What do multinationals' disclosures of the number of U.S. versus foreign employees tell us?

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Abstract

Data from a 2009 U.S. Commerce Department survey indicates that U.S. Multinationals decreased their U.S. work forces by 2.9 million during the preceding decade while increasing their employment overseas by 2.4 million. This pattern is not reflected in the domestic versus foreign employment pattern of U.S. multinationals that voluntarily disclosed geographical employment data. We examine U.S. multinationals' choice to disclose the number of employees by geographical segment and find results consistent with the concerns over potential political repercussions and employee backlash affecting this choice. We further find that Big 4 auditor use reduces the likelihood of geographical segment disclosure. We consider several alternative methods to address the potential bias in examining only the disclosed data to study concerns about U.S. employment numbers. Using estimated U.S. employees from these models, we find that the domestic versus foreign employment patterns for non-disclosers are more similar to the overall domestic vs. foreign employment in the Census Bureau Survey. These results are consistent with the notion that to the extent that firms are concerned with political pressure and employee backlash resulting from a reduction in domestic employees accompanied by an increase in foreign employees, firms choose not to disclose the number of employees by geographical segment to avoid these negative reactions.

1. Introduction

According to Bureau of Labor Statistics data, the U.S. unemployment rate has exceeded 8% since January of 2009, resulting in the longest period of consecutive monthly unemployment above 8% since record keeping was begun in 1948. Concern about the unprecedented period of high unemployment has been the focus of a great deal of political and media attention. Of particular concern is the increase in corporate profits unaccompanied by job growth that federal bailout money was hoped to stimulate. One potential explanation offered for the inconsistency between profits and job growth is a shift by multinationals to lower cost overseas .

Data from a 2009 U.S. Commerce Department survey indicates that U.S. Multinationals decreased their U.S. work forces by 2.9 million during the preceding decade while increasing their employment overseas by 2.4 million.¹ In an April 19, 2011 Wall Street Journal Article, David Wessel argues that

The Commerce Department's totals mask significant differences among the big companies. Some are shrinking employment at home and abroad while increasing productivity. Others are hiring everywhere. Still others are cutting jobs at home while adding them $abroad^2...$ the growth of their overseas work forces is a sensitive point for U.S. companies.

David Wessel further argues that "*Many of them don't disclose how many of their workers are abroad. And some who do won't talk about it.*" For example, IBM had separately disclosed the number of employees in the U.S. until 2010, but only provided a global headcount in its 2010 10-K filing. When asked about the change in disclosure policy by Computerworld, an IBM spokesmen said 'our competitors report headcount

¹ The survey also indicates that when multinational's sales dropped significantly at the peak of the recession in 2009, these companies cut 5.3% of their U.S. labor but only 1.5% abroad.

² For example from 2005 to 2010, GE cut 1,000 workers overseas and 28,000 in the U.S.; Cisco added 10,900 workers in the U.S. and 21,250 overseas; Honeywell cut 5,000 employees in the U.S. while adding 19,000 jobs overseas.

globally. Going forward we will report it globally.' Similarly, Oracle's director of corporate public relations declined to comment on future hiring or head-count numbers.

The decision not to disclose the number of domestic versus foreign employees may be driven in part by political concerns. For example, in an article entitled "Stripmining America- Unpatriotically" political activist Ralph Nader argues that "while receiving all the public services, subsidies and protections in this country, large corporations have been abandoning America by shifting jobs overseas." Similar sentiments are expressed by political columnist Harold Myerson who argues that:

In an impressive display of industrial-strength chutzpah, corporate America is now demanding lower tax rates even as it daily disinvests in its home country. Worse yet, the new Congress seems likely to grant its wish—lowering taxes indiscriminately on those rare corporations that invest in America and on those more numerous corporations that abandon it. Is it too much to ask of the government that it discriminate between friend and foe? How about rewarding companies that pledge, as Siemens, Daimler, and BMW have in their own country, to keep or create a specified number of highly skilled jobs here at home? How about mandating, as Germany has, that companies put worker representatives on their boards, as a means of slowing corporate flight? America's economic decline is at bottom institutional, and reversing it requires institutional solutions that change the structure of American corporations.

The Washington Post reported on February 1, 2012 that, in an attempt to shed light on the number of American jobs being outsourced, U.S. House Representative Gary Peters (D-Mich.) introduced a bill requiring U.S. firms with revenues over \$1 billion to disclose how many of their jobs are based on U.S. soil and how many are based abroad, and to track the increase or decrease of these figures from the previous year. The article goes on to say that "such data is closely guarded by some of the country's biggest multinationals, including Pfizer, Apple and IBM. Public filings by these firms disclose their total number of employees, but don't specify where those jobs are located." The purpose of this bill is to "incentivize U.S. companies to keep jobs in the U.S." by allowing lawmakers and the public to track which companies are adding jobs in this country with geographical employment disclosure.

Although the lack of availability of data is the subject of this proposed legislation, voluntary disclosure of the number of employees by geographical segments is provided by approximately twenty percent of multinational SEC filers. While the disclosures of these firms could be used to study the concerns raised about U.S. versus foreign employment, ignoring observations with missing data would likely bias inferences since U.S. versus foreign employment likely differs for disclosers versus non-disclosers. To address this potential bias, we consider several alternative methods that differ based on the assumption of whether the selection is ignorable conditional on the independent variables or whether the selection depends on un-observables. Under both assumptions we examine the characteristics of companies that choose to provide geographical segment employment information relative to those that do not, and then use the predictions from these models to estimate the aggregate number of U.S. versus foreign employees for multinationals that do not disclose the number of employees by geographical segment.

Following Imbens and Wooldridge (2007), we use two alternative methods to address potential selection basis under the assumption of conditional ignorability (i.e., selection on observables): inverse probability weighting and imputation. The inverse probability weighting method addresses the selection bias by weighting the observed data using the inverse of an estimated selection probability. The propensity score from a model of the probability that an observation is missing is also used in the imputation method, but, rather than being used as a weight, the propensity score is used to stratifies the sample. Missing values are then imputed based on the non-missing values in each

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group. Although selection bias can be eliminated by imputing a *single* value for the missing data from the propensity stratified groups, the standard errors of the estimates will be biased downward when the missing data is treated as known (Little and Rubin, 2002). Therefore, in addition to using a single imputation method we also use the Bayesian bootstrap multi-imputation method suggested by Little and Rubin (2002).

Under the assumption that the selection depends on un-observables, we estimate a two-stage Heckman selection correction model using instrumental variables to capture the un-observables. In addition to the difference in the selection assumptions and exogenous instrument requirement, the Heckman procedure also assumes data normality, in contrast to the non-parametric grouping approach used in the imputation method.

Our analyses of the characteristics of companies that choose to disclose the breakout between domestic and foreign employees suggest that the disclosure choice is likely determined by several factors. First, the disclosure choice may, at least in part, be driven by concerns about political backlash. Specifically, firms are less likely to disclose if they are expanding geographically, reflected in increases in the number of geographical segments, and are more likely to disclose when they operate in regions with higher tax rates. Further, employee perceptions may also affect the disclosure choice based on our findings that firms are more likely to disclose if they provide pension or post-retirement benefits, and are less likely to disclose if they operate in foreign areas or countries where wages are consistently lower than U.S. wages. Finally, we find that firms audited by a big four firm are less likely to disclose, suggesting that the complementary relation between auditors and financial disclosures found by Ball et al. (2012) may not extend to non-

financial disclosures. These findings are conditional on controlling for U.S. and foreign revenues, firm age, leverage, tangibility and disclosure of segment operating profit.

We analyze the determinants of the employment in the U.S. for disclosers only, incorporating imputed data, adjusting for the inverse probability weight, and applying the Heckman correction method. While domestic employment is not negatively affected by foreign activity for those that disclose geographical employment, the imputed data suggests that foreign activity negatively affects U.S. employment for those who choose not to disclose. This finding further indicates that multinationals choose not to disclose their U.S. employment data when they are substituting foreign for U.S. jobs.

