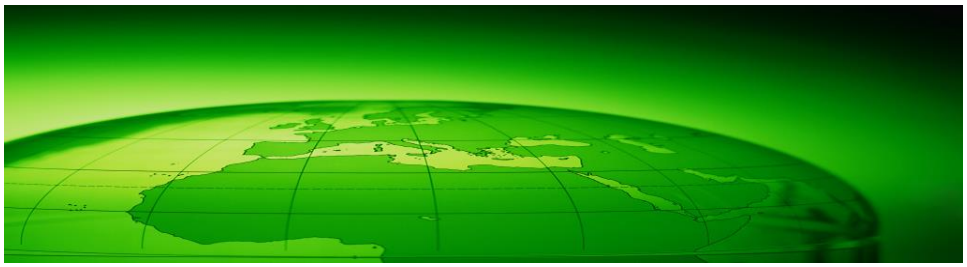

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IMPACT OF STEADY PREDICTABLE INFLATION ON EQUITY HOLDER RETURNS AND POTENTIAL LOSSES

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IMPACT OF STEADY, PREDICTABLE INFLATION ON EQUITY HOLDER RETURNS AND POTENTIAL LOSSES

ABSTRACT

Unexpected changes in inflation/deflation can create real short-term hardships for companies and reduce equity returns. One might expect that steady, predictable inflation would have little impact on a company's real (i.e., "inflation-adjusted") equity returns. It is reasonable to think that, even as inflation is raising a firm's costs, it also is proportionately raising the price the firm can charge, thus leaving its real profits unchanged. In this paper, we mathematically show that for leveraged firms, equity-holder returns may be reduced by inflation even if the inflation is steady and predictable and even if the inflation-adjusted cost of borrowing is unchanged. We show that a high inflation environment reduces firm leverage through the "Tilt Effect" if firms are unable to easily obtain additional credit to maintain their leverage. This reduced leverage reduces equity-holder returns and increases equity-holder losses substantially should the firm fail.

INTRODUCTION

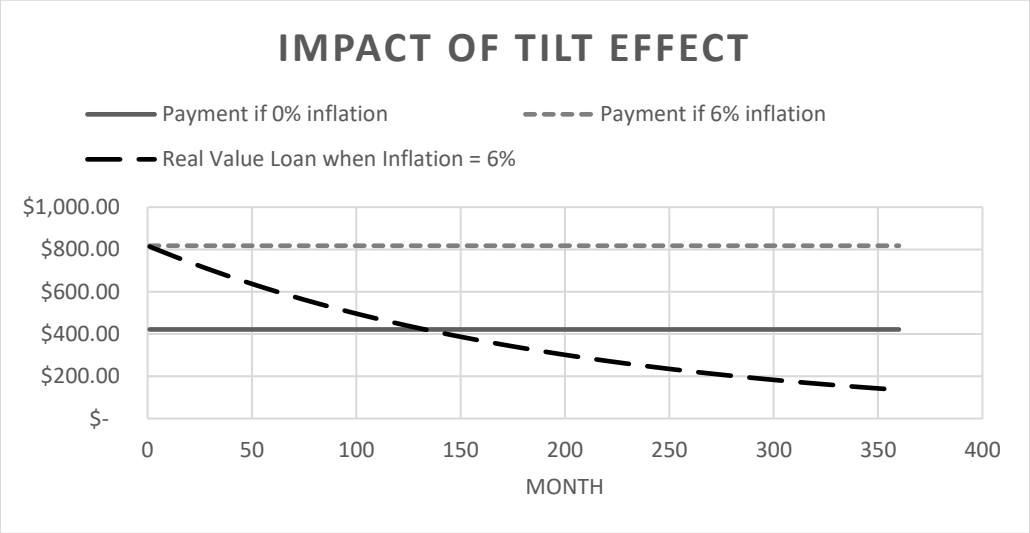
This paper demonstrates that even steady, predictable inflation can reduce firm leverage and thus reduce real inflation-adjusted equity-holder returns and increase real inflation-adjusted potential losses should the firm fail through what is known as the "Tilt Effect." First, we define inflation and discuss how it causes the tilt effect, then show that steady predictable inflation for unleveraged firms does not impact real equity holder returns. Next, we discuss the research on how interest rates and investors react to inflation, then finally we examine the existing research on the tilt effect. The significance of this paper is that it adds to the literature by examining how the tilt effect can reduce firm leverage and demonstrate that this reduced leverage can seriously impact equity holder returns and increase potential losses, should the firm fail.

Inflation is defined as a general rise in prices over a given period (Oner, 2010). That is, when inflation occurs, most goods increase in price in similar proportions as producers attempt to maintain their real inflation-adjusted prices. Fisher (1930) hypothesized that nominal interest rates rise with inflation such that the real rate of interest is unchanged. Similarly, lenders, if they wish to maintain their real inflation adjusted returns must charge higher

interest rates to compensate for the impact of inflation. For loans that have the same constant payment over the life of the loan, inflation erodes the real value of those later loan payments so the higher interest rate must create higher real payments early on to compensate for the lower real payments that occur later because of the inflation. This effect is known as the "Tilt Effect."

Figure 1, below, illustrates the concept of the tilt effect. It shows the monthly payments on a constant payment $100,000 loan when there is no inflation and lenders are willing to accept a 3% real rate and the same loan when banks earn the same real 3% return but there is 6% inflation. When there is no inflation, the borrower pays $421.60 per month with the same real value for those payments. However, if there is 6% inflation, banks must charge a higher rate to keep their real returns the same. Assuming Fisher is correct, the bank will now have to charge $817.61 for the same loan. With the nominal payments constant, inflation causes the real value of those payments to decline over time. Thus, in the early years, the real inflation-adjusted payments (indicated by the green line) are higher than the same loan made with no inflation (indicated by the blue line) to make up for the fact that the real value of the loan payments in the higher inflationary period are being eroded in the later years by inflation.

