FIRM LOCATION AND FINANCIAL REPORTING QUALITY

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ABSTRACT

I find that rural firms have higher quality financial reporting than urban firms. In additional tests, I document two pieces of evidence that may explain these differences. First, I find that differences in financial reporting quality between rural and city firms are greatest when rural firm analyst coverage is low. Second, rural firm stock price is less sensitive to missing the year-end consensus analyst earnings forecast. These findings suggest one reason for rural firms' higher financial reporting quality is that they have less incentive for managing earnings.

INTRODUCTION

Prior research suggestions information is more slowly disseminated to the market for rural firms than for firms in more populated areas (e.g., Loughran and Schultz, 2006; Loughran, 2008). Consequently, rural firms can be more difficult to monitor for investors (Ayers, Ramalingegowda and Yeung, 2011; John, Knyazeva and Knyazeva, 2011).1 For example, Loughran and Schultz (2005, 2006) find that rural firms have higher costs of capital and lower liquidity than urban firms. Similarly, Brockman, Francis and Pinnuck (2011) document that cost of external capital is lowest for firms headquartered in the 12 largest U.S. metropolitan areas relative to all other U.S. firms. Francis, Hasan and Waisman (2007) find that rural firms face higher costs of debt. John, Knyazeva and Knyazeva (2011) document that investors demand greater dividends for rural firms, especially for rural firms with low investment opportunities. Ayers, Ramalingegowda and Yeung (2011) find that managers are more likely to use opportunistic financial reporting when institutional investors are located far away.

Prior research also documents that rural firms have lower analyst coverage (Loughran and Schultz, 2005, 2006; John *et al.*, 2011), lower institutional investment (Loughran and Schultz, 2005, 2006; Brockman *et al.*, 2011), and provide less voluntary disclosure than urban firms (Francis *et al.*, 2007). However, existing literature offers mixed signals about the relation between firm location and financial reporting. On one hand, Urcan (2007) documents greater accrual quality and a lower likelihood of reporting small positive earnings for rural firms than for urban firms. On the other hand, Kedia and Rajgopal (2008) find that managers' incentives for financial misreporting are positively associated with the distance between the firm and the nearest SEC office which, for rural firms, is likely to be considerable. Ayers et al. (2011) report similar results with regards to firm proximity to large monitoring institutions; Managers of firms closer to institutional investors are less likely to misreport. Given these disparate findings, I investigate whether differences in financial reporting quality exist between rural and urban firms. I then examine whether factors known to impact financial reporting quality, namely analyst coverage, institutional investment, voluntary disclosure and stock price sensitivity to earnings surprises, explain these differences.

Analyzing a comprehensive sample of rural and urban firms, from 1996 to 2009, I find that rural firms have higher financial reporting quality than urban firms. Inquiry into potential causes reveals the following: higher earnings quality of rural firms is *decreasing* in analyst coverage, indicating that lower analyst coverage partially explains why rural firms have higher earnings quality than urban firms. Alternately, higher earnings quality of rural firms is *increasing* in institutional investment, indicating that variation in earnings quality between rural and urban firms is likely not caused by differences in institutional investment. Furthermore, the variation in earnings quality between rural and urban firms does not depend on managerial earnings guidance. Finally, rural firm stock price is less sensitive to earnings surprises than urban firm stock price. Together with the results for analyst coverage, this last finding suggests a lower pressure to meet analyst earnings forecasts may be the primary reason why rural firms have higher earnings quality than urban firms. Results are robust to controls for industry and year effects, to independent measures of earnings quality, and to alternative specifications of the definitions of 'rural' and 'urban'.

My findings contribute to several streams of literature. They contribute to literature on the determinants of financial reporting quality by showing that the location of a firm's headquarters may explain cross-sectional variation in earnings quality. They also contribute to literature on the determinants of managers' incentives to manage earnings (e.g., Dechow and Skinner, 2000; Matsumoto 1999, 2000). Abarbanell and Lehavy (2003) argue that a stronger stock price reaction to earnings news may create an incentive for managers to avoid negative earnings surprises. Analyst activity may increase incentives to manage earnings as well, since analyst earnings forecasts may increase pressure to meet or beat analyst targets (e.g., Abarnell and Lehavey, 2003; Levitt, 1998; Rajgopal, Shivakumar and Simpson, 2007). Similarly, Chen *et al.*, (2011) argue that issuance of earnings guidance can lead to managerial myopia such that managers make short-term decisions in an effort to meet earnings targets at the expense of long- term performance. Finally, Matsumoto (2002) finds that transient institutional ownership may be positively associated with a propensity to just meet-or-beat earnings targets. My study provides additional evidence that differences in analyst coverage may lead to variation in earnings quality between rural and urban firms.

I also contribute to the broader literature on the geography of economics and finance. Glaeser (2009) argues that cities offer firms a number of advantages, one of which being that densely populated areas are natural conductors of information. I contribute to this literature by finding that rural firms report higher quality earnings than urban firms, and that having less incentive to manage earnings may at least partially explain this finding.

In the next section I discuss related literature and develop testable hypotheses regarding the relation between firm location and financial reporting quality and the impact of high quality financial on rural firm cost of capital and liquidity. In sections 3 and 4, I discuss my research design, test sample and present results of empirical analyses and sensitivity tests. In section 5, I conclude.

RELEVANT LITERATURE

Information and Geography

Arguing that even in the modern world information is largely immobile, prior studies suggest investors have more information about companies they are physically close to (e.g., Loughran and Schultz, 2005; Massa and Simonov, 2006; Van Nieuwerburgh and Veldkamp, 2009). Coval and Moskowitz (2001) find that mutual funds perform better on local stocks than on distant ones. This is especially true for geographically remote companies, indicating fund managers close to a firm may have greater access to value-relevant information than fund managers farther away. As Coval and Moskowitz (2001) explain:

> "*Investors located near a firm can visit the firm's operations, talk to suppliers and employees, and assess the local market conditions in which the firm operates. In addition to the lower travel, time, and research costs associated with obtaining such information, local investors may also gain access to private information*"
>
> -(Coval and Moskowitz, 2001, p. 839)

Supporting this conjecture, Ivkovic and Weisbenner (2005) analyze the brokerage accounts of 78,000 U.S. households between 1991 and 1996, and find that investors heavily favor firms located within 250 miles of their household, hold an average of 30% of their total portfolio values in domestic assets, and generate annual returns 3.2% beyond returns to non-local assets. Malloy (2005) finds that equity analysts geographically closer to the headquarters of the firms they analyze have lower forecast errors than analysts farther away. He also finds that forecasts and forecast revisions from local analysts have a larger impact on stock price than revisions by non-local analysts and that local analysts perform better on stocks in more remote areas. In an international context, Bae, Stulz & Tan (2008) find that domestic analysts make more precise estimates for domestic firms than do foreign analysts. Chan, Covrig & Ng (2005) examine the holdings of over 20,000 mutual funds across 26 countries, and find that fund managers typically perform better on domestic assets than foreign holdings.

In addition to affecting the costs of information acquisition, firm location may also impact investor recognition (Massa and Simonov, 2006; Brockman, Francis & Pinnuck, 2010). Barber and Odean (2003) find that investors prefer stocks that have recently been in the news. Similarly, Huberman (2001) finds that, in the 1990s, the customers of the Regional Bell Operating Company (RBOC) were more likely to invest in RBOC than other telecommunications companies, and attributes this finding to greater familiarity. In a similar vein, previous research suggests firms with larger advertising expenditures are more visible (Grullon, Kanatas & Weston, 2004). Additionally, cities provide natural conduits of exposure because of greater media presence, closer proximity to banks and more analyst activity (Glaeser, 2009; Coval and Moskowitz, 2001). Thus, they are likely to facilitate the flow of firm information, making firms headquartered in urban areas more visible to investors than firms headquartered in rural areas.

In sum, prior studies on firm location suggest information is more easily attainable and thus investors' monitoring costs are significantly lower for firms headquartered in or near highly populated areas (e.g., Van Nieuwerburgh & Veldkamp, 2009; Coval & Moskowitz, 2001).

Financial Reporting and Firm Transparency

Transparency depends both on the transmission of information through indirect channels and on information provided in a firm's financial reports (Bushman, Piotroski & Smith, 2004). Transparency in general may be associated with better governance (Wang, 2007). For instance, Dyck and Zingales (2004) find that firms with richer information environments have lower private benefits of control. Similarly, transparency may lead to lower information asymmetries between informed and uninformed investors, decreasing adverse selection risk (Easley and O'Hara, 2004). In line with this argument, Jin and Myers (2006) and Hutton, Marcus and Tehranian (2009) find that the likelihood of a stock price crash is lower in transparent firms. Holthausen and Watts (2001) argue and provide evidence that litigation risk is negatively related to firm transparency, while Charitou, Lambertides and Trigeorgis (2007) document a negative relation between firm transparency and the probability of bankruptcy. There may also be real benefits to transparency. Biddle and Hilary (2006) and Biddle *et al.*, (2009) find that managers in firms with greater financial reporting quality make more efficient investments.

