our results provide important insight into the potential costs of a firm's global business structure choices; however, we note several limitations to our study. We caution that because we focus only on a sample of S&P 500 firms, our results may not generalize to a larger sample that includes smaller firms. Despite this drawback, during our sample period, Congress investigated several large firms' global business strategies, including Microsoft, Apple, Hewlett-Packard, and Caterpillar, suggesting these firms are of significant interest to policy makers. Moreover, our relatively small sample is consistent with other studies in the income shifting literature that focus on the tax strategies of large MNCs (e.g., Grubert 2012). Additionally, the employment data we

use to classify firms, while gathered from audited financial statements, may contain some measurement error.

Some research considers the costs of foreign income shifting, such as Desai, Foley, and Hines (2009) who examine whether foreign investment is made at the expense of domestic investment. It is not our goal to speak to the domestic cost of locating real operations overseas, yet, the data used in our study may provide interesting evidence regarding domestic employment outcomes when firms increase foreign employment. Lastly, the results of our study contribute to the literature that documents that over the past half-century earnings quality has diminished. Srivastava (2014) provides evidence that earnings quality has decreased over time due to increased income from intangible assets that do not map well into accounting earnings. Our results suggest that foreign employment is another important factor in addition to intangibility that affects the quality of reported earnings. Given the importance of U.S. MNCs overseas operations, our results suggest that the current accounting standards may not allow financial statement users to fully ascertain the nature of a firm's global business structure.

REFERENCES

- Agmon, T., and D. R. Lessard. 1977. Investor recognition of corporate international diversification. *The Journal of Finance* 32 (4):1049-1055.
- Beatty, A., and S. Liao. 2013. What do US multinationals' voluntary geographical employment disclosures tell us?: Working paper, Ohio State University.
- Callen, J. L., O. K. Hope, and D. Segal. 2005. Domestic and foreign earnings, stock return variability, and the impact of investor sophistication. *Journal of Accounting Research* 43 (3):377-412.
- U. S. Congress. 2014. Permanent Subcommittee on Investigations. *Caterpillar's offshore tax strategy*. Senate Hearing Number 113-408. April 1, 2014.
- Chen, C.-W., B. Hepfer, P. Quinn, and R. J. Wilson. 2015. Tax-Motivated Income Shifting and the Information Environment: Working paper, University of Iowa.
- Collins, J., D. Kemsley, and M. Lang. 1998. Cross-jurisdictional income shifting and earnings valuation. *Journal of Accounting Research*:209-229.
- De Simone, L., L. F. Mills, and B. Stomberg. 2015. Examining IRS Audit Outcomes of Income Mobile Firms: Working paper, University of Texas.
- De Simone, L., and R. Sansing. 2015. Intellectual Property and Income Shifting: Working paper, Stanford University.
- Dechow, P., W. Ge, and C. Schrand. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics* 50 (2):344-401.
- Dechow, P. M., and C. M. Schrand. 2004. Earnings quality. *The Research Foundation of CFA Institute*.
- Denis, D. J., D. K. Denis, and K. Yost. 2002. Global diversification, industrial diversification, and firm value. *The Journal of Finance* 57 (5):1951-1979.
- Desai, M. A., C. F. Foley, and J. R. Hines. 2009. Domestic effects of the foreign activities of US multinationals. *American Economic Journal: Economic Policy* 1 (1):181-203.
- Dharmapala, D. 2014. What do we know about base erosion and profit shifting? A review of the empirical literature. *Fiscal Studies* 35 (4):421-448.
- Dichev, I. D., and V. W. Tang. 2008. Matching and the changing properties of accounting earnings over the last 40 years. *The Accounting Review* 83 (6):1425-1460.