Using various methods to estimate or impute the missing data of domestic vs. foreign employees for non-disclosers, we find that, in aggregate, multinationals reporting the number of U.S. versus foreign employees display an increase in both categories consistent with a significant positive correlation between U.S. and foreign employment rather than the opposing trend documented in the Commerce Department survey. In contrast, estimates of the number of U.S. versus foreign employees for those that do not disclose this information suggest a decline in U.S. employment and an increase in foreign employment, consistent with the Commerce Department survey results. These macro findings suggest that firms may choose not to disclose the number of employees by geographical segment when these numbers might be viewed unfavorably in the U.S.

Our paper contributes to the debate over the disclosure of the number of U.S. employees of multinational corporations and speaks directly to Representative Gary Peters proposed legislation by showing that there is a systematic bias in the numbers voluntarily disclosed towards companies that are hiring more employees both in the U.S.

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and globally and away from companies that are shrinking U.S. employees while growing jobs globally. We also make contributions to the disclosure literature by introducing the use of Bayesian bootstrapping imputation, which is commonly used in analyzing survey data, to analyses of voluntary disclosures in SEC filings. Our study also suggests that researchers need to be cautious about whether missing data can be ignored when analyzing variables that are sometimes missing. In our setting, the relation between U.S. and foreign employees depends on the disclosure decision and therefore ignoring missing data may generate inaccurate inferences.

Finally, our study contributes to the segment disclosure literature. Previous studies focus on the consequences of segment disclosure of financial information. For example, Hope and Thomas (2008) examine the effect of segment profit disclosures on empire building in the post SFAS 131 regime. Similarly, Berger and Hann (2007) also interpret firms' decisions to conceal segment profit information using agency theory. Our study differs from theirs by examining non-financial segment disclosures.

Background information for this study is provided in section 2. Our research design is described in Section 3. Data and descriptive statistics are provided in Section 4. Results are reported in Section 5 and conclusions are drawn in Section 6.

2. Background

2.1 Employment and Segment Disclosure Requirements

In Item 1 of the 10-K, SEC filers are required to discuss their business, including, among other things, identifying the number of employees. Although there is no regulatory requirement to disclose the number of employees by geographical region, the

Historical Segments database within COMPUSTAT indicates that roughly 20% of 10-K filers provide a breakout of domestic vs. foreign employees.

Under SFAS No. 131, companies must disclose revenues from external customers by geographical segment, but they are not required to disclose segment profits or employment information. Berger and Hann (2007) exploit the accounting rule change and find that firms with higher agency costs are more inclined to conceal segment profits. Consistent with their findings, Hope and Thomas (2008) find that in the post SFAS 131 regime, firms concealing geographical earnings information are more likely to engage in empire building. The disclosure incentives for non-financial information likely differ from those studied in this research.

2.2 Employee Disclosure Incentives

Multinational corporations' incentives to voluntarily provide information about the number of U.S. versus foreign employees may be affected by the potential for political pressure against outsourcing, including potential tax law changes, employee backlash and negative publicity. Consistent with these disclosure incentives, the results of a poll of 180 corporate executives conducted by the consulting firm Diamond Cluster International released on PRNewire (2004) stated that "85% of the executives were concerned about legislation or political pressure against outsourcing, while 84% were worried about backlash from employees. And 62% said they were worried about negative corporate publicity that could be created by outsourcing."

The disclosure incentives may differ depending on whether companies are growing overall and particularly whether growth is occurring in the U.S. or elsewhere. If employment is growing in both the U.S. and abroad, the likelihood of disclosing

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geographical employment is increased relative to when employment growth occurs overseas but not in the U.S.

The disclosure incentives may also depend on the location and type of foreign jobs. The Council on Foreign Relations notes that "Thea Lee, policy director for the AFL-CIO, says much of the economic data supporting the link between overseas investment and domestic job growth fails to distinguish between foreign investment used to serve market demand for U.S. goods and services and foreign investment used to buy cheaper labor abroad." That is, some companies hire foreign workers to sell products produced in the U.S., but others hire foreign workers to shift production from the U.S. For example, if companies run operations in low-wage countries, then it is more likely that foreign investment is used to buy cheap labor abroad instead of selling American products, thereby reducing companies' incentives to disclose geographic employment.

A potential political repercussion of outsourcing employment by U.S. firms that might affect multinationals' disclosure decisions relates to potential tax law changes. In his 2012 State of the Union address, President Obama proposed "Making companies pay a minimum tax for profits and jobs overseas and investing the savings in cutting taxes here at home, especially for manufacturing": The President is proposing to "eliminate tax incentives to ship jobs offshore by ensuring that all American companies pay a minimum tax on their overseas profits, preventing other countries from attracting American business through unusually low tax rates." Because of this potential tax consideration, multinationals may be more likely to disclose geographical employment if they pay relatively higher tax overseas.

Firms also may choose not to disclose geographical headcount to avoid employee

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backlash. For example, based on an article "IBM layoffs incite backlash" on Network World (2009), when IBM revealed that it would shed some 5,000 North American jobs and potentially send more positions overseas, it "has stirred up some bad sentiment toward Big Blue as the economy continues to languish." The idea that firms may avoid disclosing U.S. employment information to hide information from workers is further supported by a Washington Post article quoting Lee Conrad, national coordinator for Alliance@IBM, a group trying to unionize IBM workers that is concerned about IBM's decision to stop disclosing this information, as saying that 'IBM can do as it wishes, and the rest of us have to guess.'

Evidence consistent with multinationals' concerns about negative publicity due to outsourcing is provided in a Washington Post article quoting Jeff Immelt, CEO of GE and head of President Obama's job council as saying "firms should be ready to answer questions from the public" and that "if you want to be an admired company, you better know, you better have accountability, and you better think through where the jobs are."

Multinationals' incentives to voluntarily disclose information about U.S versus foreign employment in their SEC filings may also be affected by their auditors. Ball et al. (2012) argue that audited financial reporting and voluntary disclosure of managers' private financial information are complementary. We consider the possibility that there may also be a relation between the type of auditor and non-financial disclosures.

3. Research Design

3.1 Geographical Segment Employment Disclosure Choice

We begin by estimating a prediction model of the determinants of the choice to disclose the breakout between domestic versus foreign employees. Specifically, we focus on incentives related to political pressure, employee backlash, and influence of auditors.

We consider several variables that might be associated with the political repercussions of outsourcing employment by U.S. firms including potential tax changes. Specifically, we consider overall growth, measured as total revenue growth and an indicator for merger activity, foreign growth, indicated by the change in the number of geographic segments, and potential political pressure related to taxes, measured using the average tax rates paid in foreign segments. We expect firms that are growing both at home and abroad might be more willing to disclose the number of employees by geographical segment. After controlling for overall growth, we expect that firms that increase their foreign operations would be less likely to voluntarily disclose the breakout of their employment. We also expect that firms that pay higher foreign taxes would be more likely to voluntarily disclose U.S. versus foreign employment.

We capture concerns about employee backlash against foreign investment designed to buy cheaper labor abroad using an indicator variable for firms that operate in countries and areas with wages lower than U.S. wages. We expect firms that operate in these areas and countries might be less willing to disclose the number of employees by geographical segment. We further examine this concern by investigating the effect of pensions or post-retirement benefits on the disclosure decisions. We expect companies that provide these benefits to be more concerned about employee backlash and therefore less likely to disclose geographical segment employment.