Competing arguments exist regarding the relation between firm location and financial reporting quality. One possibility is that higher costs of investor information acquisition and lower overall visibility (Van Neiwerburg & Veldkamp, 2009; Huberman, 2001) increase the rewards to rural firm managers of managing earnings. This may especially be the case if it allows firm resources to be diverted more easily (Dyck & Zingales, 2004). Alternatively, rural firm managers may not wish to expend the necessary resources to ensure financial statement quality if they think it will matter little in reducing external capital costs (Brown *et al.*, 2008). For example, prior research finds that rural firms have higher levels of debt than urban firms (e.g. Francis, Hasan & Waisman, 2007). A greater dependency on debt may reduce the benefits of firm transparency, especially if the debt is procured through bank loans. This is possible because banks are efficient procurers of firm information and may achieve private information advantages because of the close relationships they develop with borrowers (Diamond, 1984; Myers & Majluf, 1984; Houston & James, 1996). Firms highly capitalized through debt may have less need to be transparent.

There may also be a resource reason for rural firms to have lower quality financial reporting. Urban firms may have access to a larger, more highly-skilled workforce (Glaeser, 2009; Florida, Gulden & Mellander, 2008). Research in auditing finds that larger audit offices provide better quality auditing services (Francis & Yu, 2009). Since the largest auditing offices are likely located in or near major economic areas, rural firms may also be at a disadvantage in hiring the best auditors.

It is equally plausible that rural firms have higher financial reporting quality than urban firms. Lower analyst coverage and less institutional investment may be associated with higher earnings quality, since analyst coverage and institutional investment can create pressures for managers to meet earnings benchmarks (Matsumoto, 1999; 2002). If rural firms have fewer outlets for information flow, financial reporting may be the paramount way in which managers communicate with investors. There may also be cultural/reputational reasons for rural managers to provide higher quality financial reports (Francis, Nanda & Olsson, 2008; Hope, 2003). Research suggests regional social norms, organizational attributes, and economic ideology can affect how managers perform their jobs (e.g., Ralston *et al.*, 2008). Interactions with the local community and local investors may influence rural firm managers to the effect of increasing financial reporting quality.

Prior research fails to consider how the location of a firm's headquarters might impact its financial reporting quality. To shed light on the location-financial reporting quality relation, I investigate, in the context of the rural/urban dichotomy (see Coval & Moskowitz, 1999; Loughran & Schultz, 2005, 2006), whether firm location is associated with cross-sectional variation in financial reporting quality. I then investigate possible avenues through which such differences may arise.

RESEARCH DESIGN AND SAMPLE SELECTION

Defining Rural Firms

Following prior literature (e.g., Coval & Moskowitz, 1999; Ivkovic & Weisbenner, 2003; Loughran & Schultz, 2005, 2006), rural firms are defined as those firms headquartered 100 or more miles from any of the major U.S. Core Based Statistical Areas (CBSAs) with a 2010 U.S. Census population of 1,000,000 or more persons.2 Figure 2 in the Appendix lists the 52 U.S. CBSAs with 2010 populations in excess of 1,000,000 persons.

To capture rural location I measure the linear distance between a firm's headquarters and the center of each of the 52 major CBSAs with a population of 1,000,000 or more persons. To do this, I first obtain from Compustat the historical *Company* file which includes both the historical addresses and either firm zip-codes or the Federal Information Processing Standard (FIPS) codes for firms' headquarters.3 Using the historical *Company* file is necessary because the most recent Compustat *Company* file only provides the current location of a firm's headquarters, and then backdates this information to all previous years. For example, in 2008 AT&T moved its headquarters from San Antonio, Texas to Dallas, Texas (MSNBC, 2008). In Compustat, data taken from the 2008 *Company* file would only report AT&T's most recent location (Dallas, Texas) and this location would be backdated to all previous years as the firm's city of quarter, even though the company had been headquartered in San Antonio prior to 2008. Though not tabulated, I document that roughly 7% of firms listed in my final sample change the location of their headquarters every year. This is similar to numbers reported by Holloway and Wheeler (1991) who document that from 1980 to 1987, an average of 5.6% of U.S. public companies changed the location of their headquarters every year. Strauss-Kahn and Vives (2006) report a similar percentage for U.S. companies from 1996 to 2001. By using the historical *Company* file, I am able to calculate the distance between a firm and the nearest major city with minimal error.

For each of the 52 CBSAs listed in Figure 2, I attempt to capture the central-most zip- code by locating, via a Google® search, the headquarters of city hall of the primary city constituting each CBSA.4 After recording historical zip-codes for both firm and CBSA, I then obtain the longitude and latitude for each U.S. zip-code from Zipinfo.com, a provider of zip code information, and calculate the linear distance between each firm and city hall of the primary city constituting the CBSA. Figure 2 in the Appendix provides the formula for calculating linear distance. I construct a dummy variable *RURAL* equal to 1 if a firm is more than 100 miles from city hall, 0 otherwise. This approach is similar to Loughran and Schultz (2006) who consider firms 100 or more miles from the center of any U.S. city with a population over 1 million to be ‘rural.’ All firms located within 30 miles of the largest 15 metropolitan areas listed in Figure 2, I classify as ‘urban.’ As in prior studies (e.g., Loughran & Schultz, 2005, 2006; Clark, Francis and Hasan, 2009) I delete all firms headquartered between 31 and 99 miles from the center of the 52 largest CBSAs from my sample. This is done to reduce noise in the definitions of ‘rural’ and ‘urban.’

Main Empirical Model

To test the relation between firm location and financial reporting quality, I use proxies for earnings quality (*EQ*) to capture a firm’s overall financial reporting quality and model *EQ* as a function of rural location (*RURAL*) and controls, as suggested by prior research (equation 1 below). Expectations of the direction of each independent variable with earnings quality are provided under each variable in equation (1). As stated above, I expect the coefficient on *RURAL* to be statistically insignificant (null hypothesis).

$$
\begin{aligned}
EQ_{it} = \alpha_{it} &+ \underset{(+/-)}{\beta_1 RURAL_{it}} + \underset{(+)}{\beta_2 ACCRUALS_{it}} + \underset{(+)}{\beta_3 SIZE_{it}} + \underset{(-)}{\beta_4 LEVERAGE_{it}} + \underset{(+/-)}{\beta_5 MTB_{it}} \\
&+ \underset{(+/-)}{\beta_6 SALES_{it}} + \underset{(+)}{\beta_7 DIVIDEND_{it}} + \underset{(-)}{\beta_8 VAR\_CFO_{it}} + \underset{(+)}{\beta_9 ROA_{it}} + \underset{(-)}{\beta_{10} LOSS_{it}} + \\
&\underset{(-)}{\beta_{11} OPCYCLE_{it}} + \underset{(+/-)}{\beta_{12} ANALYSTS_{it}} + \underset{(+)}{\beta_{13} HOLDINGS_{it}} + \underset{(+)}{\beta_{14} BIG4_{it}} + \\
&\underset{(+/-)}{\beta_{15} NASDAQ_{it}} + \underset{(+/-)}{\beta_{16} AMEX_{it}} + YEAR_t + INDUSTRY_{it} + \varepsilon_{it} \qquad (1)
\end{aligned}
$$

*For variable definitions refer to Table 1.

Measuring Earnings Quality

To capture earnings quality I estimate accrual quality, earnings persistence and earnings smoothness and use the principal component of these three measures as a proxy for earnings quality. Following Hutton, Marcus and Tehranian (2009) and Francis *et al.*, (2004), accrual quality (*ACCQ*) is estimated using Dechow and Dichev’s (2002) method for measuring the standard deviation of abnormal accruals. Specifically, I estimate the following firm-specific model (equation 2) over 8-year rolling windows, where total accruals are a function of past, present, and future cash flows from operations. Francis *et al.* (2004) use 10-year rolling regressions to estimate firm-specific measures of my earnings quality metrics. Because this is a data-intensive restriction, I reduce this requirement to 8 years to gain more observations in my final sample. In unreported tests, I also use 5-year rolling windows; while some relations are weaker in statistical significance, results remain qualitatively unchanged.

$$ACCRUALSit = \alpha it + \beta 1CFOit\text{-}1 + \beta 2CFOit + \beta 3CFOit\text{+}1 + \varepsilon it \quad (2)$$

Where:

ACCRUALSit = Total accruals for firm *i* in year *t*, calculated as the change in working capital from *t-1* to *t* (see Dechow and Dichev, 2002)
CFOit+n = Cash flows from operations, scaled by beginning period total assets, for firm *i* in year *t+n*.