Figure 1: Impact of Tilt Effect



Impact of Inflation on non-leveraged returns

Given how inflation affects real borrowing costs, we next examine the impact of inflation on non-leveraged returns. For example, a firm might invest $1,000 in an asset today and use no leverage for this purchase (i.e., does not borrow any money to pay for this asset). Assume also that the asset will earn $100 in net operating income (NOI) each year for the next four years and, at the end of the fourth year, the asset can be sold for the original $1,000 purchase price. Table 1, below, shows a 10% return, which can be confirmed by calculating the Internal Rate of Return (IRR).

Table 1: Example Return on Investment-No Inflation

		Year 1	Year 2	Year 3	Year 4
Investment	$ (1,000.00)				
NOI		$100	$100	$100	$100
Sale of Asset					$1,000
Cash Flows	$ (1,000.00)	$100	$100	$100	$1,100
Return	10.000%				

Changing the scenario, now suppose that before the initial investment is made, inflation is running at 5%. The firm purchases the investment asset for $1,000 but with 5% inflation, the firm will expect its NOI to also increase by 5% each year and expect the nominal value of the asset to increase by 5% each year until it is sold at the end of year 4 as shown in Table 2.

Table 2: Example Return on Investment with 5% inflation

	0	Year 1	Year 2	Year 3	Year 4
Investment	$ (1,000.00)				
NOI		$105	$110	$116	$122
Sale of Asset					$1,216
Cash Flows	$ (1,000.00)	$105	$110	$116	$1,337
Inflation Adjusted Cash Flows	$ (1,000.00)	$100.00	$100.00	$100.00	$1,100.00
Real Return	10.000%				

The inflation-adjusted values are calculated by discounting the cash flows at the 5% inflation rate. The real return is found by calculating the internal rate of return of the real cash flows. For this firm, which is completely unleveraged (has no debt), the 10% real rate of return is the same with or without inflation if the income and asset values rise at the same rate as inflation.

The above comparison shows that inflation alone does not change the return on the investment for a project for a firm that is unleveraged. However, if a firm decides to borrow money (i.e., leverage) to purchase this asset, then interest rates will have an impact on the firm's profits and equity holder returns. It is therefore important to know how interest rates change with inflation.

Fisher (1930) hypothesized that nominal interest rates rise with inflation such that the real rate of interest is unchanged. Thus, Fisher expected no change in real investing patterns. Significant research has examined whether the Fisher hypothesis describes how interest rates behave. For example, Phylaktis and Blake (1993) used empirical analysis to show support for the Fisher hypothesis of nominal interest rates rising in high-inflation economies. Boudoukh and Richardson (1993) also found empirical evidence that investors adjusted their expectations and the nominal price they would offer once higher inflation-induced nominal earnings were revealed.

However, other researchers believe that investors suffer from money illusion, where they fail to adjust their price expectations to changes in inflation/deflation. Modigliani and Cohn (1979) found that the mispricing of financial assets with the dividend-price ratio can only be explained if one assumes money illusion. They found investors suffered from two illusions: First, they capitalized equity earnings at the nominal rate rather than the corrected inflation-adjusted rate. Second, investors failed to account for depreciation of nominal corporate liabilities as inflation reduces the real value of these liabilities. Summers (1983) by examining the comparison of real interest rates and stock market yields asserted that interest rates seem to have little relation to inflation. His theory is that one would expect stock

market yields to mirror changes in real interest rates, yet he did not find that nominal interest rates moved enough to maintain a constant relationship.

Campbell and Vuolteenaho (2004) postulate that money illusion may influence stock prices. Specifically, they suggest that stocks and bonds compete for space in investors' portfolios and if the "yield on bonds rise then the risk-adjusted yield on stocks must also rise to maintain the competitiveness of stocks." Yet, their research did not find this to be the case, indicating that investors suffered from money illusion. Blinder (2000) identified money illusion in the labor market because of how people use information. Contrary to how economists typically assume that people will make the best use of all information available to them, these authors assume that people use heuristics or mental shortcuts to help them make decisions. These mental shortcuts may not make use of all the information available and lead people to be fooled by changes in inflation.

Lioui and Tarelli (2022) argued risk-averse investors could easily avoid interest rate uncertainty by buying Treasury Inflation Protected Securities (TIPS). TIPS eliminate interest rate risk by adjusting for inflation but instead they found that these people purchased non-inflation adjusted treasuries that imposed an estimated uncertainty loss of 1.6% per annum. This indicates they suffered money illusion when making the decision of which bond to purchase.

The impact of inflation on the financial market and investment behavior has been a source of debate ever since Fisher, though the debate has been relatively dormant during most of the low-inflationary period of the last 20 years (James and Chin, 2022). However, during one of the last high inflationary periods, Lessard and Modigliani (1975) and Tucker (1975) recognized what is known as the "Tilt Effect." The tilt effect, as defined earlier, describes that when loans are contracted for in constant nominal payments, to make up for the fact that the inflation will cause the real value of those payments to decline over time, the bank will have to receive larger real payments on the earlier payments. Additionally, Barrull and Dorse (2022) assert that the tilt effect is harmful even in modest inflation environments

because the increase in the real value of the early payments puts households in a precarious financial position of having to meet those higher real payments, which harms the macro economy. In fact, they find that "increases in inflation, nominal interest rates and the tilt effect burden preceded all housing recessions." This research shows that the tilt effect can be a potent economic factor.