Finally, based on Ball et al.'s (2012) argument that audited financial reporting

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complements voluntary disclosure of financial information, we expect that auditor quality may also be associated with segment employment disclosure. Specifically, we examine the relation between firms' using a Big 4 audit firm and the disclosure of geographical segment employment. In addition, we control for whether firms disclose segment operating profits and segment capital expenditure to ensure that we are not capturing the overall geographical segment disclosure tendencies. Further, we control for variables from the prior literature that are associated with voluntary disclosure, such as firm age, firm size, leverage, and tangibility. We also control for fixed Fama/French industry and year effects.

To test the above arguments, we estimate firms' geographical employment disclosure choice using the following model:

$$Disclose = \beta_0 + \beta_1 * \Delta \text{Rev} + \beta_2 * Merge + \beta_3 * \Delta \# \text{Seg} + \beta_4 * Foreign Tax + \beta_5 * Low Wage + \beta_6 * Pension + \beta_7 * Big4 + \Sigma \beta_c * Controls + \Sigma \beta_1 * IFE + + \Sigma \beta_y * YFE + \varepsilon (1)$$

Where:

Disclose:	An indicator that equals 1 if the firm provides geographical segment employee data; 0 otherwise.
ΔRev :	Growth of total revenues, measured as the change in revenue (Compustat
	"revt") divided by lagged revenue.
Merge:	An indicator variable that equals 1 if the growth of total assets (Compustat
	"at") is greater than 10%; 0 otherwise.
Δ#Seg:	Annual change in the number of segments reported by the firm.
Foreign Tax:	Ratio of foreign tax (Compustat "txfo") to foreign revenues (Compustat "revt" – "sales")
Low Wage:	An indicator variable that equals 1 if the firm identifies its segments in any of the following areas or countries where the wage is constantly lower that in the U.S.: Asia (including China, India, Malaysia, etc., Latin America, Africa, Middle East, Caribbean, Mediterranean, Italy or Spain; 0 otherwise.
Pension:	An indicator variable that equals 1 if the firm has either pension employer contribution (Compustat "pbec") or postretirement service cost (Compustat "prc"); 0 otherwise.

Big4: An indicator that equals 1 if the firm uses one of the big 4 auditors: PWC, Ernst & Young, Deloitte and KPMG; 0 otherwise.

Control variables include the following.

US Sales:	Natural log of revenue in the U.S. (Compustat "sales" of the U.S. segment).
Foreign Sales:	Natural log of foreign revenue (Compustat "revt"-"sales").
OP Dis:	An indicator variable that equals 1 if the firm discloses segment operating profit (Compustat "ops"); 0 otherwise.
Capx Dis:	An indicator variable that equals 1 if the firm discloses segment capital expenditure (Compustat "capxs"); 0 otherwise.
Size:	Natural log of total assets (Compustat "at").
EMP:	Total number of employees (Compustat "emp").
Age:	Number of years that the firm has been covered by Compustat up to the data date.
Lev:	Ratio of total debt (Compustat "dlc" + "dltt") to total assets (Compustat "at").
PPE:	Ratio of property, plants and equipment (Compustat "ppent") to the number of employees (Compustat "emp") divided by 1,000.

We use the results of this model to estimate the number of U.S. employees for companies that do not voluntarily disclose this information. For Bayesian bootstrap imputation models, we use Logit estimation to stratify our data into propensity score groups to impute the missing data. For the inverse probability weighting method, the weight for the number of U.S. employees regressions is the inverse of the propensity score from our Logit estimation. Finally, we use Probit estimation to compute the inverse mills ratio used in our two-stage Heckman correction procedure.

3.2 U.S. Employment Model

In an Office of Industries of the U.S. International Trade Commission working paper, Alejandro et al. (2011) summarize the literature examining the relationship between multinationals' foreign activities and employment in the parent company's home country. They report that these studies have found evidence of both complementarity and substitution between international activity and home country employment. For example, Desai, Foley, and Hines (2008) find that U.S. employment grows when foreign employment grows, while Brainard and Riker (1997) find that employment at foreign affiliates substitutes for U.S. employment. Alejandro et al. (2011) consider a model that examines how the log of the number of U.S. employees varies with the log of U.S. and foreign sales, where a positive (negative) coefficient on foreign activity suggests a complementary (substitution) relation. Using a similar model to Alejandro et al. (2011), we examine whether the relation between foreign activities and U.S. employment differs for multinationals that voluntarily disclose U.S employment versus those that choose not to disclose this information.

If multinationals are growing or shrinking their workforces both at home and abroad then we would expect the number of U.S. employees to be positively related to foreign activity, measured using either foreign sales or the number of foreign employees.³ This finding would be consistent with multinationals making foreign investments to serve market demand for U.S. goods and services. On the other hand, we would expect the number of U.S. employees to be negatively associated with these measures of foreign activity if multinationals are increasing the number of foreign employees, while cutting their U.S. employees as some have suggested. This would be consistent with foreign investments being used to buy cheaper labor abroad. To test these arguments, we estimate the following OLS model:

U.S.
$$Emp = \beta_0 + \beta_1 * U.S.$$
 Sales $+ \beta_2 *$ Foreign Sales $+ \beta_3 * Low Wage + \beta_4 * Size$
 $+ \beta_5 * Size^2 + \Sigma \beta_I * IFE + \Sigma \beta_y * YFE + \varepsilon$ (2)

⁴ Imbens and Wooldridge (2007) point out that another problem with inverse probability weighting is that the weighting may actually hurt rather than help if selection is largely a function of covariates that are sometimes missing.

Where:

U.S. Emp:	Natural log of number of employees in the U.S. (COMPUSTAT item
	"emps" for segment identified as '2')
US Sales:	Natural log of revenue in the U.S. (Compustat "sales" of the U.S. segment)
Foreign Sales:	Natural log of foreign revenue (Compustat "revt"-"sales")

and other variables are defined as for equation (1).

3.3 Addressing Missing Data Bias

Accounting and finance research often relies on datasets where data is missing for one or more variables for some sample observations. A typical approach taken to address missing data is to drop these observations from the analysis; however, the appropriateness of this approach depends on the pattern of missing data as well as the reason why the data is missing.

Imbens and Wooldridge (2007) detail the conditions under which ignoring observations does not cause biased inferences. Specifically, they note that ignoring missing data will not produce biased estimates when E(y|x,s) = E(y|x), where y is the dependent variable, x is the independent variable, and s is a binary selection indicator for missing data. They discuss two alternative methods for addressing the bias when this condition does not hold: inverse probability weighting and imputation methods. The conditions for these approaches to be appropriate are similar to those that are necessary for propensity score matching to be appropriate in measuring treatment effects. These approaches are appropriate, when the selection probability conditional on the independent variables is the same as the selection probability conditional on both the dependent and independent variables, i.e. P(s=1|y,x) = P(s = 1|x). This assumption is called unconfoundedness, selection on observables, or conditional ignorability.

The first inverse probability weighting method uses only the observations with complete data, but addresses selection bias by weighting the observations using the estimated selection probability. Wooldridge (2012) discusses problems associated with this method when the predicted probability is close to zero.⁴ The imputation approach uses non-missing observations to impute missing data and then analyzes the resulting complete dataset. When data is missing only for the dependent variable, then the imputation method is appropriate because the unconfoundedness assumption in this case is equivalent to missing at random (MAR) assumption required by most imputation models.

Imputing a single value for the missing data can address the bias caused by selection that is ignorable after conditioning on covariates. However, Little and Rubin (2002) argue that the variance of the estimates caused by the single imputation method is biased downward. To address the bias in the variance they suggest adding a random error term to the imputed value and use an averaging technique on multiple imputed values to derive an appropriate sampling error. The mechanism for multiple imputations depends on the missing data pattern. For monotone missing data, where there is an ordering of the missing data such that if Y_j is missing then all variables Y_k , k > j are also missing, either parametric or nonparametric approaches can be used. For arbitrary missing data patterns Markov Chain Monte Carlo methods can be used.