Accruals match the timing of accounting recognition of revenue with the economic benefits of revenue. However, as Dechow and Dichev (2002) argue, accruals are based on "assumptions and estimates that, if wrong, must be corrected in future accruals and earnings." As a result, estimation errors in accruals may lead to a lower correlation between accruals and cash flows. Equation (2) measures how well accruals map into cash flows. As such, the standard deviation of the residual from equation (2) has been widely used in the extant literature as a proxy for earnings quality, with higher (lower) levels indicating lower (higher) quality (Dechow, Ge and Schrand, 2010).

My second proxy for earnings quality is earnings persistence (*PERSISTENCE*). Persistent earnings are considered desirable because of the assumption that greater persistence makes for better inputs into equity valuation models and improves overall decision usefulness (Schipper & Vincent, 2003; Dechow, Ge and Schrand, 2010). Prior research documents stronger stock price response to news for firms with high earnings persistence (e.g. Komendi & Lipe, 1987; Collins and Kothari, 1989). Bradshaw, Richardson and Sloan (2001) and Bhojraj and Swaminathan (2007) also provide evidence of increased analyst performance and lower bond mispricing for firms with high earnings persistence. Li (2008) equates higher earnings persistence to financial statement clarity. Verrecchia (2001), Waymire (1985) and Tucker (2010) suggest firms with greater earnings persistence are more likely to provide earnings guidance.

Lev (1983) and Ali and Zarowin (1992) propose that the extent to which past earnings explain current earnings is a good approximation of earnings persistence. Regressing current period earnings on one-year lagged earnings, they measure persistence as the coefficient on lagged earnings, where higher persistence indicates higher earnings quality. Therefore, I estimate equation (3) over 8-year rolling windows, saving $\beta 1$ as a firm-specific measure of earnings persistence.

$$EARNINGSit = \alpha it + \beta 1EARNINGSit\text{-}1 + \varepsilon it \quad (3)$$

Where:

EARNINGSit,t-1 = Income before extraordinary items, scaled by beginning period total assets, for firm *i* in year *t*, *t-1*.

My third measure of earnings quality is the extent to which firms smooth reported earnings via accruals. Earnings smoothing mitigates problems associated with the mismatch of cash receipts with payments (Tucker & Zarowin, 2006; Dechow, Ge and Schrand, 2010). However, smoothing that is in excess of the natural accruals process may constitute earnings management and thus lead to lower financial reporting quality (Dechow & Skinner, 2000). Following Francis *et al.*, (2004) and Francis *et al.*, (2008), I define earnings smoothing as the ratio of the standard deviation of income before extraordinary items scaled by beginning period total assets to the standard deviation of cash flows from operations scaled by beginning period total assets. I calculate standard deviations of both income before extraordinary items and cash flows from operations over the prior 5 years, including the current fiscal year. Because larger values denote greater smoothing, and hence lower earnings quality, I multiply this measure by negative one, such that $SMOOTHNESSit = [\sigma(NIBEit)/\sigma(CFOit)] * (-1)$, and higher (lower) levels represent higher (lower) earnings quality.

As mentioned above I reduce the dimensionality of accrual quality, earnings persistence and earnings smoothness into a single principal component using common factor analysis. This approach allows me to utilize the common variance between these different measures of earnings quality (see Joliffe, 2002). The first factor extracted explains 88% of the variation in the group of proxies, and is the only factor with an eigen-value greater than 1. I retain this factor for use in my empirical models.

Control Variables

Control variables for equation (1) include total accruals (*ACCRUALS*) to account for the overall affect of accrual accounting on earnings quality. I also control for firm size. While evidence is mixed as to whether larger firms, on average, are more or less likely to engage in earnings management (Dechow *et al.*, 2010), I predict a positive relation with *EQ*, since larger firms are more visible and likely have more to lose for poor quality financial reporting. To control for firm size I include the natural log of total assets, (*SIZE*). Several studies provide evidence that managers, in an effort to avoid debt covenant violations, will be more likely to adopt income increasing accounting methods (e.g., Bowen, Noren, & Lacy, 1981; Zmijewski & Hagerman, 1981; Johnson & Ramanan 1988; Balsam, Haw, & Lilien, 1995; Kinney & McDaniel, 1989; Dichev & Skinner, 2002). Therefore, firm debt may be negatively associated with earnings quality. As such, I capture the potential effects of debt financing on earnings quality by including a control for firm leverage, (*LEVERAGE*). I also include a control for dividend expenditures (*DIVIDEND*), as prior literature suggests dividend payout may be associated with better governance (Brav *et al.*, 2005; John & Knyazeva, 2006).

Firm growth may also affect earnings quality. The argument here is that high growth firms likely have unsustainable earnings (Nissim & Penman, 2000). Furthermore, growth may be associated with greater management error and hence more earnings management (Richardson *et al.*, 2005). To control for firm growth I include controls for both the ratio of a firm's market value of equity to book value of equity (*MTB*), to capture a firm's future investment prospects, and 2-year average (*SALES*) to total assets to capture the extent to which the firm has responded to investment opportunities in the past. I expect both to be negatively related to earnings quality. Keating and Zimmerman (1999) and DeFond and Park (1997) suggest firm performance can also lead to variation in earnings quality. Therefore, I control for firm performance by including net income to total assets (*ROA*) and a dummy variable *LOSS*, equal to 1 if the firm reports a loss in the prior year, 0 otherwise. I also control for the variance in operating cash flows (*VAR_CFO*) over the prior 5 years and the length of operating cycle (*OPCYCLE*), to capture additional operating risk (Biddle, Hilary & Verdi, 2009).

Prior studies suggest lower analyst coverage is one of the primary reasons rural firms have less information flow (e.g., Loughran & Schultz, 2005). Therefore I control for the number of analysts issuing at least one quarterly earnings forecast per year, (*ANALYSTS*). Governance may also impact financial reporting quality (e.g., Krishnan & Visvanathan, 2005; Garcia-Lara *et al.*, 2009). Therefore I include the ratio of the total number of shares owned by institutional investors to total shares outstanding, (*HOLDINGS*) to capture governance. I predict a positive relation between *HOLDINGS* and *EQ*. Finally, Francis and Yu (2009) find that clients of Big 'N' auditors are significantly less likely to manage earnings. To control for auditor quality I include a dummy variable *BIG4*, equal to 1 if a firm is audited by a Big 'N' audit firm, 0 otherwise and predict a positive relation between *BIG4* and *EQ*.

In addition to the above control variables I also include a dummy variable *NASDAQ* equal to 1 if a firm is listed on the Nasdaq stock exchange, 0 otherwise, and a dummy variable *AMEX* equal to 1 if a firm is listed on the American Stock Exchange, 0 otherwise. I include these controls because the average firm listed on the Nasdaq and/or AMEX is likely to have different attributes than the average firm listed on the New York Stock Exchange (NYSE) (Loughran & Schultz, 2005; Loughran, 2007). Table 1 provides the basic definitions, calculations, and data sources for all variables used in my empirical models.

Table 1
Variable descriptions

Variable	Definition	Caculation (if applicable)	Data Source
ACCQ	Standard deviation of abnormal accruals	Dechow and Dichev (2002); see text	Compustat
PERSISTENCE	Measure of earnings persistence	see text	Compustat
SMOOTHNESS	Measure of earnings smoothing	see text	Compustat
EQ	Principal component of σAcc, Persistence and Smoothness	see text	--
ANALYSTS	Number of analysts issuing earnings forecasts by year	see text	I/B/E/S
HOLDINGS	Percentage of outstanding shares held by institutional investors	see text	Thomson
LN_GUIDANCE	Measure of managerial earnings guidance	see text	FirstCall
RURAL	Dummy variable, 1 if firm has "rural" headquarters	see text	ZipInfo.com; Compustat
ACCRUALS	Total change in working capital	-(RECCH+INVCH+APALCH+TXACH+AOLOCH)	Compustat
BETA	Fama-French three-factor model coefficient on the market premium	see text	Compustat; CRSP
SIZE	Natural log of total assets	log (AT)	Compustat
ZSCORE	Measure of bankruptcy potential	(3.3*PI)+SALE+(.25*RE)+(.5*((ACT-LCT)/AT))	Compustat
LEVERAGE	Ratio of debt to total equity	(DLTT+DLC)/((PRCC*F*CSHO)+DLTT+DLC)	Compustat
DIVIDEND	Payout: dividend expenses to total assets	(DVC+DVP)/AT	Compustat
OPCYCLE	Natural log of daily operating cycle	log(((RECT/SALE)+(INVT/COGS))*360)	Compustat