One area of tilt effect research examines how demand for home purchases changes due to the tilt effect – with the higher real payments borrowers must pay in the earlier periods, the greater financial burden to purchase a home. This, of course, leads to fewer home purchases. Ciftci (2019) and Brunnermeier and Julliard (2008) examine how rising inflation and nominal interest rates may create bias in home valuation through the money illusion effect, where households fail to adjust their price expectations to changes in inflation/deflation. While money illusion is not relevant in an environment where inflation is steady and predictable, both studies indicated the extent to which buyer behavior could be explained by the higher real loan payments caused by the tilt effect. Both concluded that the tilt effect influenced buyer purchases but that it could not by itself explain all the price differentials—an indication that buyers suffered from a money illusion effect.

Hardin, Jian, and Wu (2017) found that commercial real estate company's valuations were not affected by money illusion. They found that more sophisticated buyers were less likely to suffer from money illusion. However, interestingly, they did find evidence that valuers "likely believe that higher expected inflation will damage the long-term cash flows of the commercial property sector and lower their estimates on the long-term income growth rate."

Explanations of why investors would conclude that inflation damages long-term cash flows has been provided by researchers who argue that inflation really does reduce real and perceived firm value. Hong (1977) argued that inflation reduces real firm value and equity returns through its impact on the monetary assets in each firm's capital allocation. That is, if the company is holding any cash assets, the real purchasing power of that money declines

with inflation. The decline in real purchasing power of money assets as inflation occurs is an called a "wealth effect." This decline in wealth should harm firm value and returns; however, French et. al. (1983) found in their empirical analysis little evidence of an inflationary wealth effect on stock prices.

Another explanation researchers have given as to why investors seem to believe inflation will damage the long-term cash flows of the commercial property sector is that inflation reduces real firm value through tax law. Feldstein (1981) asserted that since U.S. tax law is based upon historical cost depreciation and nominal capital gains, firms pay greater taxes in periods of inflation, and thus stock prices will be adversely impacted. Meric and Meric (1997) found depreciation and inventory costs are undervalued during periods of inflation, which leads to more firm income being taxable and results in lower real cash flows and reduced firm value. Although the effect of taxes might be mitigated as Previti, Palatnik, and Seda (2017) argue by companies reallocating their profits from high corporate tax countries to lower tax countries.

While a changing interest rate environment could cause firms to be caught in undesirable contracts, this paper focuses only on whether higher inflation rates by themselves are damaging and not whether an unexpected change in inflation is damaging. Readers interested in how changing inflation rates can damage firm returns could read Gomes, et al. (2016). This paper examines how the existence of nominal long-term debt contracts changes the real value of the debt when inflation/deflation occurs and creates a "debt overhang" when disinflation occurs.

Ritter and Warr (1999) termed the phrase 'capital debt error' that states estimating firm value using earnings per share will undervalue the firm in the presence of inflation because current earnings per share are reduced by the higher real payments required to compensate for inflation. However, investors may overlook that these current reduced earnings will be "offset by the capital gain that equity holders enjoy" in later years because of the reduction in the real value of the firm's debt caused by inflation. Later, Warr (2005) found that

economic value added (EVA), is distorted by inflation because current assets and depreciation reported by accounting methods are valued in nominal terms and therefore do not properly account for the real value of these assts when inflation occurs. While prior tilt effect research recognized the impact of the tilt effect on real debt payments at different times in the repayment schedule, none examined the impact of the tilt effect on leverage. The present research attempts to fill that gap in the literature.

Tilt effect and Reduction of Leverage/Equity Returns

To illustrate how the tilt effect reduces leverage and equity-holder returns, we can modify the examples that were shown in Tables 1 and 2. One may think that if real interest rates are the same, that the impact of higher real payments early on will be offset by the lower real payments that follow. Revisiting the example in table 1 where there is no inflation, suppose that rather than financing the project entirely with equity, the firm decides to finance only 20% of the asset purchase price with equity and the remaining 80% with debt financed with a constant payment, fully amortizing 20 year loan at a 6% interest rate. With no inflation, the real rate and nominal rate are the same. The business still earns the $100 NOI each period but now equity holders only put in $200 rather than $1,000 and must pay the lender $69.75 each year for payments on the $800 loan and settle their remaining balance with the bank when they sell at the end of year 4. This example is shown in Table 3. Equity holders in the absence of inflation earn a real return of 23.55% due to the leverage they now employ.

Table 3: Example Return to Equity Holders *

	0	1	2	3	4
Investment	$ (200.00)				
NOI		$100	$100	$100	$100
Payment		($69.75)	($69.75)	($69.75)	($69.75)
Loan Payoff					($704.86)
Sale of Asset					$1,000
Cash Flows	$ (200.00)	$30.25	$30.25	$30.25	$325
Real Return	23.55%				

80% Debt Financing. No Inflation. 20-year fixed rate loan. Nominal rate on loan 6%. Real Rate=6%

Now assume that 5% inflation is expected to occur after year 0. Lenders, recognizing that 5% inflation, raise their nominal interest rates according to Equation 1 to compensate.

Equation 1

Nominal Rate = Real Rate + Inflation + Real rate * Inflation rate

With 5% inflation, to keep their real returns at 6%, they raise their nominal rates to 11.30%. Again, the firm's NOI each period increases by the rate of inflation as it did in Table 2, but the higher nominal interest rate has increased the payments required on this 20-year fully amortizing loan from $69.74 to $102.44. The cash flows are shown in Table 4. With the firm's rising NOI because of inflation, the firm can cover these higher loan payments. When they sell the investment at the end of year 4, the lender will require payment of the $743.05 principal balance on the loan.