The propensity score method is a nonparametric approach that can be used for monotone missing data. Under this method, a propensity score is generated for each variable with missing values to indicate the probability of that observation being missing.

⁴ Imbens and Wooldridge (2007) point out that another problem with inverse probability weighting is that the weighting may actually hurt rather than help if selection is largely a function of covariates that are sometimes missing.

Specifically, a Logit model can be estimated on an indicator variable for missing data on a set of covariates that includes not only the independent analysis variables but also auxiliary variables that predict the underlying missing data to generate the propensity score. Observations can then be grouped based on these propensity scores, and an approximate Bayesian bootstrap imputation is applied to each group.

The number of imputations required to obtain an efficient estimator will depend on the extent to which the data is missing. Specifically, Rubin (1987) states that the relative efficiency (RE) of using *m* imputations depends on the fraction of missing data λ based on the following formula: RE= $(1 + \lambda/m)^{-1}$. This is consistent with needing only 2 imputations to achieve 95% efficiency when only 10% of the data is missing versus 19 imputations to achieve the same relative efficiency when 90% of the data is missing.⁵ Once the imputations have been created, the *m* completed datasets are analyzed using the same procedures that would be used in the absence of missing data. The results from the analyses of the *m* datasets are then combined to produce unbiased variance estimates.

Imbens and Wooldridge (2007) also discuss the use of a Heckman correction procedure that can be used if the "selection on observables" assumption (i.e., (P(s=1|y,x) = P(s = 1|x)) is not expected to hold. In other words, the advantage of the Heckman approach is that it allows for selection on un-observables. However, this alternative approach also has disadvantages. Specifically, it assumes normality in both the selection model and the second stage model for the underlying variable, and requires identifying instruments that are correlated with the first stage dichotomous choice model, but uncorrelated with the second stage model. In our case, we use missing geographical

⁵ We use 20 imputations in our analysis, which, based on Rubin (1987), should be relatively efficient given that in our sample,19.25% of firms disclose geographic employment, ,

segment operating profit and capital expenditure disclosures, and auditor type variables as our instrumental variables assuming that they affect the disclosure choice but do not affect the number of U.S. employees.

4. Data and Descriptive Statistics

A sample of U.S. firms with 500 or more employees that disclose geographical segment sales data for two or more segments is drawn from the Historical Segment database within COMPUSTAT for the period from 2000 to 2010.⁶ This results in a sample of 16,756 firm year observations for 2,586 separate firms. After requiring non-missing control variables collected from COMPUSTAT, we have 14,752 firm-year observations for 2,333 firms. Of these, 2,835 observations disclose the number of employees by segment and 11,917 do not.

Table 1 provides descriptive statistics of firm characteristics partitioned by whether firms provide geographical employment disclosures. The table also provides significance tests for differences in means and provides the normalized differences that can be used to assess the adequacy of the overlap between the covariates for the two groups. While the means tests find significant differences between the two groups for most characteristics, none of the normalized differences exceeds the .25 threshold suggested by Wooldridge (2012), indicating adequate overlap for all of the characteristics for imputation models using propensity score groupings. Table 1 shows that there is no significant difference in asset size, leverage or market to book ratios between these two groups. However, disclosing firms have a larger number of global employees, a smaller

⁶ We delete observations if any segment sales are greater than the total sales or if segment sales are less than zero.

growth in geographical segments, greater sales in the U.S., and are less likely to be audited by a Big 4 auditor.

The correlations between the characteristics provided in Table 2 indicate a positive but small correlation between the geographical employee and operating profit and capital expenditure disclosures. This suggests that the geographical disclosure choices are not all or nothing decisions, and whether firms disclose geographical segment employment is a separate choice from other segment disclosures.

5. Results

5.1 Multivariate Models

Table 3 provides the results of our Logit and Probit models of the geographical employment disclosure choice. Although we find no significant association between the disclosure decision and overall firm growth, measured either by revenue growth or merger activity, we find in both models that firms expanding their foreign operations, captured by an increase in the number of geographical segments, are less likely to disclose. In addition, we find that firms that pay higher foreign tax rates are more likely to disclose. These associations of disclosure with foreign growth and taxes are consistent with the possibility that firms are concerned about political repercussions of outsourcing jobs.

Evidence that concerns about employee backlash affect the disclosure decision is provided by the negative association between disclosure and operations in areas and countries with low wages and by the positive association between disclosure and pension and post-retirement benefits. In contrast to the findings in Ball et al. (2012) for financial disclosures, we find that multinationals audited by one of the Big 4 are less likely to disclose geographical employment data.⁷

In addition to our test variables, we find that several of our control variables are significantly correlated to the disclosure choice. Specifically, we find that firms are less likely to disclose when they have more (less) revenues earned in the U.S. (abroad), and when the firm is older. Finally, firms are more likely to disclose geographical employment data when they also disclose geographical operating performance, and when foreign revenues are higher.

Table 4 provides statistics based on the distribution of the propensity score to disclose geographical segment employment for our sample firms, including both disclosure and non-disclosure groups, which can be used to assess the overlap in the multivariate covariate distributions. As expected, the percentage of firms disclosing geographical employment data is increasing across the propensity score quintiles. In addition, consistent with sufficient univariate overlap for all of the covariates as shown in Table 1, there appears to be sufficient multivariate covariate overlap in each quintile.

Table 4 also provides the mean U.S. employees for firms that disclose and for the estimates for non-disclosures based on imputation and inverse probability weighting methods, and for completeness for the Heckman correction method.⁸ The difference in the mean number of imputed U.S. employees versus the mean number of disclosed U.S. employees is insignificant in all but one quintile. In contrast, the difference in the mean

⁷ The economic magnitudes of these determinants are also significant. For example, firms operating in low wage areas or countries are 3.8% less likely to disclose geographical employment, firms audited by one of the Big 4 are 5% less likely to disclose, and firms providing pension and post-retirement benefits are 3.5% more likely to disclose. These figures are large given the average disclosure rate is less than 20%.

⁸ The dependent variable in the Table 5 regressions is the natural log of the number of employees. We take the exponential of the predicted log numbers to compute total employees for inverse probability weighting and Heckman models. For imputation models, we directly impute the numbers of employees.

number of inverse probability weighted U.S. employees versus the mean number of disclosed U.S. employees is significant in three of the five quintiles including both of the extreme quintiles. One weakness of the inverse probability weighting method noted by Imbens and Wooldridge (2007) is the sensitivity of the results to small and large predicted probabilities. This is consistent with the significant differences in employment numbers detected in the extreme quintiles and suggests that the inverse probability weighting may not be as effective as the imputation method in our setting in addressing biases caused by missing data . (The difference in means for the Heckman model relies on a probit prediction model rather than the logit model used in the inverse probability model.)

The results of our analysis of the determinants of U.S. employment are provided in Table 5 for disclosers only ignoring missing data, using inverse probability weighting, and Heckman correction techniques, and for disclosers and non-disclosers combined using single and multiple imputation. The coefficient estimates for single and multiple imputation methods are generally similar, although the significance levels for the single imputation are greater, which is consistent with a downward bias in the standard errors as noted by Little and Rubin (2002). When we ignore missing data, we do not find a significant relation between the number of U.S. employees and foreign activity. This is in contrast to the significant negative association that we observe for both the single and multiple imputation models. This difference in findings is consistent with multinationals choosing not to disclose their U.S. employment data when they are substituting foreign for U.S. jobs. The coefficient estimates for the propensity score and Heckman correction

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models are much closer to those for disclosers only, and the coefficients on the foreign sales variable remains insignificant in the weighted models. These findings seem to suggest that the effectiveness of imputation models in correcting the missing data bias is better than that of propensity weighted model and Heckman correction model in our setting.