Table 1
Variable descriptions

Variable	Definition	Caculation (if applicable)	Data Source
SALES	Average sales to total assets in year *t* and *t-1*	(SALE/AT + SALEt-1/ATt-1)/2	Compustat
CFO	Operating cash flows	OANCF/AT	Compustat
VAR_CFO	Volatility of operating cash flows	see text	Compustat
MTB	Ratio of market value of equity to book value of equity	(PRCC_F*CSHO)/CEQ	Compustat
ROA	Return on assets	OIADP/AT	Compustat
LOSS	Dummy variable , 1 if firm reported loss in prior year	see text	Compustat
BIG4	Dummy variable, 1 if audited by Big 'N' auditor	see text	Compustat
NASDAQ	Dummy variable, 1 if firm is listed on the Nasdaq Stock Exchange	see text	CRSP
AMEX	Dummy variable, 1 if firm is listed on the American Stock Exchange	see text	CRSP

Measuring Managerial Earnings Guidance

Similar to Dhaliwal, Khurana and Pereira (2010), to capture managerial earnings guidance I consider both the frequency and precision of quarterly management earnings forecasts over a firm's prior 3 years. Using the Thomson First Call 'Company Issued Guidelines' (CIG) file, I create 1) a measure of forecast frequency (*FREQUENCY*) which is the number of quarterly management earnings issued in the previous 12 quarters, and 2) a measure of precision (*PRECISION*), which involves scoring management earnings forecasts based on their format. I assign forecasts that are qualitative a score of 1, forecasts that are a range of values a score of 2, and forecasts that are point estimates a score of 3. My final earnings guidance measure is calculated as the product of both components: *GUIDANCE* = *FREQUENCY***PRECISION*. *GUIDANCE* is right skewed, mean 9.82 (median 2.00). Therefore I use the natural log of 1 + *GUIDANCE* (*LN_GUIDANCE*) in my empirical models. Descriptive statistics of both *GUIDANCE* and *LN_GUIDANCE* are provided in Table 1.

Sample

Table 2 details my sample breakdown. I begin with all firms available in the intersection of the Compustat Xpressfeed, CRSP, I/B/E/S, and Thomson First Call databases for the years 1996 to 2009 and then delete firms in the utilities (SIC 4900-4999) and financial services industries (SIC 6000-6999), firms not headquartered in the U.S., and firms with stock prices below $5. Loughran and Schultz (2005, 2006) delete firms with stock prices below $5 as these firms are less likely to be covered by analysts and institutional investors, making them less liquid, and likely to have higher costs of capital (Lee, Mucklow & Ready, 1993). I delete utility and financial firms because these firms are subject to regulations which may cause them to have characteristics that are significantly different than firms in other industries. As in prior research (e.g., Loughran & Schultz, 2005), to facilitate the comparison of rural firms and urban firms, I remove all firms headquartered between 31 and 99 miles from any of the 52 CSBAs listed in Figure 1 in the Appendix. These deductions provide an initial sample of 46,410 firm-year observations covering 13,505 firms.

Table 2
Sample breakdown, 1996-2009

	Obs.	Firms
Rural and urban firms with Compustat/CRSP/Thomson merged data, less utilities, financial firms, non-U.S. firms and firms with stock price less than $5	46,410	13,505
Less lost data due to calculation of earnings quality measures (8-yr. rolling regressions)	(27,367)	(8,403)
Full sample for earnings quality tests	18,865	6,102
Less firms without I/B/E/S and FirstCall coverage (for analyst coverage and earnings guidance calculations)	(7,407)	(2,298)
Sub-sample for tests with earnings guidance	11,458	3,804

Because I require that firms have at least 8 consecutive years of observations to compute my earnings quality metrics, the sample is further reduced to 18,865 firm-year observations covering 6,102 firms. While this restriction is likely to introduce survivorship bias into my sample, it allows me to estimate firm-specific earnings quality measures, resulting in a better proxy for financial reporting quality (Francis *et al.*, 2004). First Call data on managerial earnings guidance is sporadic prior to 1996. Therefore, when earnings guidance is used as a partitioning variable, the sample is reduced to 11,458 firm-year observations covering 3,804 firms.

RESULTS

Univariate Results

Table 3 provides descriptive statistics for all variables used in my analyses. In examining the earnings quality metrics in panel A, I refer to Francis *et al.,* (2004). They report mean accrual quality as .026, mean persistence as .482, and mean smoothness as .640. My sample statistics are similar, as mean *ACCQ* is -.031, mean *PERSISTENCE* is .385, and mean *SMOOTHNESS* is -.660.5 Referring to Table 3, panel B, for the largest sample, nearly 60% of firms sampled are covered by at least one equity analyst by year, with an average coverage of 3 analysts. For the implied cost of equity sample, this number increases to 8.4. Furthermore, institutional investors hold nearly 66% of the outstanding shares for firms in the full sample. Loughran and Schultz (2005) document institutional ownership closer to 50% for their sample of firms. However, in an earlier study, O'Brien and Bhushan (1990) report average institutional investment of 70% for a larger sample of firms covered by Compustat. These numbers are comparable to prior studies (e.g. Doyle, Lundholm & Soliman, 2006; Francis, Nanda & Olsson, 2008).

Table 3
Full sample descriptive statistics, 1996-2009

	N	Mean	Median	S.D.	Q1	Q3
Panel A: Earnings Quality						
ACCQ	18,865	-0.0309	-0.0244	0.0233	-0.0405	-0.0148
PERSISTENCE	18,865	0.3847	0.3675	0.5195	-0.1183	0.5635
SMOOTHNESS	18,865	-0.6600	-0.7136	0.9482	-0.4413	1.1383
EQ	18,865	0.0201	0.0929	0.9401	-0.4173	0.5965
Panel B: Firm Characteristics						
ANALYSTS %	18,865	0.5852	1.0000	1.5657	0.0000	1.0000
ANALYSTS # (includes firms with no coverage)	18,865	3.0100	1.0000	4.6087	0.0000	4.0000
ANALYSTS # (firms with coverage only)	11,458	8.3869	6.0000	7.0302	3.0000	12.0000
HOLDINGS	18,865	0.6585	0.6795	0.3358	0.3954	0.9087
GUIDANCE (earnings guidance)	11,458	12.4352	2.0000	26.9187	0.0000	15.0000
LN_GUIDANCE (log 1+ GUIDANCE)	11,458	1.4233	1.0986	1.6452	0.0000	2.7726
Panel C: Control Variables						
RURAL	18,865	0.1201	0.0000	0.3251	0.0000	0.0000
ACCRUALS	18,865	0.0383	0.0141	0.2765	-0.0119	0.0602
BETA	18,865	0.9949	0.9359	1.3884	0.2110	1.7214
SIZE (log Assets)	18,865	6.0483	6.0456	1.4321	5.0114	7.0741
ASSET ($mil)	18,865	1090.28	422.25	1860.49	150.11	1180.94
ZSCORE	18,865	3.0438	3.3995	4.3759	2.1277	4.7124
LEVERAGE	18,865	0.1831	0.1249	0.1954	0.0116	0.2860
MTB	18,865	3.3474	2.0535	12.1436	1.3361	3.2752
SALES	18,865	1.3360	1.0891	3.2427	0.5192	1.7015
DIVIDEND	18,865	0.0115	0.0000	0.0346	0.0000	0.0137
OPCYCLE	18,865	4.7202	4.7908	0.6980	4.3605	5.1548
CFO	18,865	0.1059	0.1059	0.1285	0.0527	0.1640
VAR_CFO	18,865	0.0644	0.0494	0.0555	0.0297	0.0799
ROA	18,865	0.0361	0.0501	0.1198	0.0155	0.0857
LOSS	18,865	0.1729	0.0000	0.3782	0.0000	0.0000
BIG4	18,865	0.8962	1.0000	0.3050	1.0000	1.0000
NASDAQ	18,865	0.4534	0.0000	0.4978	0.0000	1.0000
AMEX	18,865	0.0817	0.0000	0.2740	0.0000	0.0000

See Table 1 for variable descriptions. ***, **, * denote statistical significance at the .01, .05, .10 levels respectively

Referring to Table 3, panel C, 12% of the firms in my largest sample can be considered 'rural'. Roughly 45% of firms are listed on the Nasdaq, while 8% of firms are listed on the American stock exchange. These results are close to percentages reported by Francis, Hasan and Waisman (2007) and Loughran (2007). Furthermore, the average firm in the liquidity sample has total assets of $1.09 billion, a market-to-book ratio of 3.4, and 18% debt to total assets (leverage). As a percentage of total assets, firms also pay roughly 1.1% in dividends. Cash flows from operations average about 11% of total assets and the standard deviation of cash flows is .064. Average operating cycle is 4.72 days, average ROA is 3.6% of total assets firms in my largest sample report a loss 17% of the time. Again, these numbers, where comparable, are similar to prior research (e.g., Francis *et al.*, 2004; Francis *et al.*, 2007; Clark, Francis & Hasan, 2009).