- Donohoe, M. P., G. A. McGill, and E. Outslay. 2012. Through a glass darkly: What can we learn about a US multinational corporation's international operations from its financial statement disclosures? *National Tax Journal* 65 (4):961-984.
- Doyle, J., W. Ge, and S. McVay. 2007. Determinants of weaknesses in internal control over financial reporting. *Journal of Accounting and Economics* 44 (1):193-223.
- Dyreng, S., and K. Markle. 2013. The effect of financial constraints on tax-motivated income shifting by US multinationals: Working paper, Duke University.
- Dyreng, S. D., M. Hanlon, and E. L. Maydew. 2008. Long-run corporate tax avoidance. *The Accounting Review* 83 (1):61.
- Grossman, G. M., and E. Rossi-Hansberg. 2008. Trading Tasks: A Simple Theory of Offshoring. *The American Economic Review* 98 (5):1978-1997.
- Grubert, H. 2012. Foreign taxes and the growing share of US multinational company income abroad: Profits, not sales, are being globalized. *National Tax Journal* 65 (2):247-275.
- Grubert, H., and J. Slemrod. 1998. The effect of taxes on investment and income shifting to Puerto Rico. *Review of Economics and Statistics* 80 (3):365-373.
- Hanlon, M. 2005. The persistence and pricing of earnings, accruals, and cash flows when firms have large book-tax differences. *The Accounting Review* 80 (1):137-166.
- Hanlon, M., R. Lester, and R. Verdi. 2015. The effect of repatriation tax costs on US multinational investment. *Journal of Financial Economics* 116 (1):179-196.
- Hines, J. R., and E. M. Rice. 1994. Fiscal paradise: Foreign tax havens and American business. *Quarterly Journal of Economics* 109 (1):149-182.
- Keightley, M. P. 2013. An Analysis of Where American Companies Report Profits: Indications of Profit Shifting, 7-5700, R42927, edited by Congressional Research Service: www.crs.gov.
- Khurana, I. K., R. Pereira, and K. Raman. 2003. Does analyst behavior explain market mispricing of foreign earnings for US multinational firms? *Journal of Accounting, Auditing & Finance* 18 (4):453-477.
- Klassen, K. J., and S. K. Laplante. 2012a. Are US multinational corporations becoming more aggressive income shifters? *Journal of Accounting Research* 50 (5):1245-1285.
- Klassen, K. J., and S. K. Laplante. 2012b. The Effect of Foreign Reinvestment and Financial Reporting Incentives on Cross-Jurisdictional Income Shifting. *Contemporary Accounting Research* 29 (3):928-955.
- Lu, J. W., and P. W. Beamish. 2004. International diversification and firm performance: The S-curve hypothesis. *Academy of Management Journal* 47 (4):598-609.

- Mishkin, F. 1983. *A Rational Expectations Approach to Macroeconometrics: Testing Policy Effectiveness and Efficient Markets Models*. Chicago, IL: University of Chicago Press for the National Bureau of Economic Research.
- Nessa, M. L., T. J. Shevlin, and R. J. Wilson. 2015. What Do Investors Infer About Future Cash Flows from Foreign Earnings for Firms with Low Average Foreign Tax Rates?: Working paper, Michigan State University.
- Penman, S. H., and X. J. Zhang. 2002. Accounting Conservatism, the Quality of Earnings, and Stock Returns. *The Accounting Review* 77 (2):237-264.
- Rego, S. O. 2003. Tax-Avoidance Activities of US Multinational Corporations. *Contemporary Accounting Research* 20 (4):805-833.
- Schipper, K., and L. Vincent. 2003. Earnings quality. *Accounting Horizons* 17 (Supplement):97-110.
- Scholes, M. S., M. A. Wolfson, M. Erickson, M. Hanlon, E. L. Maydew, and T. Shevlin. 2014. *Taxes and business strategy: A planning approach (5th edition)*: Prentice Hall Englewood Cliffs, NJ.
- Shackelford, D. A., J. Slemrod, and J. M. Sallee. 2011. Financial reporting, tax, and real decisions: toward a unifying framework. *International Tax and Public Finance* 18 (4):461-494.
- Shevlin, T., T. Y. Tang, and R. J. Wilson. 2012. Domestic income shifting by Chinese listed firms. *Journal of the American Taxation Association* 34 (1):1-29.
- Sloan, R. 1996. Do Stock Prices Fully Reflect Information in Accruals and Cash Flows about Future Earnings? *The Accounting Review* 71 (3):289-315.
- Srivastava, A. 2014. Why have measures of earnings quality changed over time? *Journal of Accounting and Economics* 57 (2):196-217.
- Thomas, W. B. 2000. A test of the market's mispricing of domestic and foreign earnings. *Journal of Accounting and Economics* 28 (3):243-267.
- Thomsen, M., R. Ullmann, and C. Watrin. 2013. The Impact of Taxes on Location Decisions: Working paper, University of Meunster.
- Tong, T. W., and J. J. Reuer. 2007. Real options in multinational corporations: Organizational challenges and risk implications. *Journal of International Business Studies* 38 (2):215-230.
- Williams, B. 2015. Income Shifting Incentives and Offshored U.S. Jobs: Working paper, University of Texas.
- Xie, H. 2001. The mispricing of abnormal accruals. *The Accounting Review* 76 (3):357-373.