Table 4: Adjusted Example Return to Equity Holders*

	0	1	2	3	4
Investment	$ (200.00)				
NOI		$105	$110	$116	$122
Payment		($102.44)	($102.44)	($102.44)	($102.44)
Loan Payoff					($743.05)
Sale of Asset					$1,126
Cash Flows	$ (200.00)	$2.56	$7.81	$13.32	$402
Inflation Adjusted Cash Flows	$ (200.00)	$2.44	$7.09	$11.51	$330.37
Real Return	15.580%				

80% Debt Financing with 5% Inflation. 20-year fixed rate loan. Nominal rate on loan 11.30%. Real rate= 6%.

After adjusting these cash flows for inflation, the real return on the investment fell from 23.55% to 15.58%. Inflation has reduced real equity holder returns. The reason for this decline is explained in the next section.

THE TILT EFFECT IMPACT ON LEVERAGED EQUITY HOLDER RETURNS

The relationship between return on investment and leveraged equity returns is expressed as Equation 2, below.

Equation 2

$$\text{Leveraged Equity Returns} = Return\ on\ Investment + \frac{Debt}{Equity} * (Return\ on\ Investment - Interest\ Rate\ on\ Debt)$$

For equity holders, the higher nominal rate charged by the lender results in a higher nominal payment. As inflation will reduce the real value of these payments with time, the real value of the earlier payments must be higher to compensate the lender for the lower real value of the later payments. This demonstrates the "tilt effect." These high earlier real loan payments will reduce the real principal loan balance in the early years more than the principal balance is reduced in the lower inflation environment. This reduces the firm's real debt more in the inflationary environment and increases real equity more, thereby reducing the debt-to-equity ratio and leverage. The reduced leverage causes equity-holder returns to fall. As indicated in Equation 2, reducing leverage lowers leveraged equity holder returns as the debt-to-equity ratio falls. Comparing the returns in Table 3 to those in Table 4 illustrates the point that the reduced leverage in the inflationary environment caused by the tilt effect reduces equity holder returns.

When a firm borrows money and makes a payment that reduces the principal balance of a debt, this reduces the firm's debt (adding equity). Thus, for any constant payment amortizing loan, a firm's debt to equity ratio will fall over time—with the higher real payments caused by the tilt effect, the firm's debt to equity will fall much faster - reducing the leverage of that firm. Firms could offset the reduced leverage by simply borrowing additional funds to maintain the same degree of leverage. Table 5 illustrates the additional borrowing that would be needed to maintain the same debt to equity ratio as would have occurred in the non-inflationary environment. It is assumed the firm can obtain the same

real interest rate. Naturally, loan payments increase with the additional borrowing as does the loan payoff, and the term of the loan remains unchanged.

By borrowing to maintain the same debt to equity ratio each period, the firm would be able to restore real equity returns in the inflationary environment to the same return enjoyed in the non-inflationary environment.

Table 5: Return to Equity Holders to Maintain Leverage*

	0	1	2	3	4
Equity	$ (200.00)				
NOI		$105	$110	$116	$122
Payment		($102.44)	($106.23)	($110.05)	($113.86)
Borrowing to Maintain Leverage		$29.20	$29.34	$29.30	$29.08
Loan Payoff					$ (856.76)
Sale of Asset					$1,216
Cash Flows	$ (200.00)	$31.76	$33.35	$35.01	$395.51
Inflation Adjusted Cash Flows	$ (200.00)	$30.25	$30.25	$30.25	$325.39
Real Return	23.55%				

**** Additional Borrowing Each Period to Maintain Leverage. 80% Debt Financing with 5% Inflation.***

These results show that if a firm can obtain additional funds each year to maintain the same degree of leverage enjoyed without inflation, then real equity returns are unchanged; this assumes lenders are willing to offer these additional funds and are willing to accept the same rate on these additional funds.

Why Firms May be Unable to Obtain Additional Credit to Maintain Leverage

If lenders are willing to allow firms a certain amount of leverage in a non-inflationary period, they might be willing to allow firms this same amount of leverage during inflationary periods. However, several factors might prevent lenders from being willing to extend additional credit. First, there may be an asymmetric information problem. The firm may know, but the lenders may not, that its potential for failure is high. Thus firms with a greater potential for failure would have a greater incentive to extend their leverage to extract value for their equity holders at the expense of the lenders before the company's demise.

Lenders, fearing that borrowers may be trying to shift losses, might be unwilling to extend additional credit.

Additionally, the firm may find it hard to simply borrow additional funds because the existing lenders have seniority and the company's assets may have already been pledged to those lenders or bond holders (Banerjee and Duflo, 2014). Therefore, any additional funding would be subordinated debt at potentially substantially higher rates that may not be feasible. The company could seek to refinance its entire debt, but this could be costly or could present prepayment penalties for paying off existing loans. The same applies to bonds. Many bonds do not allow the debt to be called. Even those that do may require a certain amount of time to pass before they can be called or stipulate a minimum price at which the debt can be retired.

Given these problems, equity investors cannot presume that additional funds will be available. Additional credit may also not be made available because credit conditions have changed. After the business is in operation it might become apparent that the firm will cease to be a going concern. Hypotheticals include the discovery that the business's viability depends on a key employee or supplier that may not continue to do business with the firm, the unexpected entrance by a competitor, or an unexpected advancement in technology that will render the firm's product useless or undesirable. There could also be an unexpected change in the macro environment that leads to uncertainty in the banking industry wherein lenders may not be willing extend credit as readily.

The reduction of the ability to leverage means that equity-holders must put more of their equity at risk. Thus, if the business fails, the potential losses are larger. This potential for lower leveraged returns and larger losses likely impacts equity investors' decisions on whether to invest in the first place.