5.2 Macro Data

To gain insights on whether disclosure decision is a function of geographical employment and to investigate whether the overall employment trend depicted by U.S. Census Bureau Survey maps into the employment of disclosers vs. non-disclosers, we draw graphs of domestic vs. overseas headcounts for disclosers and non-disclosers based on various estimation models. Figure 1 reports the difference between the current year and year 2000 U.S. employees reported in the U.S. Census Bureau Survey for domestic versus foreign employees of multinational corporations. The number of U.S. employees declined throughout the decade, while foreign employees increased until 2009. The overall data is consistent with a substitution of foreign jobs for U.S. jobs.

Figure 2 reports the difference between current year employees and year 2000 employees for domestic and foreign employees for multinationals that disclose employees by geographical segment. The figure shows that while foreign employees increase by somewhat more during this period than did domestic employees, the two series generally track in the same direction. This is in contrast to the pattern documented in Commerce Department Survey where changes in domestic and foreign employees move in opposite directions.

Based on the imputation method, Figure 3 reports estimates of the difference between current year employees and year 2000 employees for domestic and foreign employees for multinationals that do not disclose employees by geographical segment. For these non-disclosers, the change in domestic versus foreign employees is much more consistent with the pattern suggested by the Commerce Department Survey. Specifically, the number of foreign employees increased somewhat throughout most of the period, except for 2009 and 2010, while the number of domestic employees fell precipitously throughout.

Based on the propensity weighting method, Figure 4 reports estimates of the difference between current year employees and year 2000 employees for domestic and foreign employees for multinationals that do not disclose employees by geographical segment. Again the pattern of differences in foreign vs. domestic employment looks more like that reported in the Commerce Department Survey than by multinationals who voluntarily disclosed their geographical segment employment.

Figure 5 reports estimates based on the Heckman correction method of the difference between current year employees and year 2000 employees for domestic and foreign employees for multinationals that do not disclose employees by geographical segment. Again the pattern of differences in foreign vs. domestic employment resembles that reported in the Commerce Department Survey more than by multinational disclosers.

To the extent that firms are concerned with political pressure, employee backlash and corporate reputational effects resulting from a reduction in domestic employees accompanied by an increase in foreign employees, these figures are consistent with firms choosing not to disclose the number of employees by geographical segment to avoid these negative reactions.

5.3 Robustness Tests

To address potential concerns about the stickiness of the disclosure choice and to exploit the changes in disclosure policy, we estimate our disclosure choice model separately for two subsamples. Specifically, we examine the choice to discontinue disclosure for multinationals that previously disclosed, and the choice to initiate disclosure for multinationals that had previously not disclosed. The results of those estimations are provided in Table 6. The predicted signs of the coefficients for the decision to stop disclosing are the opposite of those for the decision to start disclosure. In large part the inferences from these models are the same as those from the disclosure model reported in Table 3 with the exception of the Low Wage variable, which is insignificant in both the stop and start models. We also find that the Big 4 variable is significant in the stop model but not in the start model, indicating that multinationals with a Big 4 auditor are more likely to stop disclosing but do not differ in the likelihood of starting to disclose.

We address concerns about the indirect nature of the explanatory variables and correlated omitted variables in our prediction model by conducting a falsification test on business segment employment disclosures. We would not expect our test variables related to political repercussions and employee backlash over outsourcing jobs to be related to the business segment employment disclosure decision. However, if these proxies are capturing other omitted variables that are generally related to employment disclosures then we would expect they would predict both business and geographical employment disclosure choices. The results of this analysis are reported in Table 7. We do not observe significant coefficients on the change in geographical segment variable, the foreign tax variable, or the Big 4 variable suggesting that these variables are capturing something specific to the geographical segment disclosure choice. The coefficients on the Pension and Low Wage variables are significant but with opposite signs in the business segment versus the geographical segment disclosure models. These results suggest that these variables we use to capture political repercussions and employment backlash concerns do not just capture overall (employment) disclosure or omitted variables.

6. Conclusions

We examine the choice by U.S. multinational firms to disclose the number of employees by geographical segment. Consistent with concerns over potential political repercussions from outsourcing jobs, we find that firms that are expanding geographically are less likely to disclose geographical segment employment numbers, while firms that pay higher foreign taxes are more likely to disclose this information. We also find that concerns about employee backlash may affect the disclosure decision as evidenced by a reduced likelihood of disclosure by multinationals that operate in foreign countries and areas with lower wages and by an increased likelihood of disclosure by firms that offer pension and post-retirement benefits to their employees, although our falsification tests suggest a more nuanced interpretation of these findings is required. We further find that the use of a Big 4 auditor reduces the likelihood of geographical segment disclosure.

We consider several alternative methods to address the potential bias caused by merely dropping the observations with missing data, since the expected number of U.S. versus foreign employees is likely to differ for those who select to disclose versus those

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who do not. Assuming conditional ignorability, we use single imputation, multiple imputation, and inverse probability weighting methods, and we use a two-stage Heckman selection correction to address the possibility of selection based on the assumption of selection on unobservables. Using the estimates of U.S. employees from these models, we find that the employment patterns in the U.S. vs. overseas for non-disclosers are more similar to the overall domestic vs. foreign employment in the Census Bureau Survey, than disclosers of geographical employment. These results are consistent with the notion that to the extent that firms are concerned with political pressure and employee backlash resulting from a reduction in domestic employees accompanied by an increase in foreign employees, firms choose not to disclose the number of employees by geographical segment to avoid these negative reactions.

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	Firms t	hat disclos employm	se segment ent	Firms segr	that do no nent empl	t disclose oyment	Difference between means	Normalized difference
Variables	Mean	Median	Standard	Mean	Median	Standard	t-statistics	$(\Delta x = \frac{\bar{X}_1 - \bar{X}_0}{\sqrt{1-x_0}})$
	(X_1)		Deviation (S ₁)	(X_0)		Deviation (S ₀)		$\sqrt{S_1^2 + S_0^2}$
ΔRev	0.106	0.072	0.269	0.109	0.073	0.279	-0.48	-0.008
Merge	0.380	0.000	0.485	0.363	0.000	0.481	1.71*	0.025
∆#Seg	0.031	0.000	0.947	0.090	0.000	1.112	-2.59***	-0.040
Foreign	0.028	0.021	0.028	0.023	0.017	0.028	7.59***	0.126
Tax								
Low	0.526	1.000	0.499	0.505	1.000	0.500	2.01**	0.030
Wage								
Pension	0.513	1.000	0.500	0.485	0.000	0.500	2.70***	0.040
Big4	0.905	1.000	0.293	0.936	1.000	0.246	-5.67***	-0.081
OP Dis	0.210	0.000	0.407	0.132	0.000	0.339	10.54***	0.147
Capx Dis	0.120	0.000	0.324	0.072	0.000	0.259	8.29***	0.116
US Sales	6.346	6.199	1.581	6.520	6.403	1.684	-5.20***	-0.075
Foreign	5.797	5.521	1.805	5.632	5.520	1.836	4.30***	0.064
Sales								
Size	7.119	6.914	1.687	7.140	6.911	1.639	-0.63	-0.009
Emp	1.502	1.379	1.472	1.537	1.281	1.416	-1.19	-0.017
Age	22.621	16.000	16.720	23.461	17.000	16.431	-2.44**	-0.036
Lev	0.239	0.202	0.225	0.245	0.208	0.228	-1.28	-0.019
PPE	0.085	0.040	0.199	0.109	0.039	0.270	-4.35***	-0.072
Ν		2,835			11,917			

 Table 1: Descriptive Statistics Partitioned by Segment Employment Disclosure

Note: ***, **, and * represent the 1%, 5% and 10% significance levels, respectively.

Variable Definitions:

∆Rev:	Growth of total revenues, measured as the change in revenue (Compustat
	"revt") divided by lagged revenue.

Merge: An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.

