THE IMPACT OF GEOGRAPHY ON CORPORATE FINANCIAL REPORTING

BY

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DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Accountancy
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2010

Urbana, Illinois

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ABSTRACT

I investigate the impact of geography on corporate financial reporting. Specifically, I predict and document that both the availability of accounting and business expertise and the resulting knowledge transfers in a location influence the financial reporting attributes of public companies headquartered in that location. The nature of this impact is moderated by auditor attributes. I further investigate whether local knowledge transfers can contribute to the spread of *inappropriate* accounting practices and document strong local effects in the incidence of backdating-related restatements. These impacts of location on financial reporting are novel and incremental to effects reported in prior studies.

To

Ambika, Rohan and Kunal

Amma and Achan

Pappa and Mummy

ACKNOWLEDGEMENTS

First, I thank my wife, Ambika, for always being there for me and especially for helping me see the bright side of things. Second, I thank my sons, Rohan and Kunal, for constantly reminding me to enjoy the little things in life. Third, I thank my parents for instilling in me the values of hard work and integrity. Fourth, I thank my parents-in-law for their understanding and support. Fifth, I am thankful to my family members and friends who always have offered me love and support.

I am especially thankful to Ira Solomon, my chair, for believing in me and investing his precious time and energy in my growth as a scholar. I am extremely grateful to Rajib Doogar, my director of research, for the hundreds of hours that he spent educating me on virtually every topic under the sun. I am also thankful to my committee members: Jeffrey Brown for helping me address important econometric and conceptual issues in this dissertation and Theodore Sougiannis for providing me with a broader perspective on my dissertation.

I thank Mark Peecher, the director of the PhD program, for his constant encouragement throughout my time in the program. I thank Rachel Schwartz for helping me stay on course at a time when it seemed like I was losing my way. I also thank all my fellow PhD students, especially Ling Harris and Wei-Chern Koh, for their support. In addition, I thank Justin Leiby, Mark Peecher, I-Ling Wang, Keshk Walied, Brian White, and Steve Wu for useful feedback on earlier versions of this dissertation.

I am grateful to Department of Accountancy for monetary support during the program.

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CHAPTER 1

INTRODUCTION

A key goal of financial reporting is to ensure that financial statements represent faithfully the underlying economic reality of the reporting entity. Developing such representations calls for a deep understanding of the entity's business practices and of accounting and auditing principles and pronouncements (hereafter, *expertise*) by both preparers and auditors of financial statements.[1] Geographic variation in the availability of expertise as well as the resulting knowledge transfers among experts can be expected to induce concomitant geographical variation in corporate financial reporting (CFR). Moreover, differences in audit firms' ability to orchestrate organizational arrangements that overcome the disadvantages of spatial dispersion and to absorb knowledge transfers can be expected to moderate the impact of local variations in expertise on CFR. On a more cautionary note, local knowledge transfers that facilitate convergence of expert judgments also can, under certain circumstances, contribute to the diffusion of *inappropriate* accounting practices.[2] By systematically incorporating into the analyses measures of variation in expertise across locations (a theoretically important, but heretofore unexamined set of factors), my study contributes to a fuller understanding of the determinants of CFR.

I measure the influence of preparer and auditor expertise on CFR by the extent to which a company's financial reports conform to industry norms (financial reporting consistency, *FRC*). The theoretical justification for such a mapping stems from Einhorn's (1974) argument that

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[1]Managers (i.e. preparers) are responsible for generating financial statements while auditors provide assurance that the representations made in those statements comply with GAAP.

[2] In addition to highlighting a possible negative effect of local knowledge transfers, documenting local concentration of inappropriate accounting practices serves an important methodological purpose. Since location is a choice variable (i.e., is endogenous), an observed association between the CFR of a company and its neighbors may stem from a host of unobservable factors that influence location choice rather than from knowledge transfers per se. However, there are few, if any, explanations other than local knowledge transfers for local concentration of inappropriate accounting practices.

consistency of judgment is a hallmark of expertise: when faced with similar problems, experts are more likely than non-experts to recommend similar solutions (in my setting, similar accounting treatments for similar business transactions). Empirically, I use the absolute value of a company's performance-adjusted Jones-model abnormal accruals (Jones 1991; Kothari et al. 2005) as my principal surrogate for FRC. Conceptually, this measure represents the idiosyncratic component of a company's accruals, i.e., the extent to which a company's reported accruals differ from industry norms (Francis et al. 2006) with *larger* abnormal accruals indicating *lower* FRC.

I use instances of backdating of employee stock option grants to study the diffusion of inappropriate accounting practices. Backdating involves falsely recording in-the-money employee stock option grants as at-the-money grants and violates a variety of securities and tax laws and regulations. The patently inappropriate nature of this practice makes it an ideal candidate for examining the potential *downside* (costs) of local knowledge transfers among preparers and/or their advisors since there are few, if any, competing explanations for local concentration of such inappropriate practices.

I use metropolitan statistical areas (MSAs) as defined by the Office of Management and Budgets as the geographic unit of analysis. My measure of the local availability of expertise is the within-industry count of company headquarters located in an MSA. In sensitivity analyses (see Chapter 5 for details), I confirm that using alternative measures of consistency or of key test variables does not materially alter my principal findings.

My empirical analyses address three research questions. First, does the impact of the local availability of expertise on CFR vary with auditor size? Second, does the impact of local knowledge transfers on CFR vary with auditor size? Third, do local knowledge transfers increase the likelihood of a company adopting *inappropriate* accounting practices?

My principal findings are as follows. With respect to the first research question, I find that the impact of local availability of expertise on FRC varies with auditor size: Big Four auditee FRC is unaffected by location while non Big Four auditee FRC improves with the local availability of expertise.[3] With respect to the second research question, I find that the impact of local knowledge transfers varies with auditor size: Big Four auditee FRC increases with neighbor company FRC while non Big Four auditee FRC displays no such pattern. With respect to the third research question, I find that the likelihood of backdating increases with the proportion of other neighbor companies adopting that practice, indicating that local knowledge transfers can sometimes lead to the diffusion of inappropriate practices.

My dissertation contributes to the literature in several respects. First, prior research in economics and finance suggests that location influences innovation (e.g. Jaffe et al. 2000) and investment decisions (e.g. Coval and Moskowitz 2001, Ivkovic and Weisbenner 2005, 2007; Brown et. al 2008). In this study, I show that location influences choices even in a highly regulated domain of activity such as financial reporting. Second, prior researchers have reported that larger firms are better able than smaller firms to (1) compensate for the disadvantages of location and (2) benefit from local knowledge transfers. I exploit the considerable difference in size between the four large audit firms and the rest of the audit industry to present novel large-scale empirical evidence on this proposition. Third, my finding that Big Four auditors are able to compensate for the local availability of expertise and benefit from local knowledge transfers highlights a benefit of large audit firm networks. Fourth, my finding that local knowledge

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[3] I use the terms *auditor* and *firm* interchangeably to refer to public accounting firms. I refer to Deloitte LLP, Ernst and Young LLP, KPMG LLP and PricewaterhouseCoopers LLP collectively as the *Big Four* auditors and to all other auditors as *non-Bi-Four* auditors. I use the terms auditee, client, or company to refer to the public companies.

transfers can result in localized adoption of inappropriate accounting practices is of potential interest to corporate managers, policy makers, regulators, financial statement users and other audit market participants interested in detecting and constraining such practices. Fifth, my study highlights the importance of including location characteristics as control variables in studies that investigate determinants of CFR especially in studies that examine the influence of local market factors on CFR.

I organize the remainder of this dissertation as follows. In Chapter 2, I review prior related research and develop my principal research questions. In Chapter 3, I discuss sample selection, and in Chapter 4, I discuss research methods. I report results in Chapter 5 and present concluding remarks in Chapter 6.

CHAPTER 2

PRIOR RESEARCH, RESEARCH QUESTIONS AND EXPECTATIONS

2.1 Availability of Expertise, Knowledge Transfers, and Financial Reporting Consistency

Managers (i.e. preparers) are responsible for preparing financial statements in accordance with applicable accounting pronouncements (GAAP). Auditors examine the veracity of these assertions and as warranted provide assurance that the financial statements comply with GAAP. Representing complex business transactions using the appropriate GAAP requires a great deal of expertise on the part of both the preparer and the auditor. Prior literature argues that for a variety of reasons experts physically co-locate i.e. agglomerate and as a result the availability of expertise is not uniform across locations.[4] It is, therefore, reasonable to expect that those attributes of CFR that are influenced by preparer and auditor expertise will vary systematically with location.