Equity and Lender Returns and Losses in Absence of Inflation

Suppose there is no inflation, and a firm expects a $100 investment to earn a constant 12% annual return, the business will continue to be a going concern, and the owners will sell the business for the same $100 at the end of 10 years. The cash flows of this investment are shown in the first row of Table 6 and generate a 12% return.

Table 6: Example Project Cash Flows and Returns

Business Survival	Funding	Stakeholder	Year 0	Profits										IRR
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
Continued Viability	100% Equity	Equity Holder	$ (100)	$12.00	$ 12.00	$ 12.00	$ 12.00	$12.00	$ 12.00	$12.00	$12.00	$ 12.00	$ 112.00	12.00%
	20% Equity	Equity Holder	$ (20)	$ 5.30	$ 5.30	$ 5.30	$ 5.30	$ 5.30	$ 5.30	$ 5.30	$ 5.30	$ 5.30	$ 74.61	31.79%
		Lender	$ (80)	$6.70	$6.70	$6.70	$6.70	$6.70	$6.70	$6.70	$6.70	$6.70	$37.39	3.00%
Fails in Year 5	100% Equity	Equity	$ (100)	$12.00	$ 12.00	$ 12.00	$ 12.00	$12.00	$ 45.00					1.15%
	20% Equity	Equity Holder	$ (20)	$ 5.30	$ 5.30	$ 5.30	$ 5.30	$ 5.30	0	0	0	0	0	10.17%
		Lender	$ (80)	$ 6.70	$ 6.70	$ 6.70	$ 6.70	$ 6.70	$ 45.00					-0.40%

45% Recovery of Collateral. No Inflation.

However, if we change the going concern assumption, we might instead suppose that the business fails because of a sudden shock at the end of year 5. If the firm is financed 100% with equity, equity holders will still earn a 1.15% return as shown in the fourth row of Table 6.

Suppose the business purchase was funded 20% by equity and the remaining 80% funded by debt. If we assume that the firm remains viable over the entire time and the bank charges 3% interest for a constant payment, fully amortizing 15-year loan with yearly payments, this results in a $6.70 annual payment for the $80 borrowed. Equity holder cash flows each year correspond to the $12 profit from each period less the $6.70 loan payment and the $100 selling price of the business less the loan payoff of $29.01 in year 10. Equity holders now have cash flows as shown in the second row of Table 6, and the lender's cash flows are shown in the third row. Leveraging increases equity holder returns from 12% to 31.79% if the firm remains viable as shown in the second row of Table 6. Lenders earn their expected 3% return because the firm has the cash flows to make their loan payments and payoff the principal balance.

If the business fails after year 5, we might suppose that most of the company's assets are industry-specific and can only be sold for a fraction of their book value. For illustration purposes, we will assume that value is $45. If the company is 100% funded by equity, the investment yields a 1.15% return as shown in the fourth row of Table 6, as mentioned earlier. However, if equity holders only provide 20% of the funds for the investment and profits are immediately distributed, equity holders still earn a 10.17% return even though the business fails after year 5. Yet, in this case, lenders suffer losses – receiving payments of $33.50. This, plus the $45 proceeds from the sale of the company's remaining assets, provided lenders with $68.50. This is less than the $80 they lent, and the lenders earn a negative -0.40% return.

Equity holders might still be willing to risk doing this project even if the probability of failure in year 5 is substantial because even in the event the business fails, the expected return to equity holders is positive and if it does not fail, they will earn 31.79% rate of return. However, if the business fails in year 5, equity investors would still have received dividend payments totaling $26.50 by the end of year five that exceed their initial $20 investment. Equity investors get back $6.50 more than they invested by the end of year five; a 32.47% gain over their initial investment and a 10.17% return. This simple example demonstrates equity holders' interests drive investment decisions. Even though the investment is more questionable if the probability of firm failure is high, equity holders may still decide to pursue the project given the potential positive return to themselves regardless of lender losses.

Equity and Lender Returns and Losses in Inflation Environment

Using the previous scenario, we can demonstrate the impact of inflation on lender and equity holder returns and potential losses should the firm fail in an inflationary environment. Row 1 in Table 7 shows the same project used in the previous example with nominal cash flows for the project with the two assumptions (profits and business sale price adjust for inflation). With 100% equity funding, the real return is still 12%. Inflation did not change the unleveraged equity-holder returns.

Table 7: Example Project Cash Flows and Returns

Business Survival	Funding	Stakeholder	Year 0	Profits										IRR
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
Continued Viability	100% Equity	Nominal Equity Holder	$ (100)	$12.72	$ 13.48	$ 14.29	$ 15.15	$16.06	$17.02	$18.04	$19.13	$ 20.27	$ 200.57	18.72%
		Real Equity Holder	$ (100)	$12.00	$12.00	$12.00	$12.00	$12.00	$12.00	$12.00	$12.00	$12.00	$112.00	12.00%
	20% Equity	Nominal Equity Holder	$ (20)	$ 2.69	$ 3.45	$ 4.26	$ 5.12	$ 6.03	$ 6.99	$ 8.01	$ 9.10	$ 10.24	$151.71	34.68%
		Real Equity Holder	$ (20)	$2.54	$3.07	$3.58	$4.05	$4.50	$4.93	$5.33	$5.71	$6.06	$84.71	27%
		Nominal Lender	$ (80)	$10.03	$10.03	$10.03	$10.03	$10.03	$10.03	$10.03	$10.03	$10.03	$48.86	9.18%
		Real Lender	$ (80)	$9.46	$8.93	$8.42	$7.95	$7.50	$7.07	$6.67	$6.29	$5.94	$27.29	3.00%
Fails in Year 5	100% Equity	Nominal Equity Holder	$ (100)	$12.72	$ 13.48	$ 14.29	$ 15.15	$16.06	$63.83					7.22%
		Real Equity Holder	$ (100)	$12.00	$ 12.00	$ 12.00	$ 12.00	$12.00	$45.00					1.15%
	20% Equity	Nominal Equity Holder	$ (20)	2.6896	3.45279	4.26178	5.11931	6.0283						2.24%
		Real Equity Holder	-20	$2.54	$3.07	$3.58	$4.05	$4.50						-3.54%
		Nominal Lender	$ (80)	$10.03	$ 10.03	$ 10.03	$ 10.03	$10.03	$63.83					8.08%
		Real Lender	$ (80)	$ 9.46	$ 8.93	$ 8.42	$ 7.95	$ 7.50	$45.00					1.97%