Table 4
Key subsample descriptive statistics, rural versus urban firms, 1996-2009

	Rural				Urban				Difference in Mean ANOVA Analysis
	N	Mean	Median	S.D.	N	Mean	Median	S.D.	
Panel A: Earnings quality									
ACCQ	2,492	-0.0279	-0.0235	0.0210	13,426	-0.0314	-0.0246	0.0239	0.0035**
PERSISTENCE	2,492	0.4305	0.3876	0.5348	13,426	0.2749	0.2630	0.5148	0.0555***
SMOOTHNESS	2,492	-0.6067	-0.6536	0.6709	13,426	-0.7698	-0.7775	1.0083	0.1632***
EQ	2,492	0.1316	0.2750	0.7954	13,426	-0.0617	0.1715	0.9720	0.1933***
Panel B: Transparency characteristics									
ANALYSTS %	2,492	0.5518	1.0000	0.4989	16,373	0.6158	1.0000	0.4911	-0.0640***
ANALYSTS # (includes firms with no coverage)	2,492	2.2625	1.0000	3.7519	16,373	3.1348	1.0000	4.7252	-0.8723***
ANALYSTS # (firms with coverage only)	1,375	6.6502	5.0000	5.6170	10,083	9.0991	7.0000	7.6979	-2.4489***
HOLDINGS	2,492	0.5833	0.5703	0.3173	16,373	0.6791	0.7059	0.3378	-0.0958***
GUIDANCE (earnings guidance)	1,375	10.3312	1.0000	21.7327	10,083	13.0725	2.0000	28.0403	-2.7413***
LN_GUIDANCE (log 1+GUIDANCE)	1,375	1.3494	0.6931	1.6012	10,083	1.4435	1.0986	1.6565	-0.0942***

See Table 1 for variable descriptions. ***, **, * denote statistical significance at the .01, .05, .10 levels respectively

Table 4 reports descriptive statistics for selected variables, split into subsamples of rural versus city firms. Rural firms appear to have significantly greater earnings quality than city firms. For instance, rural firms have average standard deviation of discretionary accruals (*ACCQ*) of (-.0279), significantly smaller than the average standard deviation of discretionary accruals for city firms (-.0314). Similarly, rural firms have greater earnings persistence (*PERSISTENCE*) (.431 versus .275) and less earnings smoothing (*SMOOTHNESS*) (-.607 versus -.769).6 The principal component for these metrics (*EQ)* is also significantly higher for rural firms (.1316 versus -.0617).

With regards to information characteristics (panel B), roughly 55% of rural firms are covered by at least one analyst, while over 61% of urban firms are covered by at least one analyst per year. Likewise, rural firms are covered by an average of 2.26 analysts per year, while city firms are covered by an average of 3.13 analysts per year. In the analyst coverage subsample, the difference in analyst coverage is 6.65 for rural versus 9.09 for urban firms. Furthermore, institutional investors hold almost 10% more of the average city firm than the average rural firm (68% versus 58%). Rural firms also provide significantly less disclosure through managerial earnings guidance than city firms, (10.33 versus 13.07). These differences, where comparable, are similar to prior research (e.g., Loughran & Schultz, 2005, 2006; Francis, Hasan & Waisman, 2007; John *et al.*, 2011).

Table 5
Pearson correlations of selected variables, 1996-2009

	1.	2.	3.	4.	5.	6.	7.	8.
1. RURAL	1							
2. ACCQ	0.0439	1						
	<.0001							
3. PERSISTENCE	0.0360	-0.0125	1					
	<.0001	0.1654						
4. SMOOTHNESS	0.0707	0.0489	0.0267	1				
	<.0001	<.0001	0.0032					
5. EQ	0.0845	0.7278	0.2653	0.6705	1			
	<.0001	<.0001	<.0001	<.0001				
6. ANALYSTS	-0.1034	-0.0719	- 0.0021	0.0111	-0.0568	1		
	<.0001	<.0001	0.8156	0.2204	<.0001			
7. HOLDINGS	-0.1173	-0.0340	0.0251	-0.0019	0.0162	0.4447	1	
	<.0001	0.0002	0.0055	0.8355	0.0736	<.0001		
8. LN_GUIDANCE	-0.0235	-0.0658	0.0363	0.0010	-0.0361	0.2790	0.3887	1
	0.0092	<.0001	<.0001	0.914	<.0001	<.0001	<.0001	

See Table 1 for variable descriptions. p-values for tests of significance are listed under correlations

Pearson correlations for key variables are provided in Table 5. *RURAL* is positively and significantly correlated with *ACCQ*, *PERSISTENCE*, *SMOOTHNESS* and *EQ*. In untabulated tests, I perform collinearity diagnostics and find that no independent variable has a variance inflation factor greater than 2.5, indicating equation (1) is likely not prone to multi-collinearity problems. In sum, descriptives statistics and correlations suggest rural firms have higher financial reporting quality than urban firms, measured in terms of three proxies for earnings quality, accrual quality, earnings persistence and earnings smoothness. They also confirm the findings of prior research that rural firms are covered by fewer analysts, have lower institutional holdings and provide less voluntary disclosure (Loughran & Schultz, 2006; Francis, Hasan & Waisman, 2007).

Multivariate results

Table 6 reports the results of estimating equation (1). Columns I, II and III represent equation (1) specified with different industry controls. For example, column I contains no industry controls, column II includes specific industry indicator variables for *manufacturing* (SIC 20-39), *mining* (SIC 10-14), *retail* (SIC 52-59), *services* (SIC 70-89) and *transportation* (SIC 40-49) and column III includes industry fixed-effects. Turning to the results, as the descriptive statistics and correlations suggest, rural firms appear to have significantly greater earnings quality. In all columns the coefficient on *RURAL* is positive and statistically significant (.1945, t- stat 10.81; .2012, t-stat 11.04; .2108, t-stat 11.09). These coefficients indicate roughly 20% higher average *EQ* for rural firms than for urban firms.

Table 6
Earnings quality and rural location, 1996-2009

Dependent Variable = EQ	+/-	I		II		III	
INTERCEPT	+/-	0.2980	***	0.2907	***	0.2299	
		2.76		2.70		1.08	
RURAL	+/-	0.1945	***	0.2012	***	0.2108	***
		10.81		11.04		11.09	
ACCRUALS	+	0.2346		0.2885	*	0.2586	
		1.37		1.65		1.51	
SIZE	+	0.1069	***	0.1071	***	0.1073	***
		13.88		13.52		13.58	
LEVERAGE	-	0.4580	***	0.4551	***	0.2398	***
		8.85		8.79		4.70	
MTB	+/-	-0.0004		-0.0005		-0.0007	*
		-0.96		-1.26		-1.77	
SALES	+/-	-0.0732	***	-0.0820	***	-0.0979	***
		-6.78		-6.77		-6.31	
DIVIDEND	+	1.0204	***	0.9729	***	0.5396	*
		3.20		3.05		1.88	
VAR_CFO	-	0.7505	***	0.8247	***	0.8512	***
		4.24		4.65		4.78	
ROA	+	0.4839	***	0.5244	***	0.5628	***
		3.93		4.23		4.68	
LOSS	-	-0.3864	***	-0.3877	***	-0.3421	***
		-11.24		-11.25		-10.01	
OPCYCLE	-	-0.1662	***	-0.1429	***	-0.1038	***
		-10.08		-8.33		-4.38	
ANALYSTS	+/-	-0.2587	***	-0.2744	***	-0.2299	***
		-8.89		-9.36		-7.65	
HOLDINGS	+	-0.0020		-0.0031		-0.0060	**
		-0.89		-1.32		-2.40	
BIG4	+	0.0708	***	0.0765	***	0.0427	
		2.62		2.82		1.58	
NASDAQ	+/-	-0.1140	***	-0.1324	***	-0.1048	***
		-5.38		-6.16		-5.06	
AMEX	+/-	-0.1217	***	-0.1315	***	-0.0897	**
		-3.44		-3.66		-2.42	
Firm Cluster		Y		Y		Y	
Year FE		Y		Y		Y	
Specific Industry Indicators		N		Y		N	
Industry FE		N		N		Y	
N		18,865		18,865		18,865	
Adj.-R2		0.381		0.387		0.443	

***, **, * denote statistical significance at the .01, .05, .10 levels respectively. t-statistics are listed under coefficients and are based on standard errors clustered at the firm-level.

Model I includes year fixed-effects and no industry controls. Model II includes year fixed-effects and specific industry indicator variables for mining (SIC 10-14), manufacturing (SIC 20-39), retail (SIC 52-59), services (70-89) and transportation (SIC 40-49). Model III includes both year and industry fixed-effects.