In addition to the availability of expertise in an area, I expect local knowledge transfers that inevitably result from agglomeration of experts to affect CFR. Tacit knowledge is an important determinant of accounting and business expertise (Tan and Libby 1997, Marchant and Robinson 1999, Vera Munoz et al. 2006, Kedia and Rajagopal 2009). Prior research (e.g. Polanyi 1958; Desrochers 2001; Morgan 2004) suggests that close face-to-face interaction is especially necessary for the transmission of tacit knowledge, i.e., knowledge that is difficult to codify and is learned through close interaction and experience. Unlike experts located in geographically distant locations, experts located in the same area enjoy multiple opportunities to

[4] For instance, Krugman (1991) argues that labor market frictions can lead experts to agglomerate in geographical locations: they can more readily expect to find alternative employment in larger agglomerations, minimizing the impact of employment shocks on their human capital. Related, Rotemberg and Saloner (1990) argue that by locating in large agglomerations employers can credibly commit to paying competitive wages, reducing employee concerns about hold-up problems and encouraging them to develop industry-specific expertise.

meet and interact with other experts. For instance, accountants and auditors are likely to be members of industry and professional organizations that provide various local functions (e.g. meetings, seminars, symposiums, etc) in which their members can get together and exchange ideas. Experts in a location also are likely to frequent the same social and recreational facilities which provides then with another opportunity to interact and share knowledge. In addition, companies headquartered in the same area are more likely to share directors, consultants, and/or auditors, facilitating information transfers between neighboring companies. To the extent that such local knowledge transfers influence financial reporting choices, I expect that attributes of CFR that, in turn, are influenced by preparer and auditor expertise will be positively associated with similar attributes of other companies in its location.

Einhorn (1974) suggests that inter-expert consistency of judgment, i.e., agreement *among* experts is a necessary condition for expertise. He argues that experts should weight and combine information in similar ways so that when faced with similar problems, they should suggest similar solutions. Adopting this line of reasoning, I, therefore, expect accounting and business experts, irrespective of their location, to propose similar approaches to account for similar business transactions and the consensus of opinion among these experts to constitute the industry norm. To the extent that expertise affects CFR, I expect greater expertise to increase the consistency of a company's accounting choices with industry norms, i.e., to increase FRC.

My principal measure of FRC is the inverse of the company's performance-adjusted Jones-model abnormal accruals (Jones 1991; Kothari et al. 2005). Mechanically, Jones model abnormal accruals are residuals from industry-year regressions (see Section 4.3.1), i.e., the extent to which a company's total accruals deviate from industry norms. Accordingly, I interpret *larger* deviations as indicators of lower consistency with industry norms, i.e., of *lower* FRC.[5] To check the robustness of my findings, I also examine several alternative computations of abnormal accruals and obtain materially identical results (see Section 5.5 for details).

2.2 *The Mediating Role of Large Audit Firms on Corporate FRC*

Prior research suggests that large organizations are capable of leveraging their geographic networks to compensate for the relative shortage of experts in some locations. Specifically, larger firms can effectively substitute organizational proximity for spatial proximity by fostering a sense of organizational identity (*logic-of-belonging*) and via common work procedures and practices (*logic-of-similarity*), enabling their members to effectively exchange ideas at a spatial remove (Torre and Rallet 2005; Gertler 2005; Knoben and Oerlemans 2006).

In the auditing domain, I conjecture that the vastly larger scale of operations of the Big Four auditors enables them to more effectively substitute organizational proximity for spatial proximity. Their nation-wide (and global) network of offices permits Big Four auditors to draw on a much broader set of experts, including industry-specific expertise that may only be available in certain locations. Their larger scale also makes it more cost-effective for these firms to invest in national training sessions, standardized work procedures and quality control activities as well as inter-office personnel exchanges (travel, transfers, rotations, secondment of specialists etc.) that promote familiarity and facilitate effective exchange of knowledge among their employees. The non Big Four auditors have considerably smaller and far more geographically concentrated practices which preclude them from enjoying the scale economies necessary to replicate these

[5] Francis et al. (2006), among others, point out that abnormal accruals models fail to control for many company characteristics that can impact accruals. I address this issue by including in model (1) an extensive set of company level variables (e.g. CFO, CH_SALE) to control for these factors. As noted earlier, my analysis of the geographical incidence of inappropriate accounting practices (see Section 2.3 and 5.4 for details) further addresses the potential endogeneity problems stemming from the presence of these unobserved corporate fundamentals.

arrangements.[6] For these reasons, I expect that, compared to the non Big Four auditors, Big Four auditors will be better able to compensate for local variations in the availability of expertise and, thus, to produce more uniform auditee FRC across locations.

In addition to their greater ability to compensate for the local availability of expertise, I expect the effects of local knowledge transfers to be greater for Big Four auditors than for non Big Four auditors. Research on knowledge transfers in agglomerations suggests that the size of local networks and absorptive capacity of its members play an important role in effective transfer and adoption of new knowledge within agglomerations (e.g. Agarwal 2002; Audretsch and Feldman 2003). Larger local networks enable members to interact more frequently and extensively with other members of the agglomeration while greater absorptive capacity enables them to identify, assimilate and apply new knowledge more effectively. In the context of the audit markets, the Big Four auditors have the brand recognition and economic resources to hire the best talent and provide them access to most social and professional networks in a location. Hence, when compared with the non Big Four auditors, the Big Four auditors can be expected to be more open to knowledge transfers within agglomerations.

2.3 Inappropriate Accounting Practice- Backdating of Stock Option Grants

An inappropriate accounting practice may originate as a result of (1) an unintentional error on the part of the preparer and auditor in the application of GAAP or (2) preparers adopting a particularly aggressive interpretation of GAAP to meet certain financial reporting objectives and their auditors failing to curb such aggressive reporting. Aggressive accounting practices are unlikely to be publicly disclosed (e.g. out of concerns for regulatory or market disciplinary

[6] For instance for fiscal year 2005, in the merged *Compustat-CompactD-Audit Analytics* sample, the Big Four firms, on average, had offices in 147 different MSAs each. The next four largest audit firms after the Big Four (i.e. Grant Thronton LLP, BDO Seidman LLP, Crowe Chizek and Company LLC, and McGladrey and Pullen LLP) on average operated out of 54 MSAs each and the remaining firms operated out of 2.5 MSAs each.

consequences, should they become public) and are more likely to be disseminated via private interactions among preparers and their advisors (e.g., common board memberships or advisory relationship). As these practices become more common in a location, the likelihood of accounting contagion increases, i.e., there is an elevated likelihood that other preparers and advisors will interact with and be influenced by the earlier adopters. I, therefore, predict that the likelihood of a company adopting an inappropriate accounting practice increases as more of its neighbors adopt that practice.

The inappropriate accounting practice that I study is the backdating of stock option grants. Backdating of stock option grants involves accounting for in-the-money employee stock option grants as if they were issued as at-the-money grants made at an earlier date (when the actual stock price was equal to the exercise price). Backdating requires the fabrication of supporting documents to permit employers to falsely qualify for favorable accounting and tax treatments otherwise applicable only to at-the-money grants. If discovered, backdating can trigger potentially severe and adverse accounting and tax consequences for the companies involved. First, companies that backdate in-the-money grants to mimic at-the-money grants under-report compensation expense under GAAP and may have to restate their financial statements. Second, companies that backdate face potential liabilities under Internal Revenue Code sections 162(m) and 409A as well as additional payroll tax liabilities.

Collectively, the fact that undisclosed backdating is unambiguously and patently erroneous accounting (involving the creation of false documents and misreporting of expenses and income) and that it is successful *only* if it is undisclosed, make backdating particularly well-suited to study the role of local knowledge transfers on diffusion of inappropriate accounting practices. Both factors make localized concentration of undisclosed backdating more likely the result of private interactions between preparers and advisors who are already involved in the practice and those that might consider adopting it, rather than of local availability of expertise or other confounding factors. Consequently, studying the local adoption of backdating practices can shed valuable insights into the important of local knowledge transfers in the accounting domain.

Another feature of the backdating analyses is that it is most likely to reflect knowledge transfers among managers. This is true because auditors are unlikely to have paid close attention to employee stock options because stock options were not expensed in the financial statements and the auditors may not have had any reason to suspect the veracity of the paper work provided by the preparers to support the stock option compensation expenses.

2.4 Research Questions

Since I posit that auditor size moderates the impact of both the availability of expertise and local knowledge transfers, two of my three research questions are best posited as questions about conditional effects ("Is the impact of *x* on CFR different for auditees of Big Four and non Big Four firms?"). The third research question is not similarly phrased because a paucity of observations precludes me from testing the diffusion of inappropriate practices separately for Big Four and non Big Four auditees:

RQ1: Is Big Four auditee FRC less sensitive to the local availability of expertise than non Big Four auditee FRC?

RQ2: Does Big Four auditee FRC display a greater positive association with neighbor company FRC than does non Big Four auditee FRC?

RQ3: Does the likelihood that a company will adopt an inappropriate accounting practice increase with the proportion of its neighbors adopting that practice?