APPENDIX A Variable Definitions

Variable	Definition
Earnings quality and Market test variables	
PI_{t+1}	Pre-tax earnings (PI) in year t + 1, scaled by assets (AT) in t+1
PI_t	Pre-tax earnings (PI) in year t, scaled by assets (AT)
NI_{t+1}	Earnings (NI) in year t + 1, scaled by assets (AT) in t+1
NI_t	Earnings (NI) in year t, scaled by assets (AT)
$HIGH_AFL$	Indicator variable equal to 1 if the observation is in the top quintile of annual residuals from estimating Equation (1).
LOW_AFL	Indicator variable equal to 1 if the observation is in the bottom quintile of annual residuals from estimating Equation (1).
PI_FOR	Pre-tax foreign income (PIFO) scaled by assets (AT)
PI_DOM	Pre-tax income (PI) less pre-tax foreign income (PIFO), all scaled by assets
SAR	The annual size-adjusted return, inclusive of dividends, calculated as the raw buy-and-hold return for the security minus the buy-and-hold return for the same size decile portfolio of firms. The return accumulation period begins four months after the end of the fiscal year.
First Stage Regression Variables	
$PctForeignEmployees$	The number of employees outside the U.S. as a percentage of total employees. Data hand collected from 10-k.
$Size$	Natural log of assets (AT).
$PctForeignSales$	Foreign sales (Compustat segments REVTS) scaled by total sales (SALE).
$PctForeignIncome$	Pre-tax foreign income (PIFO) scaled by pre-tax book income (PI).
$R\&D$	Research and development expenses (XRD) scaled by assets (AT)

<i>Tech</i>	Indicator variable equal to 1 if the observation belongs to an industry commonly associated as technology based (3-digit SIC codes: 283, 357, 361, 362, 363, 364, 365, 366, 367, 368, 481, 737, and 873).
<i>ROA</i>	Income before extraordinary items (IB) scaled by assets (AT).
<i>FTR5</i>	5 year average of the foreign tax expense (TXFO) scaled by pre-tax foreign income (PIFO) less the U.S. statutory tax rate and is calculated following (Klassen and Laplante 2012b).
<i>AD</i>	Advertising expense (XAD) scaled by assets (AT)
<i>PPE</i>	Net property, plant, and equipment (PPENT) scaled by assets (AT).
<i>Residual</i>	The residual from estimating Equation (1)

Additional Analysis Variables

<i>Cash</i>	Cash holdings (CHE) divided by year total assets (AT).
<i>DEPR</i>	Depreciation and amortization expense (DP) divided by total assets (AT).
<i>BTM</i>	Book-to-market ratio. Book value of equity (CEQ) divided by market value of equity (PRCC_F X CSHO).
<i>EQInc</i>	Equity income (ESUB) divided by prior year total assets (AT).
<i>Lev</i>	Long-term-debt-to-asset ratio (DLTT) divided by prior year total assets (AT).
<i>NOL</i>	Tax-loss carryforward (TLCF) divided by prior year total assets (AT).
<i>SGA</i>	Selling, general and administrative expenses (XSGA) divided by prior year total assets (AT)

This table presents descriptions for the variables used in this study. Compustat mnemonics are identified in parenthesis.