 Δ #Seg: Annual change in the number of segments reported by the firm.

- Foreign Tax: Ratio of foreign tax (Compustat "txfo") to foreign revenues (Compustat "revt" "sales").
- Low Wage: An indicator variable that equals 1 if the firm identifies its segments in any of the following areas or countries where the wage is constantly lower that in the U.S.: Asia (including China, India, Malaysia, etc., Latin America, Africa, Middle East, Caribbean, Mediterranean, Italy or Spain; 0 otherwise.
- Pension: An indicator variable that equals 1 if the firm has either pension employer contribution (Compustat "pbec") or postretirement service cost (Compustat "prc"); 0 otherwise.

Big4:	An indicator that equals 1 if the firm uses one of the big 4 auditors: PWC,
	Ernst & Young, Deloitte and KPMG; 0 otherwise.
OP Dis:	An indicator variable that equals 1 if the firm discloses segment operating
	profit (Compustat "ops"); 0 otherwise.
Capx Dis:	An indicator variable that equals 1 if the firm discloses segment capital
	expenditure (Compustat "capxs"); 0 otherwise.
US Sales:	Natural log of revenue in the U.S. (Compustat "sales" of the U.S.
	segment).
Foreign Sales:	Natural log of foreign revenue (Compustat "revt"-"sales").
Size:	Natural log of total assets (Compustat "at").
EMP:	Natural log total number of employees (Compustat "emp").
Age:	Number of years that the firm has been covered by Compustat up to the
	data date.
Lev:	Ratio of total debt (Compustat "dlc" + "dltt") to total assets (Compustat
	"at").
PPE:	Ratio of property, plants and equipment (Compustat "ppent") to the
	number of employees (Compustat "emp") divided by 1,000.

Table 2: Pearson Correlations (and p-values)

	ΔRev	Merge	∆#Seg	Foreign	Low	Pension	Big4	OP Dis	Capx	US	Foreign	Size	Emp	Age	Lev	PPE
				Tax	Wage				Dis	Sale	Sale					
Disclose	-0.004	0.014	-0.021	0.062	0.017	0.022	-0.047	0.086	0.068	-0.043	0.035	-0.005	-0.010	-0.020	-0.011	-0.036
	(0.628)	(0.087)	(0.010)	(0.001)	(0.044)	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.530)	(0.001)	(0.015)	(0.200)	(0.001)
ΔRev		0.422	0.033	0.061	0.008	-0.126	-0.017	-0.005	-0.008	-0.063	-0.059	-0.014	-0.093	-0.153	-0.081	0.036
		(0.001)	(0.001)	(0.001)	(0.305)	(0.001)	(0.044)	(0.570)	(0.350)	(0.001)	(0.001)	(0.088)	(0.001)	(0.001)	(0.001)	(0.001)
Merge			0.013	0.097	0.013	-0.131	-0.004	0.007	0.017	-0.027	-0.023	0.012	-0.052	-0.110	-0.144	0.017
			(0.114)	(0.001)	(0.109)	(0.001)	(0.585)	(0.364)	(0.040)	(0.011)	(0.005)	(0.158)	(0.001)	(0.001)	(0.001)	(0.041)
∆#Seg				-0.006	0.078	-0.005	0.001	-0.018	-0.005	-0.029	-0.016	-0.020	-0.015	-0.026	-0.015	-0.008
				(0.452)	(0.001)	(0.547)	(0.889)	(0.026)	(0.515)	(0.001)	(0.054)	(0.014)	(0.082)	(0.002)	(0.070)	(0.345)
Foreign					0.035	0.063	0.015	0.025	0.046	0.131	0.100	0.191	0.091	0.064	-0.017	0.242
Tax					(0.001)	(0.001)	(0.065)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.036)	(0.001)
Low						0.010	-0.017	0.039	0.037	-0.135	0.181	0.003	-0.018	0.019	-0.087	0.011
Wage						(0.216)	(0.045)	(0.001)	(0.001)	(0.001)	(0.001)	(0.688)	(0.028)	(0.021)	(0.001)	(0.173)
Pension							0.117	-0.033	-0.006	0.400	0.417	0.378	0.407	0.444	0.188	0.094
							(0.001)	(0.001)	(0.443)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Big4								0.001	-0.015	0.213	0.224	0.245	0.177	0.041	0.049	0.062
								(0.867)	(0.066)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
OP Dis									0.514	-0.026	0.008	-0.057	-0.011	-0.029	0.028	0.021
									(0.001)	(0.001)	(0.362)	(0.001)	(0.163)	(0.002)	(0.001)	(0.011)
Capx										0.018	0.055	0.002	0.017	-0.018	0.020	0.082
Dis										(0.030)	(0.001)	(0.819)	(0.043)	(0.033)	(0.014)	(0.001)
US Sale											0.715	0.868	0.843	0.414	0.148	0.183
											(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Foreign												0.828	0.746	0.403	0.071	0.156
Sale												(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Size													0.787	0.387	0.149	0.309
													(0.001)	(0.001)	(0.001)	(0.001)
Emp														0.444	0.127	-0.009
														(0.001)	(0.001)	(0.261)
Age															-0.009	0.069
Ũ															(0.297)	(0.001)
Lev																0.149
																(0.001)

<u>Variable Definitions</u>: Disclose: An indicator variable that equals 1 if the firm discloses geographic segment employment (Compustat "emps"); 0 otherwise.

- $\Delta \text{Rev:} \qquad \text{Growth of total revenues, measured as the change in revenue (Compustat "revt") divided by lagged revenue.} \\ \text{Merge:} \qquad \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.} \\ \text{An indicator variable that equals 1 if the growth of total assets (Compustat$
- Δ #Seg: Annual change in the number of segments reported by the firm.
- Foreign Tax: Ratio of foreign tax (Compustat "txfo") to foreign revenues (Compustat "revt" "sales").
- Low Wage: An indicator variable that equals 1 if the firm identifies its segments in any of the following areas or countries where the wage is constantly lower that in the U.S.: Asia (including China, India, Malaysia, etc., Latin America, Africa, Middle East, Caribbean, Mediterranean, Italy or Spain; 0 otherwise.
- Pension: An indicator variable that equals 1 if the firm has either pension employer contribution (Compustat "pbec") or postretirement service cost (Compustat "prc"); 0 otherwise.
- Big4: An indicator that equals 1 if the firm uses one of the big 4 auditors: PWC, Earnst & Young, Deloitte and KPMG; 0 otherwise.
- OP Dis: An indicator variable that equals 1 if the firm discloses segment operating profit (Compustat "ops"); 0 otherwise.
- Capx Dis: An indicator variable that equals 1 if the firm discloses segment capital expenditure (Compustat "capxs"); 0 otherwise.
- US Sales: Natural log of revenue in the U.S. (Compustat "sales" of the U.S. segment).
- Foreign Sales: Natural log of foreign revenue (Compustat "revt"-"sales").
- Size: Natural log of total assets (Compustat "at").
- EMP: Natural log of total number of employees (Compustat "emp").
- Age: Number of years that the firm has been covered by Compustat up to the data date.
- Lev: Ratio of total debt (Compustat "dlc" + "dltt") to total assets (Compustat "at").
- PPE: Ratio of property, plants and equipment (Compustat "ppent") to the number of employees (Compustat "emp") divided by 1,000.