CHAPTER 3

DATA AND SAMPLE SELECTION

I obtain corporate financial statement data from the *Compustat Fundamentals Annual* (*Compustat*) database. *Compustat* reports only the current corporate headquarters location (city, county, state). [7] I, therefore, use the *Compact Disclosure* (*CompactD*) database to identify historical data on company headquarters location (city and state) (Coval and Moskowitz 2001; Malloy C. J. 2005; Pirinsky and Wang 2006).[8] I obtain auditor location (street, city and state of the signing auditor) and audit fee data from the *Audit Analytics Audit Opinions* and *Audit Fee* databases respectively.[9]

My geographic unit of analysis is the Metropolitan Statistical Area (MSA). Neither *CompactD* nor *Audit Analytics* provide MSA information for corporate headquarters or auditor locations. I use a two-step process to identify this information. First, using the SAS file SASHELP.ZIPCODE, I identify the county in which the corporate headquarters city and the auditor's city office is located.[10] I then map these counties into MSAs using the U.S. Census Bureau Annual MSA definition files.[11]

I obtain annual MSA and national level employment data, used to compute MSA size and MSA level supply of accounting expertise (both control variables), from the County Business

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[7] For example, Boeing moved its corporate headquarters from Seattle, WA to Chicago, IL in 2003. In 2010, *Compustat* reports Chicago, IL as Boeing's headquarters for *all* years for which data are available.
[8] *Compact Disclosure* was published monthly till June 2006. I use the June issue of each year to obtain the headquarters location for each company-year.
[9] The *Audit Analytics* database also has data on the location of company headquarters but, as with *Compustat*, *Audit Analytics* provides only corporate headquarters location as of the latest financial statement date.
[10] SASHELP.ZIPCODE (a SAS installation file) provides County, State, ZIP and Centriods for many cities. For others, I obtain county information from the National Association of Counties website, http://www.naco.org/.
[11] MSA definition files are available annually beginning June 2003. For the years between 1993 and 2003 MSA definition files are available as on June 30, 1993 and June 30, 1999. These files are obtained from http://www.census.gov/population/www/metroareas/metrodef.html .

Patterns (CBP) data of the U.S. Census Bureau.[12] Audit Analytics data are available for company fiscal years after 2000 while *CompactD* is not available after July 2006, and so my data span the fiscal years 2000 to 2005 (both inclusive).[13] Since I require three years of lagged data to calculate auditor tenure and company age variables I restrict my analyses to fiscal years 2003, 2004 and 2005 (see Appendix A for data sources). To enhance inferential validity, I also impose the following restrictions:

a) To minimize confounds stemming from international variations in institutions, legal and regulatory systems, enforcement levels and other business practices, I exclude from my analyses companies headquartered outside of the United States,[14]

b) To minimize inferential confounds stemming from auditors and auditees benefiting differentially from knowledge transfers occurring in their separate locations, I exclude all cases in which a company and its auditor are located in different MSAs,

c) To minimize confounds stemming from the use of inappropriate accrual models, I exclude companies belonging to regulated (SIC 4000-4999) and financial (SIC 6000-6999) industries.[15]

My final sample, therefore, consists of 4,803 observations (1,988 distinct companies) all having the necessary data and meeting my sample criteria. Table 1 provides details of the loss of observations from applying the above restrictions.

I identify backdating-related restatements by searching the *Audit Analytics* database for restatements classified as "Deferred, stock-based compensation backdating only (subcategory)."

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[12] Annual business and financial services employment data at MSA and national levels are available as zip files from the Census Bureau website http://www.census.gov/econ/cbp/download/index.htm.

[13] The SEC required public companies to disclose audit and non-audit fees paid to their outside auditors in proxy statements filed after February 5, 2001 (SEC Final Rule S7-13-00).

[14] I do, however, include companies incorporated outside, but headquartered in the United States.

[15] The accrual structure for financial companies is qualitatively different from that of the others companies (e.g. Richardson et al. 2005; Francis and Yu 2009).

In addition to the 138 U.S. headquartered companies with such restatements in fiscal year 2005, I identify five more companies with such restatements for fiscal year 2005 from the *Wall Street Journal* list of potential backdaters.[16] After applying restrictions (a) and (b) above, my final sample for the backdating-related tests consists of 1,845 observations (1,845 companies).[17]

[16] The Wall Street Journal list of potential backdaters is available at the following website http://online.wsj.com/public/resources/documents/info-optionsscore06-full.html .

[17] I choose fiscal year 2005 data for these tests because (a) most restatements were filed for this period and (b)company and auditor location data are available for this period. I get qualitatively similar results using 2004 data.

CHAPTER 4

RESEARCH DESIGN

In this section, I discuss, in order, the choice of the geographic and industrial unit of analyses and the estimation models I use.

4.1 Geographic Unit of Analyses

MSAs are, by definition, socially and economically integrated geographic units. They are widely regarded as the appropriate unit of analysis for the study of professional and social interactions that facilitate knowledge spillovers (Glaeser et al. 1992) because they are both large enough to be economically meaningful (i.e., each MSA hosts a sufficiently large number of headquarters) and numerous enough to permit meaningful statistical analysis.

4.2 Industry Unit of Analyses

My industry unit of analysis is the 2-digit SIC code. This choice is motivated by three principal considerations: (1) it is sufficiently narrow to ensure both within-group commonality and between-group diversity in economic activity, (2) it is sufficiently broad to ensure that there are an adequate number of companies in each group to permit meaningful statistical analysis, and (3) it is the most commonly used industry classification in accounting research and therefore permits meaningful comparison of the results of this study to those of prior studies.

4.3 Model Specification: Financial Reporting Consistency - Abnormal Accrual

To investigate whether the impact of location on absolute abnormal accruals (my measure of FRC) is moderated by auditor size, I estimate the following model separately for Big Four and non Big Four auditees and test whether the coefficients on the test variables are significantly different between the two groups[18]

[18] An alternate estimation approach would be to specify a fully nested model (a model that interacts an indicator variable for Big Four auditees with all other variables). Such a specification results in severe multicollinearity

$$ABS\_ACC = \beta_0 + \beta_1 LHQ + \beta_2 MEAN\_ACC + \beta_3 LMSA + \beta_4 LACCY + \beta_5 LDIST + \beta_6 HHI\_MSA + \beta_7 LFEESZ + \beta_8 INFL + \beta_9 AUD\_NEW + \beta_{10} MSA\_LEAD + \beta_{11} NEW + \beta_{12} MSA\_NEW + \beta_{13} LAT + \beta_{14} CH\_SALE + \beta_{15} LOSS + \beta_{16} LEV + \beta_{17} CFO + \text{industry fixed effects} + \text{year fixed effects} + \varepsilon \quad (1)$$

where the dependent and test variables are defined as follows:

ABS_ACC	(the dependent variable) is the absolute value of company-specific discretionary accruals estimated using the performance adjusted modified Jones model;[19]
LHQ	(the test variable for availability effects) is the natural logarithm of total number of headquarters in each 2-digit SIC industry in each MSA;
MEAN_ACC	(the test variable for local knowledge transfer effects) is the mean absolute abnormal accrual (i.e. mean ABS_ACC) for all other companies located in the MSA excluding the company in question;

and the control variables are defined as follows:

LMSA	is the natural logarithm of total employment in the MSA;
LACCY	is the natural logarithm of total employment in NAICS 5412 (Accounting, Tax Preparation, Bookkeeping, and Payroll Services) in each MSA;
LDIST	is the natural logarithm of the distance, in miles, between the MSA where the company is headquartered and the nearest SEC office; [20]
HHI_MSA	is the Herfindahl index (a measure of market concentration) for the audit market at the MSA level. It is computed as $\sum_{i=1}^{N} s_i^2$ where s_i is the market share of firm i and N is the number of firms in the market;
BIG	is an indicator variable that takes the value 1 if the company is audited by a Big Four auditor and 0, otherwise;
LFEE_SZ	is the natural logarithm of total fees earned by each audit office;
INFL	is the ratio of the total fees paid by the auditee to the total fees collected from all its auditees by the office that audits this auditee;
AUD_NEW	takes the value 1 if the tenure of the auditor is less than or equal to three years and 0 otherwise;
MSA_LEAD	takes the value 1 if the auditor has the highest market share by auditee fees for that industry in that MSA, 0 otherwise;

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among regressors, precluding any meaningful inferences. I therefore rely on cross-equation Wald tests to examine differences in coefficient estimates.

[19] See section 4.3.1 for model details.

[20] I use the Stata ado file globdist.ado authored by Simons (2007) to calculate the distance between locations. I use the SEC offices located in Washington DC and the regional offices located in Boston, MA; New York, NY; Philadelphia, PA; Chicago, IL; Salt lake City, UT; San Francisco, CA; Los Angeles, CA; Denver, CO; Atlanta, GA; Miami, FL and Fort Worth, TX as reference points for the computations.

NEW	takes the value 1 if the company has appeared in the *Compustat* database for less than 4 years, 0 otherwise;
MSA_NEW	takes the value 1 if the company has been located in an MSA for three years or less, 0 otherwise
LAT	is the natural logarithm of company total assets;
CH_SALE	is the change in company sales computed as ($Sales_t$-$Sales_{t-1}$/$Sales_{t-1}$);
LOSS	takes the value 1 if net income for the company is less than 0 and 0 otherwise;
LEV	is the ratio of the company's total liabilities to its total assets;
CFO	is the cash flow from operations for the company.

The model is estimated using ordinary least squares (OLS) with industry and year fixed effects and standard errors clustered by MSA. The industry and year fixed effects control for observable and unobservable time-invariant industry characteristics or year effects while the clustered standard errors correct for intra-MSA correlations (Rogers 1993, Petersen 2008). For brevity, I discuss below the motivation for (and computation of) the dependent variable, the two test variables and, since these variables are new to this study, the two MSA level control variables and relegate analogous discussion of the other control variables to Appendix B.