Appendix B

Sample employment disclosures

Below we provide two distinct S-K 101 disclosures:

Microsoft's form 10-K reports the following:

As of June 30, 2014, we employed approximately 128,000 people on a full-time basis, 62,000 in the U.S. and 66,000 internationally, including approximately 25,000 employees transferred as part of the NDS acquisition in April 2014. Of the total employed people, 44,000 were in product research and development, 30,000 in sales and marketing, 23,000 in product support and consulting services, 20,000 in manufacturing and distribution, and 11,000 in general and administration. In July 2014, we announced a restructuring plan, which will eliminate up to 18,000 positions in fiscal year 2015, including 12,500 professional and factory positions related to the acquisition of NDS. As a result of the NDS acquisition, we have certain employees that are subject to collective bargaining agreements.

Whereas Nike reports the following:

As of May 31, 2013, we had approximately 48,000 employees worldwide, including retail and part-time employees. Management considers its relationship with employees to be excellent. None of our employees are represented by a union, except for certain employees in the Emerging Markets geography, where local law requires those employees to be represented by a trade union. Also, in some countries outside of the United States, local laws require employee representation by works councils (which may be entitled to information and consultation on certain Company decisions) or by organizations similar to a union. In certain European countries, we are required by local law to enter into and/or comply with industry-wide or national collective bargaining agreements. NIKE has never experienced a material interruption of operations due to labor disagreements.

Both disclosures comply with regulation S-K but include different pieces of information, i.e., number of domestic employees. Note that for our analysis we can only calculate the percentage of foreign employees for Microsoft based on these disclosures.

APPENDIX C
First Stage Regression

Dependent Variable = <i>PctForeignEmployees</i>	Coefficient (<i>t-stat</i>)
<i>INTERCEPT</i>	0.080 (1.33)
<i>Size</i>	0.022*** (5.53)
<i>PctForeignSales</i>	0.313*** (12.67)
<i>PctForeignIncome</i>	0.145*** (9.73)
<i>R&D</i>	-0.310* (-1.81)
<i>Tech</i>	0.017 (1.17)
<i>ROA</i>	0.395*** (4.79)
<i>FTR5</i>	-0.038 (-1.40)
<i>AD</i>	0.089 (1.41)
<i>PPE</i>	-0.192*** (-5.98)
Industry and Year Fixed Effects	Yes
Observations	1,003
Adjusted R-Squared	45.29%

All variables are defined in Appendix A. All continuous variables are winsorized at the 1% and 99% levels. T-statistics are reported below coefficient estimates. The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively

TABLE 1

Sample Selection

Criteria	
2003 - 2013 S&P 500 firms (as of 2013)	5,500
Less: Observations without foreign sales	-1,763
Less: Observations reporting negative pre-tax income	-279
Less: Observations without enough data to compute the control variables	-47
Less: Observations that do not disclose employment by location	-2,408
Final Sample	1,003

Notes: Financial data is gathered from Compustat with the exception of foreign employment data hand-collected from 10-k disclosures. See Appendix A for variable definitions.