45% Recovery of Collateral. 6% Inflation.

If the assumption is changed to one of an inflationary environment, with steady, predictable 6% inflation, lenders will adjust their nominal rates for inflation to keep their real interest rate unchanged. By reapplying Equation 1, one can find the nominal rate that keeps the real return the same.

From Equation 1. Nominal Rate = Real Rate + Inflation + Real rate * Inflation rate

Nominal rate = 3% + 6% + 3%*6%= 9.18%.

Banks will now charge 9.18% to keep their real returns at 3%. This higher nominal rate will increase nominal loan payments from $6.70 to $10.03; early payments have an inflation-adjusted real value greater than $6.70 payment the firm paid without inflation. Later payments have an inflation-adjusted real value less than $6.70. The higher early real payments reduce the leverage that equity investors enjoy. Should the firm remain viable, Table 7 shows nominal returns are higher to both the bank and equity investors; however, nominal returns are irrelevant to any investor since nominal returns do not show actual purchasing power. In this example, real leveraged equity returns have been reduced from 32% in the non-inflationary environment (Table 6), to 27% in the 6% inflationary environment (Table 7). Thus, equity holders have been harmed by inflation.

The impact on equity holders is much more significant should the business fail. In real terms, equity investors receive $17.75 by the end of year five, which is $2.25 less than their initial $20 investment. This is an 11.26% loss compared to the 32.47% gain that equity investors earned in the zero-inflation case. The real return equity holders earn is reduced from 10.17% in the non-inflationary environment to a negative 3.54% as shown in the third row from bottom of Table 7, whereas lenders now earn a positive return. This return is lower than their desired 3%, but a positive 1.97% as shown in the bottom row of Table 7.

Given the negative 3.54% real equity returns should the business fail, and the lower equity returns should the business succeed. An increased probability of failure in year 5 will weigh more heavily on potential investors. Therefore, investors in this inflationary environment would likely be much less willing to pursue this business investment. This demonstrates that the mere existence of inflation could alter investment decisions.

Generalizing Equity Gains/Losses

Table 7 calculated the losses should the company fail at year five, but the results can be generalized. The loss that equity holders will experience in real terms if a shock causes the business to fail at time 'k' is simply the difference between the real value of profits the firm receives and the real value of loan payments made in each period, less any equity investment made by the equity holders as shown in equation 3.

Equation 3

$$\text{Real Equity Holder Gains (losses)} = \text{Real NOI} - \text{Real Loan Payments} - \text{Real Equity}$$

The firm expects nominal 'NOI' to increase at the same rate as inflation, so the real NOI each period does not change and so in real terms by the k^{th} period the firm receives k*NOI in real profits. Since the firm makes fixed nominal loan payments, inflation will change the real value of these payments. The real inflation-adjusted value of these constant nominal loan payments can be found discounting these cash flows for the inflation rate using the standard annuity formula with inflation as the discount factor as shown in Equation 4.

Equation 4

$$\text{PVA} = \text{PMT}*\left(\frac{1-\frac{1}{(1+f)^k}}{f}\right) \text{ where f is the inflation rate.}$$

Therefore, applying these real values to the equity holder gain (loss) formula shown in equation 3 yields equation 5. This shows that real equity holder losses are the difference between the real NOI the firm receives, NOI*k, and the real value of the loan payments, $\text{PMT(f)}*\left(\frac{1-\frac{1}{(1+f)^k}}{f}\right)$ and the real amount of money equity holders provided, Equity.

Equation 5

$$\text{Real Equity Holder Loss at time k} = \text{NOI}*k - \text{PMT(f)}*\left(\frac{1-\frac{1}{(1+f)^k}}{f}\right) - \text{Equity},$$

The percentage loss to equity holders is simply the ratio of their gains (losses) to the amount of equity they provided, as represented as Equation 6.

Equation 6

$$\frac{[\text{NOI}*k - \text{PMT(f)}*\left(\frac{1-\frac{1}{(1+f)^k}}{f}\right) - \text{Equity}]}{Equity} \text{x } 100$$

These results assume that equity holders receive no net residual value from the lender's sale of the company's repossessed assets and the outstanding balance of the loan is not part of the equity holder's loss calculation because it is assumed that profits were immediately distributed to equity holders and that the lender cannot seek compensation for its losses from equity holders. Thus, the bank can only recover any unpaid loan balance from the sale of the repossessed company assets.

Inflation's Impact on Equity holder Gains (Losses) if Business Fails

Figure 2 shows real equity holder gains (losses) at different times of business failure assuming the firm earns either a constant 10% or 12% return on investment. Each with three

different inflation scenarios: 0%, 2%, and 6%. It is assumed equity holders obtained a 15-year loan at a real interest rate of 1% with 20% equity funding.