4.3.1 Dependent Variable

As noted earlier, my primary measure of FRC is the magnitude of performance adjusted Jones model abnormal accruals (Jones 1991; Kothari et al. 2005). I compute these accruals as the residual from the following regression model estimated separately by industry and year:

$$TA_{it} = \beta_0 + \beta_1 (1/ASSET_{it-1}) + \beta_2 \Delta SALES_{it} + \beta_3 PPE_{it} + \beta_4 ROA_{it} + \varepsilon_{it} \quad (2)$$

where TA is total accruals, computed as net income (Compustat# 172, NI) less operating cash flows (Compustat# 308, OANCF) (Hribar and Collins 2002). ASSET is total assets (Compustat# 6, AT). ΔSALES is the changes in net sales (Compustat# 12, SALE less lagged Compustat# 12, SALE), PPE is net property, plant and equipment (Compustat# 8, PPENT) and ROA is net income before extraordinary items (Compustat# 18, IB). Variables TA, ΔSALES, PPE, and ROA are scaled by lagged total assets.

4.3.2 Test Variables

My first test variable, LHQ, is a proxy for the local availability of experts. I choose to model the local availability of expertise at the level of the auditee industry for the following reason. Each industry has its unique business practices that call for industry specific accounting policies and require accountants and auditors to specialize by industry. For instance, prior studies in auditing suggest that auditors specialize by industry (e.g. Balsam et al. 2003) and that industry specialist auditors naturally develop specific knowledge and skills (e.g. Solomon et al. 1999). Thus, FRC is more likely to be influenced by the local availability of business and accounting experts who specialize by auditee industry. I use LHQ, computed as the natural logarithm of the total number of auditee industry headquarters (2-digit SIC) in a location to proxy for the local availability of auditee industry expertise. Given that my dependent measure is the magnitude of abnormal accruals, and that smaller abnormal accruals indicate higher FRC, I expect the coefficients of my measures of the local availability of expertise (LHQ) to be negative and significant. I interpret a significant negative coefficient on LHQ as evidence that the greater local availability of expertise increases FRC.

My second test variable, MEAN_ACC is a proxy for local knowledge transfer effects. I define it as the mean absolute abnormal accrual for all neighboring companies (i.e. other companies in a location, excluding the company in question). I expect the coefficient on MEAN_ACC to be positive and significant indicating a positive correlation between the abnormal accruals of a company and the abnormal accruals of its neighbors. In other words, a significant positive coefficient on this variable indicates that a company's accruals are more likely to be closer to the industry norm if its neighbors' accruals are closer to the industry norm. I interpret a significant positive coefficient as evidence of information transfer between companies situated in the same location.

4.3.3 MSA Level Control Variables

In this section, I discuss two the MSA level control variables included in model (1) that are new to this study. LMSA is the natural logarithm of the total local employment. If the ability of managers and auditors to produce consistent financial reports depends on the general availability of expertise in a location, I expect the FRC of a company to increase with the size of the local labor pool (LMSA). I include a second MSA level control variable, LACCY, computed as the natural logarithm of MSA employment in NAICS 5412 (Accounting, Tax Preparation, Bookkeeping, and Payroll Services) to account for the influence of the local availability of accounting and auditing expertise which could also influence FRC.

4.4 Model Specification: Inappropriate Accounting Practice – Backdating

To investigate whether the likelihood of a company engaging in undisclosed backdating increases with the proportion of neighboring companies doing likewise, I estimate the following model pooled for Big Four and non Big Four auditees [21]

$$\text{BACKDATE} = \beta_0 + \beta_1\text{PROP\_BACK} + \beta_2\text{LHQ} + \beta_3\text{LMSA} + \beta_4\text{LACCYb} + \beta_5\text{LDIST} + \beta_6\text{HHI\_MSA} + \beta_7\text{BIG} + \beta_8\text{LFEESZ} + \beta_9\text{INFL} + \beta_{10}\text{AT} + \beta_{11}\text{CH\_SALE} + \beta_{12}\text{LOSS} + \beta_{13}\text{LEV} + \beta_{14}\text{CFO} + \text{industry fixed effects} + \varepsilon \quad (3)$$

where the dependent and test variables are defined as follows

BACKDATE (the dependent variable) takes the value 1 if the company has restated its financial statement for fiscal year 2005 to account correctly for backdated stock options;

[21] Restatements by non Big Four auditees are too few in number (less than 10% of the sample of backdating-related restatements) to permit separate analysis by auditor type.

PROP_BACK (test variable 1) is the proportion of companies in an MSA that restated its fiscal year 2005 financial statements to correct for stock options backdating, excluding the company in question

and the control variables are defined as in model (1)

The dependent measure BACKDATE is an indicator variable that takes the value of 1 if the company has a backdating related restatement for fiscal year 2005 and 0 otherwise. The test variable is PROP_BACK which is computed as the proportion of companies in an MSA that restated its fiscal year 2005 financial statements to correct for stock options backdating, excluding the company in question. I predict that local knowledge transfers will increase the probability of a company being involved in backdating as a larger proportion of its neighbors are involved in backdating, i.e., I predict a positive and significant coefficient for PROP_BACK.

Among the control variables, the predictions for the variables on the local availability of expertise (LHQ, LMSA and LACCY) are ambiguous. On the one hand greater local availability of experts can be expected to reduce the probability that a company would adopt an inappropriate accounting practice. On the other hand greater local availability of experts also increases the chances of interactions among experts leading to knowledge transfers and greater adoption of accounting innovations including inappropriate innovations. I discuss the predictions with respect to other control variables in Appendix B. I estimate the model for fiscal year 2005 as a conditional logistic model with industry fixed effects. [22] Standard errors are robust standard errors clustered by industry.

[22] Fixed effects logistic models estimated using dummy variables for individuals (industries, in this instance) produce biased regression coefficients and incorrect standard errors. Chamberlain (1980) suggested conditional maximum likelihood estimation, in which the likelihood function is reformulated to drop the individual specific dummies, as a solution to this problem. See Allison (2005) for a discussion.

CHAPTER 5

RESULTS

5.1 Sample Description

Table 2 reports descriptive statistics for key variables used in the study. The following points are worthy of note: (1) the mean abnormal accrual for the sample is 7% of total assets, (2) the distribution of MSA_SZ is negatively skewed with the mean (2,500,000) being much larger than the median (1,900,000). A logarithmic transformation considerably reduces the distributional asymmetry: the mean (median) for LMSA is 14.35 (14.47), (3) the mean value for the BIG indicator variable is 0.80 which indicates that 80% of the sample company years are audited by Big Four auditors. Table 3 reports full-sample correlations (both Spearman and Pearson) between the dependent variable and the (continuous) independent variables. Both test and control variables display significant inter-correlations.[23]

5.2 Regression Analyses - by Auditor Type: Research Questions One and Two

Table 4 reports the results of estimating model (1) by auditor type. Columns (1) and (2) report results for Big Four auditees and columns (3) and (4) for non Big Four auditees. The coefficient on local availability of industry expertise (LHQ) is not significant in column (1) indicating that Big Four auditee FRC is invariant to local availability of industry-specific expertise while it is negative and significant (-0.015, $p<0.05$) in column (3) indicating that non Big Four auditee FRC increases with local availability of industry-specific expertise. This finding answers research question one (does the impact of local availability of expertise on FRC vary with auditor type?) in the affirmative. By contrast, the coefficient on local knowledge transfers, MEAN_ACC, is positive and significant (0.121, $p<0.05$) in column (1) indicating that

[23] The variance inflation factors (vif) for all models are well below the cut-off of 10 (Kennedy 2008), indicating that multicollinearity is a factor in my models. I discuss additional robustness checks as part of my sensitivity analyses reported later in this chapter.

the Big Four auditee FRC improves with the FRC of neighboring companies while it is non significant in column (3) indicating that there are no such impacts on non Big Four auditee FRC. This finding answers research question 2 (does the impact of local knowledge transfers vary across auditor types) in the affirmative. The χ^2 statistic for a cross-equation Wald test of the equality of the coefficients of LHQ reported in columns (1) and (3) is 4.83 (one-tail p-value 0.01) while that for the test of equality of the coefficients of MEAN_ACC is 2.12 (one-tail p-value 0.07) indicating that the inter-group difference in both sets of coefficients is statistically significant.

Interestingly, neither the MSA-level supply of general business expertise, LMSA, nor that of MSA-level accounting expertise discernibly impacts FRC for the Big Four or non Big Four auditees. Collectively, the findings with respect to the two test variables coupled with the lack of significance for the two MSA-level control variables supports the argument that industry specific rather than general business and accounting expertise is the key driver of FRC.

With respect to the other controls, distance from SEC, LDIST, significantly impacts only Big Four auditee FRC, indicating that proximity to SEC offices increases Big Four auditee FRC while local market competition, HHI_MSA, does not discernibly impact FRC for either Big Four or non Big Four auditees. Auditor office size, LFEE_SZ also has a significant impact on Big Four auditee FRC, indicating that the Big Four audit office size effect documented in Francis and Yu (2009) is incremental to the location effects I document. Local audit market leadership, MSA_LEAD, has no incremental impact on Big Four auditee FRC, but improves FRC for non Big Four auditees: the beneficial impact of local audit market leadership appears to be confined to non Big Four auditees.[24] The remaining, auditee level, variables are all either significant in the expected direction or insignificant throughout Table 4.