TABLE 2
PANEL A – Descriptive Statistics

Variable	N	Mean	Std Dev	P25	Median	P75
First stage variables						
<i>PctForeignEmployees</i>	1,003	0.4687	0.1836	0.3495	0.5000	0.5977
<i>Size</i>	1,003	9.2365	1.4052	8.3162	9.0409	10.0406
<i>PctForeignSales</i>	1,003	0.4350	0.2245	0.2775	0.4333	0.5752
<i>PctForeignIncome</i>	1,003	0.5235	0.4034	0.2755	0.4848	0.7163
<i>R&D</i>	1,003	0.0247	0.0330	0.0000	0.0126	0.0349
<i>Tech</i>	1,003	0.2243	0.4173	0.0000	0.0000	0.0000
<i>ROA</i>	1,003	0.0775	0.0484	0.0405	0.0699	0.1098
<i>FTR5</i>	1,003	0.0918	0.1883	0.0187	0.1087	0.1735
<i>AD</i>	1,003	0.0153	0.0435	0.0000	0.0000	0.0135
<i>PPE</i>	1,003	0.2294	0.1925	0.0937	0.1666	0.3188
Earnings quality and Market test variables						
<i>PI_{t+1}</i>	1,003	0.1039	0.0713	0.0557	0.0966	0.1482
<i>PI_t</i>	1,003	0.1082	0.0679	0.0566	0.0977	0.1515
<i>NI_{t+1}</i>	1,003	0.0744	0.0517	0.0400	0.0691	0.1084
<i>NI_t</i>	1,003	0.0780	0.0491	0.0416	0.0699	0.1097
<i>HIGH_AFL</i>	1,003	0.1994	0.3998	0.0000	0.0000	0.0000
<i>LOW_AFL</i>	1,003	0.1994	0.3998	0.0000	0.0000	0.0000
<i>PI_FOR</i>	1,003	0.0551	0.0534	0.0184	0.0430	0.0774
<i>PI_DOM</i>	1,003	0.0537	0.0574	0.0174	0.0447	0.0814
<i>SAR_{t+1}</i>	1,003	0.1045	0.27051	-0.0750	0.0634	0.2366
<i>Residual</i>	1,003	0.0000	0.1340	-0.0817	0.0021	0.0877

Notes: this table presents the descriptive statistics for the final sample. All variables are as defined in Appendix A. All continuous variables are winsorized at the 1% and 99% levels.

PANEL B – VARIABLE MEANS BY GLOBAL BUSINESS STRUCTURE

Variable	Low <i>AFL</i> Sample (n = 200)	Baseline Sample (n = 603)	High <i>AFL</i> Sample (n = 200)	Low vs. High <i>AFL</i> t-stat
First stage variables				
<i>PctForeignEmployees</i>	0.2536	0.4827	0.6414	-27.81***
<i>Size</i>	9.1381	9.2827	9.1956	-0.46
<i>PctForeignSales</i>	0.3947	0.4541	0.4178	-0.95
<i>PctForeignIncome</i>	0.4791	0.5351	0.5331	-1.16
<i>R&D</i>	0.0222	0.0258	0.0239	-0.49
<i>Tech</i>	0.2700	0.2056	0.2350	0.80
<i>ROA</i>	0.0723	0.0787	0.0791	-1.36
<i>FTR5</i>	0.0786	0.0940	0.0982	-0.93
<i>AD</i>	0.0131	0.0160	0.0151	-0.68
<i>PPE</i>	0.2544	0.2147	0.2490	0.26
Earnings quality and Market test variables				
<i>PI_{t+1}</i>	0.0998	0.1052	0.1040	-0.56
<i>PI_t</i>	0.1035	0.1096	0.1085	-0.69
<i>NI_{t+1}</i>	0.0689	0.0758	0.0755	-1.24
<i>NI_t</i>	0.0715	0.0795	0.0800	-1.58
<i>HIGH_AFL</i>	0.0000	0.0000	1.0000	N/A
<i>LOW_AFL</i>	1.0000	0.0000	0.0000	N/A
<i>PI_FOR</i>	0.0404	0.0563	0.0657	-4.15***
<i>PI_DOM</i>	0.0634	0.0539	0.0431	3.53***
<i>SAR_{t+1}</i>	0.1048	0.1088	0.0913	1.08
<i>Residual</i>	-0.1913	0.0029	0.1823	-53.67***

This table presents means on our sample partitioned on high and low abnormal foreign labor (the residual from equation 1). See Appendix A for variable definitions.