		Logit	Probit
Variables	Predictions	Coefficients	Coefficients
		(Clustered z-stats)	(Clustered z-stats)
Intercept	?	1.462	0.842
1		(1.18)	(1.14)
ΔRev	+	-0.091	-0.047
		(-0.86)	(-0.86)
Merge	+	0.072	0.035
		(1.24)	(1.06)
∆#Seg	-	-0.040	-0.024
		(-2.52)**	(-2.65)***
Foreign Tax	+	7.229	4.097
		(5.00)***	(4.89)***
Low Wage	-	-0.262	-0.151
		(-2.49)**	(-2.56)**
Pension	+	0.268	0.150
		(2.14)**	(2.11)**
Big4	?	-0.307	-0.173
		(-1.91)*	(-1.85)*
OP Dis	+	0.554	0.316
		(4.00)***	(3.95)***
Capx Dis	+	0.209	0.132
		(1.13)	(1.24)
US Sales	?	-0.311	-0.179
		(-4.11)**	(-4.13)***
Foreign Sales	?	0.134	0.075
		(2.20)**	(2.25)**
Size	?	-0.342	-0.181
		(-1.53)	(-1.41)
Size^2	?	0.033	0.0178
		(2.24)**	(2.17)**
Emp	?	0.046	0.023
		(0.45)	(0.49)
Age	?	-0.009	-0.006
		(-2.40)**	(-2.47)**
Lev	?	0.031	0.011
		(0.45)	(0.09)
PPE	?	-0.616	-0.355
		(-1.69)*	(-1.91)*
Industry Fixed Effects		YES	YES
Year Fixed Effects		YES	YES
N		14,752	14,752
Pseudo R-Squared		0.0633	0.0632

Table 3: Logit/Probit Model of Disclosure of Employment by Geographic Segment

Note: ***, **, and * represent the 1%, 5% and 10% significance levels, respectively.

Variable Defin	nitions:
ΔRev :	Growth of total revenues, measured as the change in revenue (Compustat "revt")
	divided by lagged revenue.
Merge:	An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%: 0 otherwise.
Δ#Seg:	Annual change in the number of segments reported by the firm.
Foreign Tax:	Ratio of foreign tax (Compustat "txfo") to foreign revenues (Compustat "revt" – "sales").
Low Wage:	An indicator variable that equals 1 if the firm identifies its segments in any of the following areas or countries where the wage is constantly lower that in the U.S.: Asia (including China, India, Malaysia, etc., Latin America, Africa, Middle East, Caribbean, Mediterranean, Italy or Spain; 0 otherwise.
Pension:	An indicator variable that equals 1 if the firm has either pension employer contribution (Compustat "pbec") or postretirement service cost (Compustat "prc"); 0 otherwise.
Big4:	An indicator that equals 1 if the firm uses one of the big 4 auditors: PWC, Earnst & Young, Deloitte and KPMG; 0 otherwise.
OP Dis:	An indicator variable that equals 1 if the firm discloses segment operating profit (Compustat "ops"); 0 otherwise.
Capx Dis:	An indicator variable that equals 1 if the firm discloses segment capital expenditure (Compustat "capxs"); 0 otherwise.
US Sales:	Natural log of revenue in the U.S. (Compustat "sales" of the U.S. segment).
Foreign Sales:	Natural log of foreign revenue (Compustat "revt"-"sales").
Size:	Natural log of total assets (Compustat "at").
EMP:	Natural log of total number of employees (Compustat "emp").
Age:	Number of years that the firm has been covered by Compustat up to the data date.
Lev:	Ratio of total debt (Compustat "dlc" + "dltt") to total assets (Compustat "at").
PPE:	Ratio of property, plants and equipment (Compustat "ppent") to the number of employees (Compustat "emp") divided by 1,000.

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Propensity Score Range	0.002-	0.111-	0.154-	0.199-	0.265-
	0.111	0.154	0.199	0.265	0.811
Mean (std) propensity score	0.0782	0.132	0.176	0.229	0.346
	(0.024)	(0.012)	(0.013)	(0.019)	(0.080)
% of disclosers	7.77	14.81	17.22	22.54	33.86
Mean (std) of U.S. employees for disclosers	13.069	7.772	7.755	7.544	7.861
	(21.785)	(16.631)	(15.430)	(15.850)	(18.303)
Non-parametric estimated Mean (std) of imputed U.S. employees for	13.329	10.110	8.157	7.308	7.067
non-disclosers	(19.096)	(17.908)	(15.770)	(16.058)	(17.873)
Parametric (Inverse Probability Weighting) estimated mean (std) of U.S.	9.894	7.276	7.077	5.567	6.419
employees for non-disclosers+	(16.964)	(15.214)	(15.833)	(11.660)	(14.922)
Parametric (Heckman) estimated mean (std) of U.S. employees for non-	7.344	5.736	5.644	4.526	5.333
disclosers+	(12.388)	(12.075)	(12.699)	(9.581)	(12.639)
Difference (t-statistic) between mean imputed and mean disclosed	0.26	2.34	0.402	-0.436	-0.794
	(0.49)	(2.92)	(0.58)	(-0.39)	(-1.35)
Difference (t-statistic) between mean inverse probability weighted and	-3.175	-0.50	-0.678	-2.177	-1.442
mean disclosed	(-2.14)	(-0.58)	(-0.90)	(-2.99)	(-2.15)
Difference (t-statistic) between mean Heckman and mean disclosed	-5.275	-2.036	-2.111	-3.218	-2.528
	(-3.90)	(-2.45)	(-2.89)	(-4.67)	(-3.91)

Table 4: Descriptive statistics by logit model propensity score quintiles

+: The estimated employees numbers are predicted using the employee model in Table 5

	1					
		Disclosers	Single	Multiple	Propensity	Heckman
		Only	Imputation	Imputation	Weighted	Model+++
			Model	Model	Model	
Variables	Sign	Coefficients	Coefficients	Coefficients	Coefficients	Coefficients
		(clustered t-	(t-stats)	(t-stats)+	(clustered t-	(clustered t-
		stats)			stats)	stats)
Intercept	?	0.833	5.643	5.669	0.767	0.744
-		(2.22)**	(23.65)***	(20.08)***	(1.94)**	(1.92)*
US Sales	+	0.732	0.249	0.262	0.783	0.719
		(17.48)***	(13.10)***	(10.58)***	(18.66)***	(15.91)***
Foreign Sales	?	-0.018	-0.071	-0.073	-0.023	-0.011
		(-0.63)	(-5.10)***	(-3.69)***	(-0.71)	(-0.37)
Size	?	0.205	0.232	0.197	0.190	0.188
		(1.98)**	(3.77)***	(2.48)**	(1.70)*	(1.76)*
Size^2	?	-0.002	-0.014	-0.012	-0.003	-0.000
		(-0.25)	(-3.61)***	(-2.45)**	(-0.48)	(-0.03)
Inverse Mills						0.121
Ratio						(0.84)
Industry Fixed		YES	YES	YES	YES	YES
Effects						
Year Fixed		YES	YES	YES	YES	YES
Effects						
N		2,835	14,752	14,752	2,835	2,835
Adjusted R-		0.8622	0.0690	0.0716++	0.8575	0.8623
Squared						

Table 5: Determinants of U.S. Employment

***, **, and * represent 1%, 5% and 10% significance levels, respectively.

+: T-stats are based on the estimate coefficients of 20 imputations.

++: The average R-Squared of 20 imputations.

Variable Definitions:

US Sales: Natural log of revenue in the U.S. (Computstat "sales" of the U.S. segment).

Foreign Sales: Natural log of foreign sale (Compustat "revt"-"sales" of the U.S. segment).

Size: Natural log of total assets (Compustat "at").