5.3 Backdating Analyses: Research Question Three

Table 5 provides the industry distribution of these 143 companies with backdating related restatements (hereafter, backdaters). The most salient feature of Table 5 is the notable industry concentration of the restatements: two industries, Business Services (2-digit SIC 73) and Electrical and Electronic Equipment (SIC 36), contributing about 45% of the observations. Table 6 provides the distribution of backdaters by MSAs for those MSAs with at least three backdaters located therein (a total of 10 MSAs). The important finding in this table is that certain MSAs have relatively high presence of backdaters. For instance, San Jose-Sunnyvale-Santa Clara, CA MSA hosts 23% of all backdating companies while it hosts only about 3.45% of all company headquarters and 17.14% (6%) of headquarters in 2-digit SIC 36 (73). Similarly, the Los Angeles-Long Beach-Santa Ana, CA MSA and Boston-Cambridge-Quincy, MA-NH MSA hosts a disproportionately large share of the backdaters. Taken together the findings in tables 5 and 6 suggest that, even after controlling for local industry presence, stock options backdating was concentrated in certain geographic locations.

I report the results of estimating model (3) in table 7. The key finding is that the coefficient of PROP_BACK is positive and significant (6.506, $p<0.05$) which indicates that the likelihood of a backdating-related restatement increases with the proportion neighbor company backdating-related restatements. This finding answers research question three (does the likelihood of a company adopting inappropriate accounting practice increase with the proportion of its neighbors adopting that practice?) in the affirmative. The coefficients on the variables for

[24] To the best of my knowledge this finding is novel since prior studies do not examine separately by auditor type the effects of audit market leadership on CFR attributes.

the local availability of expertise (LHQ, LMSA or LACCY) are not significant suggesting that the local availability of expertise does not impact the probability of a company restating their financial statements to correct for backdating.[25] Among the other control variables only size (LAT -0.043, $p<0.10$) and cash flow from operations (CFO1.423, $p<0.10$) are significant indicating that larger companies are less likely to restate their financial statements in connection with stock options backdating and companies with higher cash flows from operations are more likely to restate financial their financial statements to rectify backdating related errors.[26]

Overall, the results of the backdating analyses provide stronger evidence of local knowledge transfer effects. However, these results also provide cautionary evidence that while local knowledge transfers can help promote consistency in accounting practices such convergence may not always be beneficial (i.e. the practice on which one converges may not always be appropriate).

5.4 Sensitivity Analyses

Establishing causality is a central challenge in studies that involve location choices (Manski 1993). As noted earlier, the analysis of backdating-related restatements serves as a check that the effects I document are not merely artifacts of uncontrolled-for endogeneity.[27] In

[25] Recall that unlike the accrual analyses where I use LHQ as a test variable, in the backdating analyses I use LHQ as a control variable and I do not make any specific predictions about how it would impact the likelihood of backdating related restatements.

[26] Prior research suggests that companies with better corporate governance are less likely to backdate stock options (Collins et al. 2009). In untabulated analyses I control for corporate governance characteristics by including composite governance metric (GOV_SCORE) proposed by Brown and Caylor (2006) in model (3). Inclusion of the governance metric substantially reduces the sample size from 1,851 to 958 observations but it does not alter my principal findings. The coefficient on PROP_BACK continues to be positive and significant (8.943, $p<0.05$).

[27] Notably, I do not use the instrumental variables (IV) approach because good instruments are very difficult to identify in most accounting research settings and absent such variables, the merits of the IV approach are questionable (e.g. Larcker and Rusticus 2010). Rather, I select a dependent measure that enables me to credibly rule out competing explanations: as noted earlier, there are few, if any, explanations other than local knowledge transfers that would explain local concentration of backdating-related restatements.

this section, I report on several additional analyses designed to investigate the sensitivity of my finding to alternative specifications of the dependent and test variables.

5.4.1 Alternate measures of local supply of expertise

Many studies in economic geography prefer to measure the availability of expertise using relative size metrics such as location quotients, computed as the ratio of an industry's share of local employment to its share of national employment (Glaeser et al. 1992). Table 8 reports the results of re-estimating model (1) by auditor type after replacing the absolute measure of the local supply of industry expertise (LHQ) used in Table 4 by the rank of the corresponding location quotient (RLQ).[28] For consistency, I also substitute the analogous relative measure of the supply of accounting expertise (RACCY) for its absolute counterpart (LACCY). The most notable feature of the results reported in Table 8 is that once I control for auditor identity, both the local supply of industry expertise and local knowledge transfers impact auditee FRC.

5.4.2 Alternate measures of abnormal accruals

To assess the sensitivity of my results to alternate specifications of the dependent variable, I proceed as follows. I first compute abnormal accruals as residuals from each of three alternative models proposed in the literature. These are (1) the modified Jones model (Dechow et al. 1995), (2) Ball and Shivakumar model (Ball and Shivakumar 2006), and (3) the Dechow-Dichev (Dechow and Dichev 2002) model as modified by McNichols (McNichols 2002).[29] Untabulated analyses reveal significant positive correlation between these three sets of abnormal accruals and the Jones model accruals used thus far, so I use principal component analysis to

[28] I compute the location quotient for accounting services using the employment data while I compute the location quotients for the auditee industry headquarters using headquarters count in a location since I do not have access to headquarters employment data by industry.

[29] Details on the computation of each model are provided in appendix two.

create a composite measure that captures the common information content of all four measures.[30] Table 9 reports the results of re-estimating model (1) using the composite measure. Overall, the results reported in Table 9 also confirm the basic finding that once I control for auditor identity, both the local supply of industry expertise and local knowledge transfers affect auditee FRC.

5.4.3 Additional analysis of non Big Four auditee FRC

The non Big Four audit firms include four firms, Grant Thornton LLP, BDO Seidman LLP, Crowe Chizek and Company LLC, and McGladrey and Pullen LLP (the Second Tier firms) that are each much larger than the other non Big Four firms. In untabulated analyses conducted separately for these two subgroups I find that (1) Second Tier auditee FRC (N=400) is unaffected by, while smaller non Big Four auditee FRC (N=547) increases with local availability of industry expertise and (2) FRC for both groups is unaffected by local knowledge transfers. Using the composite score as the dependent measure, I find auditee FRC for both groups to vary with local availability of industry expertise and to be unaffected by local knowledge transfers. Overall, these findings indicate that the impact of geography on Second Tier auditee FRC is about the same as that for smaller non Big Four auditees.

[30] In the principal component analysis the first component extracted has an eigenvalue of 3.16 and explains over 79% of the total variation. The second component extracted has an eigenvalue of 0.72 and explains 18% of the variation. These results support the proposition that the information in these four measures of abnormal accruals effectively can be reduced to a single component.

CHAPTER 6

CONCLUDING REMARKS

I investigate the impact of geography on a key attribute of corporate financial reporting, financial reporting consistency (FRC). I predict and document that this impact is conditional on auditor type and that compared to the non Big Four auditors, Big Four auditors are both better able to compensate for local availability of expertise and to absorb local knowledge transfers that result naturally from the spatial agglomeration of experts. Using stock option backdating-related restatements as an ex-post indicator of the adoption of inappropriate accounting practices, I further document the potential *downside* of local knowledge transfers.

My study is subject to certain limitations. First, absent data on MSA-level employee head counts by industry I use MSA-level industry headquarter counts to measures the local availability of industry-specific expertise. Second, although my findings with respect to the localized diffusion of backdating provides some reassurance in this respect, the degree to which my analyses satisfactorily distinguish between preparer and auditor influences on financial statements remains an open question. Future research that relaxes these limitations would be valuable as would studies of settings that do not involve a significant role for preparers (e.g. income decreasing misstatements), thereby better isolating the effects of local knowledge transfers among auditors. Other promising lines of inquiry include research on the links between local variations in corporate FRC and corporate cost of capital or the co-movement of stock returns of neighboring companies documented in Pirinsky and Wang (2006).

Overall, my findings should be of widespread interest. It could be beneficial for future research on determinants of CFR to account for the location effects I document. The superior ability of Big Four auditors to orchestrate organizational arrangements that compensate for the effects of spatial dispersion of experts I document as well as my finding that local knowledge transfers can abet the diffusion of *inappropriate* accounting practices should be of interest to policy-makers, regulators, audit market participants and financial statement users engaged in the ongoing debate on the role of the large audit firms.

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TABLES

Table 1
Sample Selection

The merged *Compustat-Compact Disclosure-Audit Analytics* sample of companies headquartered in United States for the Compustat fiscal years 2003 to 2005, both inclusive	13,252
Less:	
1. Observations that do not have all the necessary data	6,380
2. Observations pertaining to financial (SIC 6000-6999, both inclusive) and regulated (SIC 4000-4999, both inclusive) industries	712
3. Observations where the company and auditor are not collocated	1,357
Number of observations used in the analyses	4,803

Table 2
Descriptive Statistics

The sample consists of all observations, for fiscal years 2003 to 2005 (both inclusive), with necessary data and subject to the following restrictions (1) the company is headquartered in the United States, (2) the company and its auditors are both located in the same MSA and, (3) the company does not belong to the regulated (SIC 4000-4999) or financial (6000-6999) industries. Table 1 provides details on sample selection. Appendix B provides definitions and computations of all variables.