TABLE 3**Industry Breakdown****High vs. Low Abnormal Foreign Labor Firms**

<i>SIC 1-DIGIT INDUSTRY CODE</i>	<i>N</i>	<i># LOW AFL</i>	<i>% LOW AFL</i>	<i># HIGH AFL</i>	<i>% HIGH AFL</i>
1	44	8	18%	11	25%
2	278	55	20%	56	20%
3	384	68	18%	70	18%
4	24	6	25%	6	25%
5	61	12	20%	13	21%
6	69	17	25%	15	22%
7	125	34	27%	26	21%
8	0	0	0%	0	0%
9	18	0	0%	3	17%

TABLE 4
Effects of Global Business Structure on Earnings Persistence

Panel A Earnings Persistence		(1)	(2)
Dependent Variable = $Earnings_{t+1}$		Pre-Tax Earnings	After-Tax Earnings
	Prediction	Coefficient <i>t-stat</i>	Coefficient <i>t-stat</i>
<i>Intercept</i>		-0.002 (-0.15)	0.000 (-0.04)
<i>Earnings_t</i>		0.816*** (20.57)	0.792*** (18.60)
<i>HIGH_AFL</i>		-0.010 (-1.38)	0.001 (0.17)
<i>LOW_AFL</i>		0.011 (1.50)	0.010* (1.88)
<i>HIGH_AFL * Earnings_t</i>	?	0.074 (0.99)	-0.054 (-0.66)
<i>LOW_AFL * Earnings_t</i>	?	-0.125** (-2.08)	-0.139* (-1.90)
Year Fixed Effects		Yes	Yes
Industry Fixed Effects		Yes	Yes
Clustered Standard Errors		Firm	Firm
Observations		1,003	1,003
Adjusted R-Squared		62.08%	53.14%
F-statistic			
<i>HIGH_AFL * Earnings_t - LOW_AFL * Earnings_t = 0</i>		p < 0.05 **	p < 0.10 *

Notes: this table presents results of estimating OLS regression Equation (2). All variables are defined in Appendix A. All continuous variables are winsorized at the 1% and 99% levels. T-statistics are reported below coefficient estimates. The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel B Persistence of Pre-Tax Foreign and Domestic Earnings		
Dependent Variable = PI_{t+1}		Coefficient
	Prediction	<i>t-stat</i>
<i>Intercept</i>		0.002 (0.21)
<i>PI_FOR_t</i>		0.803*** (10.62)
<i>PI_DOM_t</i>		0.568*** (3.12)
<i>HIGH_AFL</i>		-0.021* (-1.97)
<i>LOW_AFL</i>		-0.002 (-0.16)
<i>HIGH_AFL * PI_FOR_t</i>	?	-0.007 (-0.08)
<i>LOW_AFL * PI_FOR_t</i>	?	-0.221*** (-3.29)
<i>HIGH_AFL * PI_DOM_t</i>	?	0.393** (2.22)
<i>LOW_AFL * PI_DOM_t</i>	?	0.174 (0.91)
Year Fixed Effects		Yes
Industry Fixed Effects		Yes
Clustered Standard Errors		Firm
Observations		1,003
Adjusted R-Squared		63.03%
F-statistics:		
$HIGH_AFL * PI_FOR_t - LOW_AFL * PI_FOR_t = 0$		p < 0.05 **
$HIGH_AFL * PI_DOM_t - LOW_AFL * PI_DOM_t = 0$		p < 0.01 ***

Notes: this table presents results of estimating OLS regression Equation (3). All variables are defined in Appendix A. All continuous variables are winsorized at the 1% and 99% levels. T-statistics are reported below coefficient estimates. The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

TABLE 5
Market Expectations of Earnings Persistence Based on Mishkin (1983) Test

Panel A: Market Pricing of Pretax Earnings:

$$PI_{t+1} = \gamma_0 + \gamma_1 PI_t + \varepsilon_{t+1}$$

$$SAR_{t+1} = \alpha + \beta_1 (PI_{t+1} - \gamma_0^* - \gamma_1^* PI_t) + \varepsilon_{t+1}$$

Parameters:	(1) Baseline Firms N=603		(2) Low <i>AFL</i> N=200		(3) High <i>AFL</i> N=200	
	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
β_1	1.751***	0.273	1.219***	0.385	1.702***	0.442
γ_1	0.836***	0.027	0.712***	0.052	0.896***	0.044
γ_1^*	0.745***	0.098	0.119	0.295	0.734***	0.160
Ratio γ_1^*/γ_1	0.891		0.167		0.819	

Test of Rational Pricing

Market Efficiency Hypothesis	LR Statistic	Significance	LR Statistic	Significance	LR Statistic	Significance
$\gamma_1 = -\gamma_1^*$	0.84	0.360	6.45	0.011**	1.02	0.313

Notes: this table presents results of estimating the system of equations (4) and (5) using an iterative non-linear generalized least squares procedure. All standard errors are based on asymptotic approximations. All variables are defined in Appendix A.