Figure 2: Rate of Return and Anticipated Inflation Impact (If Failure Occurs)

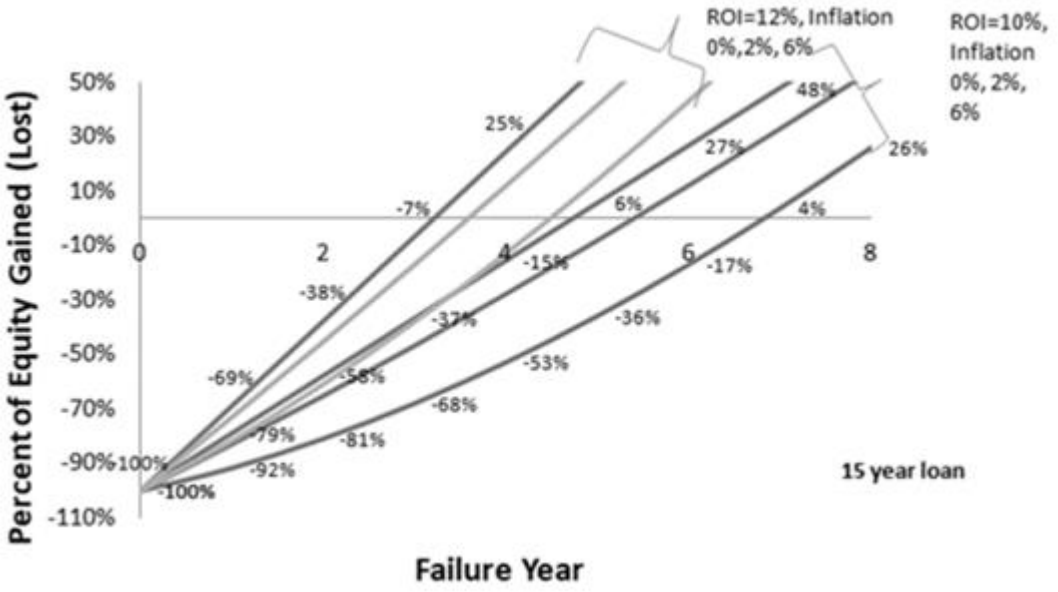


Figure 2 shows that if the return on investment is 10% with no inflation and the business fails in year five, then equity holders will still have a real equity gain of 6%. However, the same investment with a 6% inflation rate results in equity investors losing 36% of their real original equity. If the return on investment had been 12% rather than 10%, with no inflation and the business failing in year three, equity holders lose 7% of their original equity; yet the same investment would result in equity holders losing 37% of their real equity in the 6% inflationary environment. The difference in these losses is significant and could lead equity investors to change their investment decisions.

Therefore, equity holders should be more willing to invest in low-inflation environments. Not only are the potential returns greater should the company survive, but the potential losses are smaller should the company fail. This may help explain the empirical results found by Sharpe (2002) that a one percentage point increase in expected inflation raises required real stock returns by about one percentage point. If equity holders face increased risk in

higher inflation environments should the business fail and lower leveraged returns if it succeeds, one expects investors to require higher real returns to compensate.

CONCLUSION

Unlike previous research that focuses on finding empirical evidence to demonstrate that inflation impacts investor returns, this paper shows mathematically that equity holder returns must be harmed, and potential losses must be larger, if equity holders cannot easily obtain additional financing to counteract reduced leverage created by the "tilt effect." During inflationary periods, the inability to obtain additional credit to maintain the same leverage they enjoyed in a non-inflationary environment, reduces equity holder returns should the business succeed and increases potential equity holder losses should the firm fail. The difference in potential losses during inflationary and non-inflationary periods was shown to be potentially large.

An inflationary environment harms equity holder returns and increases potential equity holder losses should the business fail. In summation, the results in this paper help justify why investors believe inflation damages the long-term profitability of these projects—because for leveraged firms unable to maintain their degree of leverage it does.

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THE ASSOCIATIONS BETWEEN CRITICAL AUDIT MATTERS, INTERNAL CONTROL EFFECTIVENESS, AND GOING CONCERN OPINION

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THE ASSOCIATIONS BETWEEN CRITICAL AUDIT MATTERS, INTERNAL CONTROL EFFECTIVENESS, AND GOING CONCERN OPINION

ABSTRACT

This study examines the associations between internal control over financial reporting (ICFR), going concern opinion, and critical audit matters (CAMs). We use regression analyses and the initial reported CAMs of 2,050 large accelerated filers listed on the NYSE and NASDAQ. We examine two factors - ICFR and going concern opinion - that affect CAM reporting, because of their importance and pervasive impact on the financial statements. The study also uses the more objective auditor opinion on ICFR.

We find that effective ICFR has a negative association with reported CAMs, while firms with a going concern opinion have a positive association with reported CAMs. Our results mean that firms with effective ICFR have fewer reported CAMs, while firms with a going concern opinion have more reported CAMs. No or fewer reported CAMs show no or reduced information asymmetry and may increase the perceived quality of the financial statements and management's credibility. Reporting more CAMs may minimize information asymmetry between financial statement users, auditors, and firms.