VARIABLE	N	MEAN	S.D.	MIN	25%	MEDIAN	75%	MAX
ABS_ACC	4,803	0.07	0.09	0	0.02	0.04	0.08	0.80
MEAN_ACC	4,803	0.08	0.02	0.01	0.07	0.08	0.09	0.32
MSA_SZ	4,803	2,500,000	2,200,000	47,680	870,000	1,900,000	2,400,000	7,400,000
LMSA	4,803	14.35	0.9	10.77	13.67	14.47	14.68	15.81
IND	4,803	15.80	20.08	1	2	6	22	79
LIND	4,803	1.92	1.35	0	0.69	1.79	3.09	4.37
ACCY	4,803	42,207	60,505	375	8,130	17,500	37,500	260,000
LACCY	4,803	9.91	1.19	5.93	9	9.77	10.53	12.48
LDIST	4,803	4.01	1.25	2.39	2.91	3.46	5.42	7.78
HHI_MSA	4,803	0.30	0.11	0.19	0.25	0.26	0.31	1.00
BIG	4,803	0.80	0.40	0	1	1	1	1
LFEE_SZ	4,803	16.65	1.95	9.68	15.60	17.13	18.06	20.20
INFL	4,803	0.10	0.19	0	0.01	0.03	0.09	1
AUD_NEW	4,803	0.27	0.45	0	0	0	1	1
MSA_LEAD	4,803	0.38	0.48	0	0	0	1	1
NEW	4,803	0.01	0.08	0	0	0	0	1
MSA_NEW	4,803	0.03	0.18	0	0	0	0	1
LAT	4,803	38.09	4.82	21.31	33.96	39.68	41.51	61.19
CH_SALE	4,803	0.14	0.53	-3.19	0.01	0.08	0.21	19.94
LOSS	4,803	0.26	0.44	0	0	0	1	1
LEV	4,803	0.54	0.59	0.03	0.28	0.48	0.64	13.59
CFO	4,803	0.05	0.25	-3.67	0.01	0.08	0.15	4.82

Table 3
Correlation Table

Pair-wise correlations for all continuous variables used in estimating model (1). Spearman correlations are above and Pearson correlation are below diagonal with p–values in square brackets. See Appendix two for variable definitions. See table 1 for sample selection criteria.

	ABS_ACC	LMSA_SZ	LHQ	LACCY	LDIST	HHI_MSA	INFL	LFE_SZ	LAT	CH_SALE	LEV	CFO
ABS_ACC		0.031	0.1	0.025	-0.024	-0.036	-0.011	-0.142	-0.027	0.014	0.026	-0.24
		[0.03]	[0.00]	[0.08]	[0.10]	[0.01]	[0.43]	[0.00]	[0.06]	[0.35]	[0.08]	[0.00]
LMSA_SZ	0.017		0.437	0.924	-0.592	-0.617	-0.247	0.299	0.059	-0.006	-0.031	-0.059
	[0.23]		[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.70]	[0.03]	[0.00]
LHQ	0.091	0.451		0.402	-0.36	-0.268	-0.22	0.234	0.011	-0.06	-0.179	-0.066
	[0.00]	[0.00]		[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.44]	[0.00]	[0.00]	[0.00]
LACCY	0.02	0.935	0.4		-0.562	-0.699	-0.204	0.237	0.002	-0.009	-0.029	-0.051
	[0.17]	[0.00]	[0.00]		[0.00]	[0.00]	[0.00]	[0.00]	[0.87]	[0.52]	[0.04]	[0.00]
LDIST	-0.036	-0.571	-0.407	-0.539		0.282	0.226	-0.265	-0.082	0.063	0.034	0.083
	[0.01]	[0.00]	[0.00]	[0.00]		[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.02]	[0.00]
HHI_MSA	-0.01	-0.614	-0.305	-0.584	0.281		0.098	-0.103	0.184	0.01	0.045	0.014
	[0.48]	[0.00]	[0.00]	[0.00]	[0.00]		[0.00]	[0.00]	[0.00]	[0.49]	[0.00]	[0.34]
INFL	0.068	-0.167	-0.142	-0.134	0.096	0.222		-0.671	-0.112	0.007	0.188	0.027
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]		[0.00]	[0.00]	[0.65]	[0.00]	[0.06]
LFEE_SZ	-0.196	0.228	0.173	0.165	-0.175	-0.188	-0.631		0.092	0.037	0.005	0.096
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]		[0.00]	[0.01]	[0.72]	[0.00]
LAT	-0.008	0.031	0.03	-0.014	-0.022	0.12	-0.066	0.085		-0.007	-0.027	-0.051
	[0.57]	[0.03]	[0.03]	[0.32]	[0.12]	[0.00]	[0.00]	[0.00]		[0.63]	[0.06]	[0.00]
CH_SALE	0.031	0.015	-0.03	0.017	0.011	-0.01	-0.012	-0.01	-0.038		-0.047	0.313
	[0.03]	[0.29]	[0.04]	[0.23]	[0.45]	[0.48]	[0.41]	[0.50]	[0.01]		[0.00]	[0.00]
LEV	0.219	-0.022	-0.048	-0.02	0.017	0.028	0.083	-0.131	-0.042	-0.061		-0.134
	[0.00]	[0.12]	[0.00]	[0.16]	[0.23]	[0.05]	[0.00]	[0.00]	[0.00]	[0.00]		[0.00]
CFO	-0.256	-0.054	-0.091	-0.047	0.065	0.027	0.004	0.115	-0.013	0.053	-0.21	
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.06]	[0.79]	[0.00]	[0.38]	[0.00]	[0.00]	

Table 4
Regression of Absolute Value of Performance Adjusted Jones Model Abnormal Accruals on Location Characteristics and Control Variables by Auditor Type

The sample consists of all observations, for fiscal years 2003 to 2005 (both inclusive), with necessary data and subject to the following restrictions (1) the company is headquartered in the United States, (2) the company and its auditors are both located in the same MSA (3) the company does not belong to the regulated (SIC 4000-4999) or financial (6000-6999) industries. Table 1 provides details on sample selection. The dependent variable is the absolute value of performance adjusted Jones model abnormal accruals. The model is estimated with both industry and year fixed effects. Standard errors are clustered by MSA. Appendix B provides definitions and computations of all variables.

		Big Four Auditees		Non Big Four Auditees	
Variable &		(1)	(2)	(3)	(4)
Predicted Sign		Coefficient	t-value	Coefficient	t-value
Test Variables					
LHQ	-	0.001	0.51	-0.015	-1.98**
MEAN_ACC	+	0.121	2.17**	-0.162	-0.87
Control Variables					
LMSA	-	0.005	0.90	0.000	0.00
LACCY	-	-0.002	-0.67	-0.002	-0.27
LDIST	+	0.002	1.77**	-0.006	-1.20
HHI_MSA	-	0.003	0.25	0.093	1.39
LFEE_SZ	-	-0.003	-1.84**	-0.003	-0.72
INFL	-	-0.020	-1.68**	-0.011	-0.56
AUD_NEW	+	0.003	0.99	0.007	0.86
MSA_LEAD	-	0.001	0.24	-0.042	-2.27**
NEW	+	-0.010	-0.48	0.054	1.27*
MSA_NEW	+	0.017	1.56*	-0.020	-0.63
LAT	-	0.000	0.31	0.000	0.11
CH_SALE	+	0.030	3.96***	0.002	0.37
LOSS	+	0.024	3.94***	0.046	4.18***
LEV	+	0.020	2.48***	0.025	3.94***
CFO	-	-0.070	-3.24***	-0.030	-1.04
CONSTANT	?	0.027	0.71	0.173	0.98
N		3,856		947	
Clusters		80		63	
Adjusted R^2		0.11		0.15	

*, ** and *** indicate significance at the 10%, 5% and 1% levels for one-tailed tests when the expected sign is determinate and for two-tailed tests otherwise.

Table 5
Industry Distribution of Companies Involved in Stock Options Backdating
(Fiscal Year 2005)

2-Digit SIC Code	Industry Description	Frequency	Percent	Cumulative Percent
73	Business Services	35	24.48	24.48
36	Electrical and Electronic Equipment	29	20.28	44.76
35	Industrial Machinery and Equipment	16	11.19	55.94
38	Instruments and Related Products	10	6.99	62.94
28	Chemicals and Allied Products	9	6.29	69.23
48	Communications	9	6.29	75.52
50	Wholesale Trade-Durable Goods	4	2.8	78.32
87	Engineering and Management Services	4	2.8	81.12
58	Eating and Drinking Places	3	2.1	83.22
63	Insurance Carriers	3	2.1	85.31
20	Food and Kindred Product	2	1.4	86.71
37	Transportation Equipment	2	1.4	88.11
56	Apparel and Accessory Stores	2	1.4	89.51
59	Miscellaneous Retail	2	1.4	90.91
67	Holding and Other Investment Offices	2	1.4	92.31
15	General Building Contractors	1	0.7	93.01
23	Apparel and Other Textile Products	1	0.7	93.71
27	Printing and Publishing	1	0.7	94.41
34	Fabricated Metal Products	1	0.7	95.1
39	Miscellaneous Manufacturing Industries	1	0.7	95.8
49	Electric, Gas and Sanitary Services	1	0.7	96.5
54	Food Stores	1	0.7	97.2
62	Security, Commodity Brokers and Services	1	0.7	97.9
64	Insurance Agents, Brokers and Services	1	0.7	98.6
80	Health Services	1	0.7	99.3
82	Educational Services	1	0.7	100
	Total	**143**	**100**	