TABLE 5
Market Expectations of Earnings Persistence Based on Mishkin (1983) Test

Panel B: Market Pricing of Pretax Domestic and Foreign Earnings:

$$PI_{t+1} = \gamma_0 + \gamma_1 PI_DOM_t + \gamma_2 PI_FOR_t + \varepsilon_{t+1}$$

$$SAR_{t+1} = \alpha + \beta_1 (PI_{t+1} - \gamma_0^* - \gamma_1^* PI_DOM_t - \gamma_2^* PI_FOR_t) + \varepsilon_{t+1}$$

	(1) Baseline Firms N=603		(2) Low <i>AFL</i> N=200		(3) High <i>AFL</i> N=200	
Parameters:	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
β_1	1.682***	0.266	1.179***	0.388	1.906***	0.438
γ_1 (PI_DOM)	0.788***	0.038	0.759***	0.059	0.988***	0.070
γ_1^* (PI_DOM)	0.975***	0.140	-0.035	0.373	1.072***	0.216
γ_2 (PI_FOR)	0.834***	0.041	0.603***	0.066	0.825***	0.054
γ_2^* (PI_FOR)	0.433***	0.161	0.333	0.314	0.585***	0.176
Ratio γ_1^*/γ_1 (PI_DOM)	1.237		-0.046		1.085	
Ratio γ_2^*/γ_2 (PI_FOR)	0.517		0.552		0.709	

Test of Rational Pricing

Market Efficiency Hypothesis	LR Statistic	Significance	LR Statistic	Significance	LR Statistic	Significance
$\gamma_1 = -\gamma_1^*$ (PI_DOM)	1.74	0.187	8.490***	0.003	0.14	0.710
$\gamma_2 = -\gamma_2^*$ (PI_FOR)	6.81***	0.009	0.770	0.380	1.85	0.173

Notes: this table presents results of estimating the system of equations (4) and (5) using an iterative non-linear generalized least squares procedure. All standard errors are based on asymptotic approximations. All variables are defined in Appendix A.

TABLE 6
Differences in Cash Effective Tax Rates

Dependent Variable =	Cash ETR Coefficient (t-stat)
<i>Intercept</i>	0.117 (1.39)
<i>HIGH_AFL</i>	0.015 (1.12)
<i>LOW_AFL</i>	-0.019 (-1.23)
<i>Tech</i>	0.010 (0.55)
<i>Size</i>	0.004 (0.76)
<i>Cash</i>	-0.003 (0.00)
<i>PPE</i>	-0.076 (-1.17)
<i>ROA</i>	-0.129 (-0.93)
<i>DEPR</i>	-0.263 (-0.67)
<i>FTR5</i>	-0.092** (-2.52)
<i>BTM</i>	-0.020 (-0.60)
<i>R&D</i>	-0.872*** (-3.56)
<i>AD</i>	-0.267* (-1.75)
<i>EqInc</i>	-0.070 (-0.07)
<i>PctForeignIncome</i>	0.011 (0.56)
<i>Lev</i>	-0.060 (-1.13)
<i>NOL</i>	0.003 (0.27)
<i>SGA</i>	0.149*** (3.15)
Year Fixed Effects	Yes
Industry Fixed Effects	Yes
Clustered Standard Errors	Firm
Observations	1,003
Adjusted R-Squared	14.35%

Notes: All variables are defined in Appendix A. All continuous variables are winsorized at the 1% and 99% levels. T-statistics are reported below coefficient estimates. The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.