EQ is a measure of earnings quality based on the principle component of three common measures of earnings quality. These include a measure of accrual quality as calculated by Dechow and Dichev (2002), a measure of earnings persistence and a measure of earnings smoothness. RURAL is a dummy equal to 1 if a firm is headquartered 100 or more miles from the center of any of the 52 CBSAs in the U.S. with 2010 Census populations of 1,000,000 persons or more. ACCRUALS is total working capital accruals. SIZE is the natural log of total assets. Leverage is the ratio of debt to debt plus market value of equity. MTB is the ratio of the market value of equity to the book value of equity. SALES is total sales to total assets. DIVIDEND is dividend expense to total assets. VAR_CFO is the 5-year variance of operating cash flows to total assets. ROA is net income to total assets. LOSS is a dummy variable equal to 1 if a firm reported a loss in the prior year, 0 otherwise. OPCYCLE is length of operating cycle. HOLDINGS is the percent of common shares outstanding held by institutional investors. ANALYSTS is the number of equity analysts issuing earnings forecasts for the year. BIG4 is a dummy variable equal to 1 if the firm is audited by a Big “N” auditor for the year, 0 otherwise. NASDAQ is a dummy variable equal to 1 if a firm is listed on the Nasdaq stock exchange, 0 otherwise. AMEX is a dummy variable equal to 1 if a firm is listed on the American stock exchange, 0 otherwise.

Coefficients on control variables are generally as hypothesized. Total accruals (*ACCRUAL)* exhibit a positive and significant association with earnings quality, but only when specific industry controls are included in the model (.2885, t-stat 1.65) (column II). In all specifications, *SIZE*, *DIVIDEND* and *ROA* are positively and significantly related to earnings quality. Somewhat surprisingly, this is also the case for variance of operating cash flows (*VAR_CFO*). My *a priori* expectation was that uncertainty in cash flows would lead managers to smooth earnings more, leading to lower earnings quality. Average sales (*SALES*), reporting a loss (*LOSS*) in the prior year and the length of a firm's operating cycle (*OPCYCLE*) are all negatively and significantly related to earnings quality. Greater analyst coverage appears to be associated with less earnings quality in all models (-.2587, t-stat -8.89; -.2744, t-stat -9.36; -.2299, t-stat - 7.65). When industry fixed effects are included in the model, institutional holdings also appear to be associated with lower earnings quality (column III, -.0060, t-stat -2.40). Finally, being audited by a Big 'N' auditor appears to be associated with greater earnings quality, except when industry fixed-effects are included in the model; evident by the positive and statistically significant coefficients on *BIG4* in columns I and II (.0708, t-stat 2.62; .0765, t-stat 2.82; .0427). I interpret results in Table 6 as indication that financial reporting quality increases with the distance between a firm and its investors.

Next I investigate whether analyst coverage, institutional holdings and managerial earnings guidance explain earnings quality differences between rural and urban firms. In Table 7, I re-estimate equation (1), specified with both year- and industry-fixed effects, across subsamples of low and high analyst coverage, institutional holdings and managerial earnings guidance. To measure low and high I rank firms below and above their peer group industry-year average of analyst coverage, institutional holdings and earnings guidance, where peer group indicates that rural firms are compared only to rural firms and city firms are compared only to city firms. For example, if a rural (city) firm has analyst coverage below (above) the industry-year average for all other rural (city) firms, it is included in the low (high) analyst coverage subsample. The same definitions apply to partitions based on institutional holdings and managerial earnings guidance.

Table 7

Subsample analysis of earnings quality and rural location, 1996-2009

Partitioning variable =		Analyst coverage				Institutional holdings				Earnings guidance			
Dependent variable = EQ		I		II		III		IV		V		VI	
+/	-	Low		High		Low		High		Low		High	
INTERCEPT +/	-	0.1463		1.2547	***	0.3488	**	0.9844	***	0.2660		1.1653	***
		0.74		6.06		2.07		3.83		1.58		5.27	
RURAL +/	-	0.1782	***	0.1313	***	0.0962	***	0.2283	***	0.1366	***	0.1270	***
		6.64		6.37		3.77		9.33		5.85		4.99	
ACCRUAL	+	0.3637	*	0.2940		0.1967		0.0320		0.3051	*	-0.1366	
		1.93		1.44		1.22		0.13		1.75		-0.65	
SIZE	+	0.0830	***	0.0831	***	0.1035	***	0.0747	***	0.0997	***	0.0540	***
		6.58		8.77		7.72		5.75		10.79		4.86	
LEVERAGE	-	0.0327		0.0257		0.0009		0.0860		-0.0497		0.3043	***
		0.51		0.35		0.01		1.15		-0.80		4.23	
MTB +/	-	0.0211	***	0.0006		0.0065	***	0.0003		0.0007		0.0026	***
		5.60		1.16		3.05		0.67		0.71		5.39	
SALES +/	-	-0.0792	***	-0.1696	***	-0.0853	***	-0.1385	***	-0.0744	***	-0.1607	***
		-4.52		-9.23		-4.63		-7.69		-4.55		-7.64	

Table 7
Subsample analysis of earnings quality and rural location, 1996-2009

Partitioning variable =		Analyst coverage				Institutional holdings				Earnings guidance			
Dependent variable = EQ		I		II		III		IV		V		VI	
+/	-	Low		High		Low		High		Low		High	
DIVIDEND	+	0.8132	***	2.9777	***	0.9822	***	3.5042	***	0.9897	***	4.1315	***
		2.70		5.07		3.68		5.23		3.46		6.14	
VAR_CFO	-	6.4608	***	7.1655	***	6.3319	***	7.4890	***	6.2254	***	7.5177	***
		16.87		15.73		14.74		17.56		17.01		17.57	
ROA	+	-0.0056		-0.2749		-0.2458	*	-0.1111		-0.2008	*	0.3169	
		-0.04		-1.55		-1.91		-0.47		-1.76		1.24	
LOSS	-	-0.0953	**	-0.2022	***	-0.1287	***	-0.1691	***	-0.1137	***	-0.0863	*
		-2.47		-4.51		-3.34		-3.41		-3.29		-1.88	
OPCYCLE	-	-0.0973	***	-0.2239	***	-0.1104	***	-0.2048	***	-0.1147	***	-0.1989	***
		-3.10		-8.79		-4.68		-5.91		-4.18		-7.38	
ANALYSTS	+/ -	-0.1903	***	-0.1121	***	-0.2487	***	-0.1815	***	-0.2680	***	-0.0872	**
		-4.73		-2.75		-4.36		-3.71		-7.15		-2.03	
HOLDINGS	+	-0.0124	*	-0.0051	**	-0.0069	*	-0.0058	**	0.0018		-0.0052	*
		-1.67		-2.10		-1.76		-2.22		0.90		-1.69	
BIG4	+	-0.0214		0.0688	*	-0.0240		0.0942	**	0.0283		-0.0043	
		-0.70		1.66		-0.80		2.26		1.00		-0.09	
NASDAQ	+/ -	-0.06392	**	-0.05091	**	-0.1241	***	-0.0341		-0.079	***	-0.03904	
		-2.23		-2.02		-4.49		-1.29		-3.25		-1.35	
AMEX	+/ -	-0.10649	***	-0.08308		-0.11616	***	-0.21723	**	-0.07012	*	-0.21452	***
		-2.66		-1.06		-3.11		-2.43		-1.83		-2.92	
Test of equal coefficients for RURAL*EQd across Low and High subsamples			t-stat	(2.45)			t-stat	(6.08)			t-stat	(0.92)	
Firm Cluster		Y		Y		Y		Y		Y		Y	
Year FE		Y		Y		Y		Y		Y		Y	
Industry FE		Y		Y		Y		Y		Y		Y	
N		10826		8039		8963		9902		10749		8116	
Adj.-R2		0.3266		0.3853		0.3592		0.355		0.3024		0.4456	

***, **, * denote statistical significance at the .01, .05, .10 levels respectively. t-statistics are listed under coefficients and are based on standard errors clustered at the firm-level.

Table 7, models earnings quality as a function of rural location and controls, split into subsamples of below (Low) and above (High) the peer group industry-year mean of analyst coverage, institutional holdings and issuance of managerial earnings guidance. All models include industry fixed-effects.

EQ is a measure of earnings quality based on the principle component of three common measures of earnings quality. These include a measure of accrual quality as calculated by Dechow and Dichev (2002), a measure of earnings persistence and a measure of earnings smoothness. RURAL is a dummy equal to 1 if a firm is headquartered 100 or more miles from the center of any of the 52 CBSAs in the U.S. with 2010 Census populations of 1,000,000 persons or more. ACCRUAL is the difference between earnings before extraordinary items and operating cash flows. SIZE is the natural log of total assets. LEVERAGE is the ratio of debt to debt plus market value of equity. MTB is the ratio of the market value of equity to the book value of equity. SALES is 2-year average sales to total assets. DIVIDEND is dividend expense to total assets. VAR_CFO is 5-year variance of operating cash flows to total assets. ROA is net income to total assets. LOSS is a dummy variable equal to 1 if a firm reported a loss in the prior year, 0 otherwise. OPCYCLE is length of operating cycle. ANALYSTS is the number of equity analysts issuing earnings forecasts for the year. HOLDINGS is the percent of common shares outstanding held by institutional investors. BIG4 is a dummy variable equal to 1 if the firm is audited by a Big “N” auditor for the year, 0 otherwise. NASDAQ is a dummy variable equal to 1 if a firm is listed on the Nasdaq stock exchange, 0 otherwise. AMEX is a dummy variable equal to 1 if a firm is listed on the American stock exchange, 0 otherwise.