Table 6
Metropolitan Statistical Area (MSA) Distribution of Companies Involved in Stock Options Backdating
(MSAs with three or more Backdating Companies – Fiscal Year 2005)

	Backdaters		All Headquarters		SIC 36 Headquarters		SIC 73 Headquarters	
MSA TITLE	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
SAN JOSE-SUNNYVALE-SANTA CLARA, CA	33	23.08	240	3.45	79	17.14	46	6.00
LOS ANGELES-LONG BEACH-SANTA ANA, CA	17	11.89	410	5.90	28	6.07	61	7.95
NEW YORK-NORTHERN NEW JERSEY-LONG ISLAND, NY-NJ	13	9.09	814	11.72	39	8.46	103	13.43
BOSTON-CAMBRIDGE-QUINCY, MA-NH	12	8.39	287	4.13	22	4.77	52	6.78
SAN FRANCISCO-OAKLAND-FREMONT, CA	11	7.69	243	3.50	19	4.12	57	7.43
DALLAS-FORT WORTH-ARLINGTON, TX	6	4.20	254	3.66	15	3.25	30	3.91
WASHINGTON-ARLINGTON-ALEXANDRIA, DC-VA-	5	3.50	183	2.63	5	1.08	31	4.04
HOUSTON-SUGAR LAND-BAYTOWN, TX	4	2.80	257	3.70	5	1.08	14	1.83
PHOENIX-MESA-SCOTTSDALE, AZ	3	2.10	84	1.21	15	3.25	11	1.43
MIAMI-FORT LAUDERDALE-POMPANO BEACH, FL	3	2.10	168	2.42	11	2.39	23	3.00

Table 7
Conditional Logistic Regression of Backdating Probability on Location Characteristic and Control Variables

The sample consists of all observations, for fiscal year 2005, with necessary data and subject to the following restrictions (1) the company is headquartered in the United States, (2) the company and its auditors are both located in the same MSA. The dependent variable is an indicator variable that takes the value 1 if the company is involved in backdating and 0 otherwise. The model is estimated with industry fixed effects. Standard errors are robust standard errors clustered by industry. Appendix B provides definitions and computations of all variables.

		Model 1	
Variable &		(1)	(2)
Predicted Sign		Coefficient	z-value
Test Variable			
PROP_BACK	+	6.506	1.94 **
Control Variables			
LHQ	?	0.221	0.90
LMSA	?	-0.566	-1.14
LACCY	?	0.338	1.16
LDIST	+	-0.071	-0.47
HHI_MSA	-	-0.916	-0.59
BIG	-	1.063	1.28
LFEE_SZ	-	0.109	0.62
INFL	-	0.870	1.17
LAT	-	-0.043	-1.51 *
CH_SALE	+	-0.136	-0.54
LEV	-	-0.119	-0.34
CFO	-	1.423	1.64 *
N		1,845	
Pseudo R^2		0.09	

*, ** and *** indicate significance at the 10%, 5% and 1% levels for one-tailed tests when the expected sign is determinate and for two-tailed tests otherwise.

Table 8
Regression of Absolute Value of Performance Adjusted Jones Model Abnormal Accruals on Location Characteristics (computed using relative presence matrices) and Control Variables

The sample consists of all observations, for fiscal years 2003 to 2005 (both inclusive), with necessary data and subject to the following restrictions (1) the company is headquartered in the United States, (2) the company and its auditors are both located in the same MSA (3) the company does not belong to the regulated (SIC 4000-4999) or financial (6000-6999) industries. Table 1 provides details on sample selection. The dependent variable is the absolute value of performance adjusted Jones model abnormal accruals. The model is estimated with both industry and year fixed effects. Standard errors are clustered by MSA. Appendix B provides definitions and computations of all variables.

Variable & Predicted Sign		Big Four Auditees (1) Coefficient	(2) t-value	Non Big Four Auditees (3) Coefficient	(4) t-value
Test Variables					
RHQ	-	0.003	0.38	-0.073	-2.15**
MEAN_ACC	+	0.122	2.27**	-0.168	-0.84
Control Variables					
LMSA	-	0.003	1.37	-0.018	-2.72***
RACCY	-	-0.066	-1.00	0.039	0.17
LDIST	+	0.002	1.72**	-0.004	-0.85
HHI_MSA	-	0.002	0.19	0.101	1.58
LFEE_SZ	-	-0.003	-1.99**	-0.003	-0.86
INFL	-	-0.020	-1.69**	-0.012	-0.63
AUD_NEW	+	0.003	0.99	0.007	0.82
MSA_LEAD	-	0.001	0.23	-0.041	-2.22**
NEW	+	-0.010	-0.48	0.052	1.23
MSA_NEW	+	0.017	1.58*	-0.020	-0.63
LAT	-	0.000	0.42	0.000	0.06
CH_SALE	+	0.030	3.97***	0.002	0.43
LOSS	+	0.024	3.92***	0.045	4.22***
LEV	+	0.020	2.49***	0.025	3.89***
CFO	-	-0.070	-3.25***	-0.029	-1.02
CONSTANT	?	0.029	0.96	0.393	2.85***
N		3,856		947	
Clusters		80		63	
Adjusted R^2		0.11		0.15	

*, ** and *** indicate significance at the 10%, 5% and 1% levels for one-tailed tests when the expected sign is determinate and for two-tailed tests otherwise.

Table 9
Regression of Predicted Accruals (Principal Component) on Location Characteristics and Control Variables for the Full Sample and by Auditor Type

The sample consists of all observations, for fiscal years 2003 to 2005 (both inclusive), with necessary data and subject to the following restrictions (1) the company is headquartered in the United States, (2) the company and its auditors are both located in the same MSA (3) the company does not belong to the regulated (SIC 4000-4999) or financial (6000-6999) industries. Table 1 provides details on sample selection. The dependent variable is the predicted accruals from the first component of a principal component analysis on four different abnormal accrual measures. The model is estimated with both industry and year fixed effects. Standard errors are clustered by MSA. Appendix B provides definitions and computations of all variables including the different abnormal accruals.

		Big Four Auditees		Non Big Four Auditees	
Variable &		(1)	(2)	(3)	(4)
Predicted Sign		Coefficient	t-value	Coefficient	t-value
Test Variables					
LHQ	-	-0.012	-0.55	-0.251	-2.05**
MEAN_ACC	+	0.099	1.63*	-0.145	-0.66
Control Variables					
LMSA	-	0.059	0.72	0.252	1.07
LACCY	-	0.011	0.23	-0.156	-1.03
LDIST	+	0.020	1.06	-0.049	-0.52
HHI_MSA	-	0.021	0.09	0.944	0.80
LFEE_SZ	-	-0.068	-2.27**	-0.081	-1.11
INFL	-	-0.554	-2.67***	-0.478	-1.34*
AUD_NEW	+	0.055	0.86	0.155	1.24*
MSA_LEAD	-	0.001	0.01	-0.667	-1.87**
NEW	+	-0.004	-0.01	-0.494	-0.89
MSA_NEW	+	0.078	0.52	-0.150	-0.60
LAT	-	0.003	0.67	-0.007	-0.36
CH_SALE	+	0.656	3.66***	0.079	0.99
LOSS	+	0.513	4.44***	0.901	3.64***
LEV	+	0.463	4.45***	0.778	4.23***
CFO	-	-1.151	-2.60***	-0.365	-0.43
CONSTANT	?	-0.673	-1.07	-0.587	-0.20
N		3,536		801	
Clusters		79		62	
Adjusted R^2		0.12		0.15	

*, ** and *** indicate significance at the 10%, 5% and 1% levels for one-tailed tests when the expected sign is determinate and for two-tailed tests otherwise.

APPENDIX A
Data Sources

No:	Data	Source
1	Company Financial Statement Data	*Compustat* Fundamentals Annual database
2	Auditor Location	*Audit Analytics Audit Opinions* dataset
3	Audit Fees	Audit Analytics Audit Fee dataset
4	Headquarters location	Compact Disclosure
5	City Name to County Name Link	SAS data file SASHELP.ZIPCODE National Association of Counties website http://www.naco.org/
6	MSA Definitions	U.S. Census Bureau – Annual MSA definition files http://www.census.gov/population/www/metroareas/metrodef.html
7	MSA Employment Data	County Business Patterns, U.S. Census Bureau http://www.census.gov/econ/cbp/download/index.htm
8	MSA Latitude and Longitude	SAS data file SASHELP.ZIPCODE.
9	Stock option backdating data	Restatement database of *Audit Analytics* and Wall Street Journal list of companies likely to have backdated stock option
10	Governance Scores	Brown and Caylor corporate governance scores downloaded from http://robinson.gsu.edu/accountancy/gov_score.html

APPENDIX B
Variable Definitions

This appendix provides the definitions of the dependent and independent variables. The expected sign column displays the predicted sign of the relation between the dependent and independent variables and the reference column lists the prior literature on which the expected signs are based. For each variable I provide (within parentheses) the *Compustat l*egacy version data item number followed by *Compustat* Xpressfeed data mnemonic.