Table 6: Coefficients and (clustered z-statistics) for Logit Models of Choice to Stop and	ł
Start Disclosure of Employment by Geographic Segment	

Variable	STOP=1 for disclosers that	START=1 for non-disclosers
	stop disclosure	that start disclosure
Intercept	-3.494	-1.106
	(-2.72)***	(-1.14)
ΔRev	0.255	0.156
	(0.91)	(1.00)
Merge	0.034	0.171
	(0.25)	(1.77)*
Δ#Seg	0.223	-0.125
	(3.60)***	(-3.77)***
Foreign Tax	-5.799	6.775
	(-2.03)**	(3.91)***
Low Wage	0.166	-0.150
	(1.15)	(-1.28)
Pension	-0.365	0.243
	(-2.01)**	(1.89)*
Big4	0.750	0.027
	(2.47)**	(0.13)
OP Dis	-0.359	0.318
	(-1.60)	(2.04)**
Capx Dis	0.069	0.254
1	(0.22)	(1.22)
US Sales	0.185	-0.272
	(1.70)*	(-3.55)***
Foreign Sales	0.058	0.288
C	(0.63)	(4.09)***
Size	0.299	-0.508
	(0.93)	(-2.13)**
Size^2	-0.033	0.027
	(-1.79)*	(1.85)*
Emp	0.015	0 124
1	(0,01)	(1 39)
Age	0.002	-0.015
01	(0.10)	(-3 36)***
Lev	0.168	-0.024
	(0.52)	(0,01)
РРЕ	0.270	-0.703
	(0.55)	(-1 71)*
Emp Ratio	-0 119	(1./ 1)
Linp runo	(-1.89)*	
Year and Industry Fixed		VFS
Effects	1123	1 EO
N	2.820	11.931
Pseudo-R Squared	0.088	0.051

***, **, and *	represent 1%, 5% and 10% significance levels, respectively.
Variable Defin	uitions:
ΔRev:	Growth of total revenues, measured as the change in revenue (Compustat "revt") divided by lagged revenue.
Merge:	An indicator variable that equals 1 if the growth of total assets (Compustat "at") is greater than 10%; 0 otherwise.
Δ#Seg:	Annual change in the number of segments reported by the firm.
Foreign Tax:	Ratio of foreign tax (Compustat "txfo") to foreign revenues (Compustat "revt" – "sales").
Low Wage:	An indicator variable that equals 1 if the firm identifies its segments in any of the following areas or countries where the wage is constantly lower that in the U.S.: Asia (including China, India, Malaysia, etc., Latin America, Africa, Middle East, Caribbean, Mediterranean, Italy or Spain; 0 otherwise.
Pension:	An indicator variable that equals 1 if the firm has either pension employer contribution (Compustat "pbec") or postretirement service cost (Compustat "prc"): 0 otherwise.
Big4:	An indicator that equals 1 if the firm uses one of the big 4 auditors: PWC, Ernst & Young, Deloitte and KPMG: 0 otherwise.
OP Dis:	An indicator variable that equals 1 if the firm discloses segment operating profit (Compustat "ops"): 0 otherwise.
Capx Dis:	An indicator variable that equals 1 if the firm discloses segment capital expenditure (Compustat "capxs"); 0 otherwise.
US Sales:	Natural log of revenue in the U.S. (Compustat "sales" of the U.S. segment).
Foreign Sales:	Natural log of foreign revenue (Compustat "revt"-"sales").
Size:	Natural log of total assets (Compustat "at").
EMP:	Natural log of total number of employees (Compustat "emp").
Age:	Number of years that the firm has been covered by Compustat up to the data date.
Lev:	Ratio of total debt (Compustat "dlc" + "dltt") to total assets (Compustat "at").
PPE:	Ratio of property, plants and equipment (Compustat "ppent") to the number of employees (Compustat "emp") divided by 1,000.
Emp Ratio:	Lagged ratio of domestic employees to foreign employees.

Variables	Logit	Logit
	Model 1	Model 2
Intercept	-0.416	-3.767
	(-0.43)	(-2.94)***
ΔRev	0.114	0.091
	(1.41)	(0.92)
Merge	0.155	0.172
	(3.10)***	(2.96)***
Δ#Seg	0.020	0.017
	(1.21)	(0.89)
Foreign Tax	0.476	0.449
	(0.35)	(0.27)
Low Wage	0.163	0.305
	(1.86)*	(2.86)***
Pension	-0.199	-0.428
	(-1.89)*	(-3.39)***
Big4	-0.191	-0.079
	(-1.39)	(-0.47)
OP Dis		1.897
		(10.94)***
Capx Dis		3.089
		(17.17)***
US Sales	-0.075	-0.116
	(-1.15)	(-1.46)
Foreign Sales	0.124	0.114
	(2.70)***	(2.08)**
Size	-0.046	-0.276
	(-0.23)	(-1.03)
Size^2	-0.006	0.019
	(-0.48)	(1.07)
Emp	-0.170	-0.319
	(-2.47)**	(-3.76)***
Age	-0.013	-0.016
	(-3.60_	(-4.11)***
Lev	-0.357	-0.307
	(-1.87)*	(-1.31)
PPE	0.16	0.316
	(2.11)**	(0.96)
Disclosure	0.173	0.153
	(1.83)*	(1.36)
Year and Industry Fixed Effects	YES	YES
Ν	14,752	14,752
Pseudo R-Squared	0.1017	0.3053

Table 7: Coefficients (clustered z-statistics) for Logit Models of Disclosure of Employment by Business Segment

***, **, and * represent 1%, 5% and 10% significance levels, respectively.

Variable Defin	nitions:
ΔRev:	Growth of total revenues, measured as the change in revenue (Compustat
	"revt") divided by lagged revenue.
Merge:	An indicator variable that equals 1 if the growth of total assets (Compustat
	"at") is greater than 10%; 0 otherwise.
Δ #Seg:	Annual change in the number of segments reported by the firm.
Foreign Tax:	Ratio of foreign tax (Compustat "txfo") to foreign revenues (Compustat "revt" – "sales").
Low Wage:	An indicator variable that equals 1 if the firm identifies its segments in any
	of the following areas or countries where the wage is constantly lower that
	in the U.S.: Asia (including China, India, Malaysia, etc., Latin America,
	Africa, Middle East, Caribbean, Mediterranean, Italy or Spain; 0
	otherwise.
Pension:	An indicator variable that equals 1 if the firm has either pension employer
	contribution (Compustat "pbec") or postretirement service cost
	(Compustat "prc"); 0 otherwise.
Big4:	An indicator that equals 1 if the firm uses one of the big 4 auditors: PWC,
	Earnst & Young, Deloitte and KPMG; 0 otherwise.
OP Dis:	An indicator variable that equals 1 if the firm discloses segment operating
	profit (Compustat "ops"); 0 otherwise.
Capx Dis:	An indicator variable that equals 1 if the firm discloses segment capital
	expenditure (Compustat "capxs"); 0 otherwise.
US Sales:	Natural log of revenue in the U.S. (Compustat "sales" of the U.S.
	segment).
Foreign Sales:	Natural log of foreign revenue (Compustat "revt"-"sales").
Size:	Natural log of total assets (Compustat "at").
EMP:	Natural log of total number of employees (Compustat "emp").
Age:	Number of years that the firm has been covered by Compustat up to the
	data date.
Lev:	Ratio of total debt (Compustat "dlc" + "dltt") to total assets (Compustat "at").
PPE:	Ratio of property, plants and equipment (Compustat "ppent") to the
	number of employees (Compustat "emp") divided by 1,000.
Disclosure:	An indicator that equals 1 if the firm disclose geographical segment
	employment, zero otherwise.

Figure 1 - Difference between reported current year employees and year 2000 employees in millions for U.S. Multinationals reported in Commerce Department Survey



Figure 2 - Difference between current year employees and year 2000 employees in millions for domestic and foreign employees for multinationals that disclose employees by segment



Figure 3- Multiple Imputation difference between current year employees and year 2000 employees in millions for domestic and foreign employees for multinationals that do not disclose employees by segment



Figure 4- Propensity weighted difference between current year employees and year 2000 employees in millions for domestic and foreign employees for multinationals that do not disclose employees by segment



Figure 5- Parametric estimated difference between current year employees and year 2000 employees in millions for domestic and foreign employees for multinationals that do not disclose employees by segment