Columns I and II of Table 7 report OLS estimates for equation (1) across analyst coverage subsamples. In both low and high subsamples, *RURAL* exhibits a positive and significant relation with earnings quality, though the magnitude of the relation decreases slightly as a firm moves from the low coverage subsample to the high coverage subsample (.1782, t-stat 6.64 versus .1413, t-stat 6.37). This equates to a roughly 3.5% greater level of earnings quality in rural firms with low analyst coverage than rural firms with high analyst coverage. Columns III and IV report results of estimating equation (1) across subsamples of low and high institutional holdings. Again, the coefficients on *RURAL* suggest earnings quality is higher for rural firms, and relatively more so when institutional holdings is above the industry-year mean for all rural firms, as the coefficient on *RURAL* in the low subsample (column III) is .0962 (t-stat 3.77) while the coefficient in the high subsample (column IV) is .2293 (t-stat 9.33), a difference in earnings quality of over 13%.

Columns V and VI of Table 7 report OLS estimates for equation (1) across subsamples of low and high managerial earnings guidance. In both subsamples, the coefficient on *RURAL* is positive and statistically significant. For example, the coefficient on *RURAL* in the low earnings guidance subsample is .1366 (t-stat 5.85) while the coefficient in the high subsample is .1270 (t-stat 4.99). While this difference is arguably economically insignificant (only a 1% difference in the value of the EQ metric), it may indicate that the average rural firm benefits from high quality financial reporting more when voluntary disclosure is low. Finally, in all columns, the models explain between 30% and 45% of the variation in my earnings quality measure and coefficients on the control variables are generally as predicted and similar to those reported in Table 6.

As discussed earlier, Abarbanell and Lehavy (2003) argue that stock price sensitivity to earnings surprises may indicate a firm's incentive to manage earnings. Therefore, I also test whether the stock price response to earnings surprises is significantly different for rural firms than for city firms. If it is, it may indicate rural firm managers are punished less by the market than urban firm managers for missing analyst forecasts.

Calculating earnings surprise (*SURPRISE*) as the difference between fiscal-year end earnings and the last consensus analyst earnings forecast before the fiscal-year end, I estimate the 3-day (-1 to +1) cumulative abnormal return (*CAR*) surrounding the fourth quarter earnings announcement date and then model *CAR* as a function of *SURPRISE*, rural location (*RURAL)*, an interaction *SURPRISE*RURAL*, *SIZE*, and year and industry controls (equation 7).

$$CAR(-1, +1)it = \alpha it + \beta 1RURALit + \beta 2SURPRISEit + \beta 3RURAL*SURPRISEit +$$

$$\beta \mathbf{4}SIZEit + YEARt + INDUSTRYit + \varepsilon it \qquad (7)$$

Table 8 presents the results of estimating equation (7). As above, column I contains no industry controls, column II includes specific industry indicator variables, and column III includes full industry fixed-effects. My interest is on the coefficient of the interaction term *RURAL*SURPRISE*. If rural firms have higher earnings quality, which descriptive statistics and multivariate tests thus far suggest, their stock price will likely be less sensitive to meeting or beating analyst earnings forecasts than the stock price of city firms. In this case, the coefficient on the interaction term should be negative and statistically significant. Indeed, in all columns the coefficient on *RURAL*SURPRISE* suggests rural firm stock price is less sensitive to earnings surprises. In column I the coefficient is -.3290 (t-stat -2.33), in column *II* it is -.3318 (t-stat - 3.33) and in column III the coefficient on the interaction term is -.3001 (t-stat -2.90). These results suggest that rural firm managers may have less incentive to manage earnings than managers in city firms.

Table 8
Stock price reaction to earnings surprises, 1996-2009

Panel A: Descriptive statistics

Variable	N	Mean	Median	S.D.	Q1	Q3
CAR (-1, +1)	11,458	0.0132	0.0046	0.1158	-0.0548	0.0410
SURPRISE	11,458	0.0191	0.0087	0.1770	-0.0300	0.0300
RURAL	11,458	0.1203	0.0000	0.3242	0.0000	0.0000
SIZE	11,458	6.0488	6.0456	1.4321	5.0114	7.0741

Panel B: OLS results

Dependent variable = CAR (-1, 1)	I		II		III	
INTERCEPT	-0.8989	***	-0.8830	***	-0.7717	***
	-14.76		-20.52		-4.33	
SURPRISE	0.2219	***	0.2187	***	0.2331	***
	4.05		5.62		5.28	
RURAL	0.3167	**	0.3215	***	0.2992	***
	2.33		3.36		3.03	
RURAL*SURPRISE	-0.3290	**	-0.3318	***	-0.3001	***
	-2.33		-3.33		-2.90	
SIZE	0.0489	***	0.0488	***	0.0522	***
	10.66		14.96		15.16	
Firm Cluster	Y		Y		Y	
Year FE	Y		Y		Y	
Specific Industry Indicators	N		Y		N	
Industry FE	N		N		Y	
N	11,458		11,458		11,458	
Adj.-R2	0.146		0.154		0.169	

***, **, * denote statistical significance at the .01, .05, .10 levels respectively. t-statistics are listed under coefficients and are based on standard errors clustered at the firm-level.

Model I includes year fixed-effects only. Model II includes year fixed-effect and specific industry indicator variables for mining (SIC 10-14), manufacturing (SIC 20-39), retail (SIC 52-59), services (70-89) and transportation (SIC 40- 49). Model III includes both year and industry fixed-effects.

CAR (-1, +1) is the three day abnormal return surrounding the fourth quarter earnings announcement date. RURAL is a dummy equal to 1 if a firm is headquartered 100 or more miles from the center of any of the 52 CBSAs in the U.S. with 2010 Census populations of 1,000,000 persons or more. SURPRISE is the difference between actual reported earnings and the consensus analyst earnings estimate for the fiscal-year end. SIZE is the natural log of total assets.

Together, results presented in Tables 6-8 suggest rural firms have higher earnings quality than urban firms, and that this difference may be driven, in part, by rural firm managers having less incentive to manage earnings. This is evident in the combination of lower analyst coverage and lower sensitivity of rural firm stock price to missing analyst earnings forecasts.

Robustness Tests

Sarbanes-Oxley Act

As a robustness test, I also examine whether my results are sensitive to passage of the Sarbanes-Oxley Act (SOX) (2002), since provisions of SOX may limit managers' ability to manage earnings. Research documents a number of potential benefits to SOX. For example, Iliev (2010) documents evidence that SOX 404 has led to more conservative reporting. Kalelkar and Nwaeze find that for firms with low levels of institutional holdings, SOX resulted in an increased value of earnings and earnings components, suggesting investors may be more confident in reported earnings post-SOX. Jain and Razaee (2006) find that bid–ask spreads, which were widening prior to 2002, began to decrease in the nine months after passage of SOX. Anecdotal evidence at the time also suggested rising investor confidence subsequent to SOX (e.g., Coates, 2007). Chang et al., (2009) report significant improvements in earnings quality in the 2-year period following SOX. Li et al., (2006), Chhaochharia and Grinstein (2005), and Jain and Razaee (2006) document positive effects for U.S. firms. Other studies find that the market responded favorably to new control procedures mandated by SOX (e.g, Beneish et al., 2006; Chan et al., 2006; Leuz, Triantis, and Wang, 2005). Wintoki (2006) documents positive abnormal returns for the largest firms, but negative abnormal returns for the smallest firms.

To gauge the potential impact of SOX on the relation between firm location and financial reporting quality, I partition my sample into pre- and post-2002 and 2003 time periods. I use both breakpoints because though some firms may have begun implementing SOX requirements in 2002, SOXs provisions were not legally required by public companies until 2003 and after (Coates, 2007). Regardless of which year is used to partition my sample, the results do not change significantly from pre- to post-SOX.

Alternative Definitions of 'Rural' and 'City'

Additionally, I estimate equation (1) using a *RURAL* dummy variable defined across both larger and smaller linear distances between firm headquarters and the center of the 52 CBSAs listed in Figure 1 of the Appendix. When 'rural' firms are defined as those 130 or more miles from city-hall of any of the 52 CBSAs, results are statistically stronger but qualitatively the same. When 'rural' firms are defined as those 75 miles or more, results are statistically weaker but qualitatively the same. When I define 'rural' firms as being 50 or more miles from the center any of the 52 CBSAs listed in Figure 1, results for equation (1) are inconclusive. Defining 'city' firms as any firm with its headquarters 15 or fewer miles from the center of the 52 CBSAs listed in Figure 1 does not change the interpretation of equation (1) estimates.