Variable	Variable Type	Exp. Sign	Definition	References/Justification
ABS_ACC	Dependent	NA	Abnormal accruals are computed as the absolute value of the residual from the following regression. $TA_{it} = \beta_0 + \beta_1 (1/ASSET_{it-1}) + \beta_2 \Delta SALES_{it} + \beta_3 PPE_{it} + \beta_4 ROA_{it} + \varepsilon_{it}$ Where Total accrual (TA) = Net Income (Compustat 172, NI) less total cash flows (Compustat 308, OANCF) ASSET = total assets (Compustat#6, AT). ΔSALES is the changes in net sales= (Compustat #12 SALE less lagged Compustat#12 SALE) PPE is net property, plant and equipment (Compustat#8, PPENT) ROA is net income before extraordinary items (Compustat#18, IB) Each of these variables is scaled by lagged total assets.	Jones (1991): Kothari et al (2005)
LHQ	Test	-	The natural logarithm of total number of headquarters in each 2-digit NAICS industry in each MSA	NA
MEAN_ACC	Test	+	The mean absolute abnormal accrual for all companies located in the MSA excluding the company in question	NA
LMSA	Test	-	The natural logarithm of the total MSA employment.	NA
LACCY	Test	-	The natural logarithm of the total employment in NAICS 5412 in each MSA	NA
LDIST_SEC	Control	+	The natural logarithm of the distance in miles from the MSA in which the company's headquarters in located to the nearest SEC office.	Kedia and Rajagopal (2009); DeFond et al. (2008)
HHI_MSA	Control	-	Is the Herfindahl index (a measure of market concentration) for the audit market at the MSA level. It is computed as $\sum_{i=1}^{N} s_i^2$ where s_i is the market share of firm *i* and *N* is the number of firms in the market.	Kallapur et al. (2009)

Appendix B (cont.)

Variable	Variable Type	Exp. Sign	Definition	References/Justification
BIG	Control	-	Indicator variable equal to 1 if the auditor is a Big Four Auditor, 0 otherwise	Becker et al. (1998)
NEW_AUD	Control	+	An indicator variable that equals 1 if the auditor tenure is less than or equal to 3 years, 0 otherwise	Myers et al. (2003);
LFEE_SZ	Control	-	Natural logarithm of the size of an audit office. Size of audit office is computed as the total audit fees collected by that individual audit office in a year.	Francis and Yu (2009)
INFL	Control	-	Computed as the ratio of the total fees paid by a company to the total fees earned by that audit office.	Reynolds and Francis (2000)
MSA_LEAD	Control	-	An indicator variable that takes the value 1, if the audit firm has the highest market share by audit fees at the MSA level in that 2-digit NAICS code, 0 otherwise	Fergusson et al (2003) Francis et al (2005)
NEW	Control	+	An indicator variable that takes the value 1 if the company has been on *Compustat* for less than 4 years, 0 otherwise	Anthony and Ramesh (1992)
NEW_MSA	Control	+	An indicator variable that takes the value 1 if the company has located in an MSA for less than 4 years, 0 otherwise	NA
LAT	Control	-	Natural Logarithm of AT (Date 6)	Dechow and Dichev (2002)
CH_SALE	Control	+	Change in sale scaled by lagged total assets. Computed as (Compustat12, $SALE_t$-Compustat12_{t-1}, SALE) / Compustat6_{t-1}, AT	McNichols (2000)
LOSS	Control	+	An indicator variable equal to 1 if net income (Compustat172, NI) is less than 0, 0 otherwise	DeAngelo et al. (1994); Burgstahler and Dichev (1997)
LEV	Control	+	Ratio of total liabilities to total assets (Compustat181, LT/Compustat6, AT)	Becker (1998); DeFond and Jimbalvo (1994)
CFO	Control	-	Cash flow from operations deflated by lagged total assets (Compustat 308_t, OANCF/Compustat 6_{t-1}, AT)	Kothari et al. (2005)
Stock Options Backdating Model				
BACKDATE	Dependent		Indicator variable equal to 1 if the company backdates its employee stock options, 0 otherwise	
PROP_BACK	Test	+	Proportion of companies that backdate stock options in a location excluding the company in question	
LHQ	Test	?	The natural logarithm of total number of headquarters in each 2-digit SIC industry in each MSA	NA
LMSA	Test	?	The natural logarithm of the total MSA employment.	NA
LACCY	Test	?	The natural logarithm of the total employment in NAICS 5412 in each MSA	NA

Appendix B (cont.)

Variable	Variable Type	Exp. Sign	Definition	References/Justification
LDIST_SEC	Control	+	The natural logarithm of the distance in miles from the MSA in which the company's headquarters in located to the nearest SEC office.	Kedia and Rajagopal (2009); DeFond et al. (2008)
HHI_MSA	Control	-	Is the Herfindahl index (a measure of market concentration) for the audit market at the MSA level. It is computed as $\sum_{i=1}^{N} s_i^2$ where s_i is the market share of firm *i* and *N* is the number of firms in the market	Kallapur et al. (2009)
BIG	Control	-	Indicator variable equal to 1 if the auditor is a Big Four Auditor, 0 otherwise	
LFEE_SZ	Control	-	Natural logarithm of the size of an audit office. Size of audit office is computed as the total audit fees collected by that individual audit office in a year.	Francis and Yu (2009)
INFL	Control	-	Computed as the ratio of the total fees paid by a company to the total fees earned by that audit office.	Reynolds and Francis (2000)
LAT	Control	-	Natural Logarithm of total assets (Date 6, AT)	Larger firms may be less likely to adopt option backdating
CH_SALE	Control	+	Change in sale scaled by lagged total assets. Computed as ($Compustat12_t$, SALE-$Compustat12_{t-1}$, SALE) / ($Compustat6_{t-1}$, AT)	Growth firms are more likely to have employee stock option plans.
LEV	Control	-	Ratio of total liabilities to total assets (Compustat181, LT/Compustat6, AT)	Highly levered firms may be more strictly monitored by their creditors reducing the likelihood of accounting manipulations.
CFO	Control	-	Cash flow from operations deflated by lagged total assets (Compustat 308_t, OANCF/Compustat 6_{t-1}, AT)	Companies with cash flow problems are more likely to use stock options.
Alternate Accrual Models				
MOD_JONES	Dependent	NA	Abnormal accruals are computed as the absolute value of the residual from the following regression. $TA_{it} = \beta_0 + \beta_1 (1/ASSET_{it-1}) + \beta_2(\Delta SALES_{it} - \Delta REC_{it}) + \beta_3 PPE_{it} + \beta_4 ROA_{it} + \varepsilon_{it}$ Where, Total accrual (TA) = Net Income (Compustat 172, NI) less total cash flows (Compustat 308, OANCF). ASSET = total assets (Compustat#6, AT). ΔSALES is the changes in net sales= (Compustat #12,SALE less lagged Compustat#12, SALE). ΔREC is the change in receivables =(Compustat#2, RECT less lagged Compustat#2, RECT). PPE is net property, plant and equipment (Compustat#8, PPENT). ROA is net income before extraordinary items (Compustat#18, IB) Each variable is scaled by lagged total assets.	Jones (1991); Dechow et al. (1995); Kothari et al (2005)

Appendix B (cont.)

Variable	Variable Type	Exp. Sign	Definition	References/Justification
BALL_SHIV	Dependent	NA	Abnormal accruals are computed as the absolute value of the residual from the following regression. $TA_{it} = \beta_0 + \beta_1 (1/ASSET_{it-1}) + \beta_2(\Delta SALES_{it} - \Delta REC_{it}) + \beta_3 PPE_{it} + \beta_4 CFO_{it} + DUM_{it} + CFO_{it} * DUM_{it} + \varepsilon_{it}$ Where Total accrual (TA) = Net Income (Compustat 172, NI) less total cash flows (Compustat 308, OANCF) ASSET = total assets (Compustat#6, AT). ΔSALES is the changes in net sales= (Compustat #12, SALE less lagged Compustat#12, SALE) ΔREC is the change in receivables =(Compustat#2, RECT less lagged Compustat#2, RECT) PPE is net property, plant and equipment (Compustat#8, PPENT) CFO is the cash flow from operations= (Compustat#308, OANCF) DUM is an indicator variable which is equal to 1 if cash flow from operations is negative, 0 otherwise Each of these variables is scaled by lagged total assets.	Jones (1991); Kothari et al (2005); Ball and Shivakumar (2006)
DD	Dependent	NA	Abnormal accruals are computed as the absolute value of the residual from the following regression. $CWC_{it} = \beta_0 + \beta_1 CFO_{it-1} + \beta_2 CFO_{it} + \beta_3 CFO_{it+1} + \beta_4(\Delta SALES_{it}) + \beta_5 PPE_{it} + \varepsilon_{it}$ Where CWC is the change in working capital accruals computed as increase in accounts receivable (Compustat#302, RECCH) +increase in inventory (Compustat#303, INVCH)+ decrease in accounts payable and accrued liabilities (Compustat#304, APALCH)+ decrease in taxes accrued (Compustat#305, TXACH)+increase (decrease) in other liabilities (Compustat#307, AOLOCH).CFO is net operating cash flows (Compustat#308, OANCF). ΔSALES is the changes in net sales= (Compustat #12, SALE less lagged Compustat#12, SALE). PPE is net property, plant and equipment (Compustat#8, PPENT). ROA is net income before extraordinary items (Compustat#18, IB) Each of these variables is scaled by average total assets.	Dechow and Dichev (2002); McNichols (2002)