Individual Measures of Earnings Quality

I also examine the sensitivity of my results to alternative measures of earnings quality. First, when I use the individual earnings quality metrics, i.e., accrual quality, earnings persistence and earning smoothness, in place of the principle component EQ, results are similar. I alternatively calculate these three measures using 5-year firm-specific rolling regressions rather than 8-year. While this approach increases the number of firm-year observations in my final samples, results are statistically weaker, though the overall interpretation does not change.

Partitions by Big 'N' Auditors and Advertising Expenditures

Additionally, I examine whether being audited by a Big 'N' auditor makes a difference for the relation between firm location and financial reporting quality. It does not appear to matter. Finally, Grullon *et al.*, (2004) document evidence that advertising can improve firm visibility. Therefore, I partition firms by low and high advertising expenditures. As with Big 'N', this characteristic does not significantly impact my results.

CONCLUSION

Prior research on firm location argues that information for rural firms is more costly to acquire than information for firms headquartered in or near major population centers. This is because the larger physical distance between investors and rural firm headquarters may impede dissemination of firm information (Coval & Moskowitz, 1999; John *et al.*, 2011). Bushman *et al.*, (2004) argue that financial reporting constitutes the primary direct channel through which firm information is disseminated to investors. I examine whether firm location leads to variation in financial reporting quality between rural and city firms, whether rural firms can benefit from commitment to financial reporting quality through a reduction in the cost of external capital and an increase in liquidity and whether their ability to do so depends on differences in analyst coverage, institutional holdings and managerial earnings guidance.

Analyzing a comprehensive sample of rural and city firms, from 1996 and 2009, I find that rural firms have higher quality financial reporting, on average, than firms headquartered in or near the 15 largest metropolitan areas of the U.S. In additional tests, I document two pieces of evidence that may explain these differences. First, I find that differences in financial reporting quality between rural and city firms are greatest when rural firm analyst coverage is low. Second, rural firm stock price is less sensitive to missing the year-end consensus analyst earnings forecast. These two pieces of evidence suggest one reason why rural firms may have higher financial reporting quality is that they face fewer incentives for managing earnings towards analyst benchmarks.

ENDNOTES

1 As in Loughran and Schultz (2005, 2006), I refer to 'rural' firms as those firms headquartered 100 or more miles from any of the 52 U.S. metropolitan areas with a population of 1,000,000 or more persons, as of the 2010 U.S. Census. Firms that are headquartered within 30 miles of the largest 15 metropolitan areas in the U.S. (listed in Figure 1 in the Appendix) I denote 'urban' firms. Using a similar definition, Brockman et al. (2011) refer to urban firms as 'supercity' firms.

2 The Core Based Statistical Area is the standard classification for any region with a population in excess of 5,000 persons, as defined by the U.S. Census Bureau. Refer to http://www.census.gov/population/www/metroareas/metroarea.html.

3 Federal Information Processing Standard codes are 5-digit geographical codes issued by the National Institute of Standards and Technology (NIST), where the first 2 digits identify the state and the last 3-digits identify the county. For example. Kansas' state code is '20' and Crawford County, Kansas has a county code of '037.' Crawford County, Kansas therefore has a FIPS code of '20037.' Multiple zip-codes can be associated with a single FIPS code. In some years firm zip-codes are available in the Compustat *Company* file, in other years

only FIPS codes are provided by Compustat. In those years for which only FIPS codes are available, I hand-match FIPS codes to firm zip-codes by locating firm addresses using a Google® search.

4 While Clark *et al.*, (2007) and Loughran and Schultz (2005) take a similar approach, they also consider an alternative way to measure the distance between firms and cities. Specifically, they calculate the arithmetic average of the different linear distances between all zip codes in a CBSA and all zip codes in a firm's FIPS. Their results are generally not sensitive to this alternative method.

5 Recall that *ACCQ* and *SMOOTHNESS* are multiplied by (-1) in this paper, so that higher levels equate to higher earnings quality.

6 Recall that I define *SMOOTHNESS* as [σ(NIBEit)/σ(CFOit)] * (-1), such that higher levels of this metric actually capture **lower** earnings smoothing.

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APPENDIX

Figure 1
Core-based Statistical Areas (CBSAs) of the United States, by 2010 populations

	Municipality	State	Population
1	New York-Northern New Jersey-Long Island	NY-NJ-PA	19,069,796
2	Los Angeles-Long Beach-Santa Ana	CA	12,874,797
3	Chicago-Joliet-Naperville	IL-IN-WI	9,580,567
4	Dallas-Fort Worth-Arlington	TX	6,447,615
5	Philadelphia-Camden-Wilmington	PA-NJ-DE-MD	5,968,252
6	Houston-Sugar Land-Baytown	TX	5,867,489
7	Miami-Fort Lauderdale-Pompano Beach	FL	5,547,051
8	Washington-Arlington-Alexandria	DC-VA-MD-WV	5,476,241
9	Atlanta-Sandy Springs-Marietta	GA	5,475,213
10	Boston-Cambridge-Quincy	MA-NH	4,588,680
11	Detroit-Warren-Livonia	MI	4,403,437
12	Phoenix-Mesa-Glendale	AZ	4,364,094
13	San Francisco-Oakland-Fremont	CA	4,317,853
14	Riverside-San Bernardino-Ontario	CA	4,143,113
15	Seattle-Tacoma-Bellevue	WA	3,407,848
16	Minneapolis-St. Paul-Bloomington	MN-WI	3,269,814
17	San Diego-Carlsbad-San Marcos	CA	3,053,793
18	St. Louis	MO-IL	2,828,990
19	Tampa-St. Petersburg-Clearwater	FL	2,747,272
20	Baltimore-Towson	MD	2,690,886
21	Denver-Aurora-Broomfield	CO	2,552,195
22	Pittsburgh	PA	2,354,957
23	Portland-Vancouver-Hillsboro	OR-WA	2,241,841
24	Cincinnati-Middletown	OH-KY-IN	2,171,896
25	Sacramento–Arden-Arcade–Roseville	CA	2,127,355
26	Cleveland-Elyria-Mentor	OH	2,091,286
27	Orlando-Kissimmee-Sanford	FL	2,082,421
28	San Antonio-New Braunfels	TX	2,072,128
29	Kansas City	MO-KS	2,067,585
30	Las Vegas-Paradise	NV	1,902,834
31	San Jose-Sunnyvale-Santa Clara	CA	1,839,700
32	Columbus	OH	1,801,848
33	Charlotte-Gastonia-Rock Hill	NC-SC	1,745,524
34	Indianapolis-Carmel	IN	1,743,658
35	Austin-Round Rock-San Marcos	TX	1,705,075
36	Virginia Beach-Norfolk-Newport News	VA-NC	1,674,498
37	Providence-New Bedford-Fall River	RI-MA	1,600,642
38	Nashville-Davidson–Murfreesboro–Franklin	TN	1,582,264
39	Milwaukee-Waukesha-West Allis	WI	1,559,667
40	Jacksonville	FL	1,328,144
41	Memphis	TN-MS-AR	1,304,926
42	Louisville/Jefferson County	KY-IN	1,258,577

Figure 1
Core-based Statistical Areas (CBSAs) of the United States, by 2010 populations

	Municipality	State	Population
43	Richmond	VA	1,238,187
44	Oklahoma City	OK	1,227,278
45	Hartford-West Hartford-East Hartford	CT	1,195,998
46	New Orleans-Metairie-Kenner	LA	1,189,981
47	Birmingham-Hoover	AL	1,131,070
48	Salt Lake City	UT	1,130,293
49	Raleigh-Cary	NC	1,125,827
50	Buffalo-Niagara Falls	NY	1,123,804
51	Rochester	NY	1,035,566
52	Tucson	AZ	1,020,200

Figure 1 lists the 52 largest Core-Based Statistical Areas (CBSAs) by 2010 U.S. Census populations. Rural firms are any firms headquartered 100 or more miles from the center of any of these 52 CBSAs. City firms are any firms headquartered 30 miles or fewer from the center of the 15 largest CBSAs, shaded in gray. All data are from the U.S. Census Bureau.

Figure 2
Calculation of linear distance

Exact distance in miles = 3958.75 * arctan[sqrt(1-x^2)/x]

Where x = [sin(zip-code1.lattitude/57.2958) * sin(zip-code2.lattitude/57.2958)] + cos(zip-code1.lattitude/57.2958) * cos(zip-code2.lattitude/57.2958) * cos(zip-code2.longitude/57.2958 – zip-code1.longitude/57.2958)]

Notes: This measure of linear distance is available from Zipinfo.com. I confirm the accuracy of this formula for a random sample of firm distances using google.maps.com®.