INTRODUCTION

This study uses the initial observations of critical audit matters (CAMs) in large accelerated filers[1] listed on the United States (U.S.) stock exchanges, specifically, the NYSE and NASDAQ, to examine how internal control over financial reporting (ICFR) and a going concern opinion (GC) affect CAM reporting. The Public Company Accounting Oversight Board's (PCAOB) auditing standard (AS) 3101 requires auditors to include CAMs in the audit reports (PCAOB, 2017), and defines CAM as:

> "Any matter arising from the audit of the financial statements that was communicated or required to be communicated to the audit committee and that [both] relates to accounts or disclosures that are material to the financial

[1] The U.S. Securities and Exchange Commission defines a large accelerated filer as an issuer with "a public float of $700 million or more, as of the last business day of the issuer's most recently completed second fiscal quarter" (see paragraph 4 in https://www.sec.gov/corpfin/secg-accelerated-filer-and-large-accelerated-filer-definitions).

statements; and involved especially challenging, subjective, or complex auditor judgment" (PCAOB, 2019a, p. 1).

CAMs are part of the broader PCAOB's audit quality indicators geared toward reducing information asymmetry by providing investors with more information to evaluate audit quality and enhance investment decisions (PCAOB, 2017; Reinstein, et al., 2018; Tan and Yeo, 2022). The PCAOB believes that due attention from auditors, audit committees, and management on matters reported as CAMs may have a positive incremental effect on audit quality and the quality of financial statements and associated disclosures (PCAOB, 2016). Auditors, those charged with governance, and regulators are concerned about ICFR and the viability of U.S. listed firms. Hence, we propose that the identification of ICFR issues and a client's financial distress may impact an auditor's reporting of CAMs. This is relevant to financial statement users (hereafter, users) and regulators because it will provide a new perspective on the financial statements, encourage further analysis of the financial statements, and encourage users to make more precise inquiries of firm management (PCAOB, 2016).

While the literature on CAM is growing, there is limited information on what factors affect CAM reporting. Few studies, such as Suttipun (2020) and Fera et al. (2021), examined CAM factors. Specifically, using firms listed on the Thailand stock exchange, Suttipun (2020) investigated the effect of several firm characteristics on key audit matters (KAM[2]), and documented that firm size and complexity positively impacted KAM reporting, while firm profitability had a negative impact. In this study, we include control variables for these relevant firm attributes. Fera et al. (2021) examined corporate governance as a factor that affects KAM, using firms listed on the Italian stock exchange. They developed a composite measure for corporate governance, which included independent directors, board diversity, the presence of an internal audit committee, and the number of board/committee meetings. Their analyses showed that auditors reported fewer

[2] KAMs are like CAMs, and it is the term used in the International Standard on Auditing (see ISA 701).

KAMs for firms with effective corporate governance. In this study, we use the auditor's ICFR opinion, a requirement of section 404(b) of the Sarbanes Oxley Act of 2002.

To provide some insight into factors that affect CAM reporting, we examine ICFR and GC for the following reasons. First, ICFR and GC have established research streams and specific regulatory standards (see PCAOB auditing standards 2201 and 2415). Second, issues with GC and ICFR, specifically material weakness, pervasively affect the financial statement (Blay, et al., 2007). Third, auditors assess ICFR and going concern status during each audit. Hence, any effect they have relates to the current audit year, unlike other significant matters like restatements that may affect multiple years. Fourth, Gray et al. (2011) noted that GC provided insight into management's quality or whether an entity is a sound investment. We believe ICFR provides similar information about both management and audit committee quality.

Auditors identify and report CAMs, in the normal course of an audit, without any additional expertise (PCAOB, 2016). The identification of CAMs arises as auditors perform procedures in the different audit areas, especially those areas that are significant, challenging, and subjective in nature. The assessment of the effectiveness of ICFR and the evaluation of whether there is substantial doubt about an entity's ability to continue as a going concern are significant, challenging, and subjective audit procedures, and hence, we expect them to affect CAM reporting.

Our archival-based study uses regression analyses and the initial observations of CAMs from 2,050 large accelerated filers. We show that effective ICFR has a negative association, while GC has a positive association, respectively, with reported CAMs. Through an effective financial reporting and disclosure process with adequate oversight, firms can enhance the auditability of their financial statements. Reporting fewer or no CAM because of adequate financial reporting and disclosures will enhance financial statement users' trust in management and the financial statements (Carver and Trinkle, 2017). Our GC result suggests that auditors with substantial doubt about the viability of their clients increase their scrutiny of the financial statements

resulting in more reported CAMs. These CAMs can focus users' attention on the highlighted matters and encourage further financial statement analysis.

This study contributes to the CAM literature by examining two factors that affect the reporting of CAMs, and by showing that firms can impact reported CAMs by maintaining effective ICFR, which will enhance financial reporting quality and lessen the challenge of auditing the financial statements. A firm can attain its strategic goal and remain viable by maintaining effective internal control that supports its operational, reporting, and compliance objectives (COSO, 2013; Lawson, et al., 2017). Although our study focuses on ICFR, we acknowledge the importance of internal control over operations. A firm's operational effectiveness and efficiency, which determines its viability, is rooted in its broader internal control system. We show that the issuance of a going concern opinion increases reported CAMs. Thus, a firm's viability anchored on an effective internal control system can reduce reported CAMs, which may minimize or eliminate perceived information asymmetry and improve users' trust (Carver and Trinkle, 2017).

Section 2 presents the relevant literature and our hypotheses. Section 3 describes our data, the variables, and our analyses. Section 4 presents our results and discussion. We conclude in section 5.

RELEVANT LITERATURE AND HYPOTHESES

Critical Audit Matters

The Public Company Accounting Oversight Board (PCAOB) requires auditors of U.S. listed firms to report CAMs to provide meaningful information and communicate significant audit matters (PCAOB, 2017; Reinstein, et al., 2018; PCAOB, 2019a; Kitiwong and Sarapaivanich, 2020). For CAMs to be helpful, they should not be overly technical, standardized, or too detailed (Jermakowicz, et al., 2018; PCAOB, 2019a), and to be a CAM, any matter under consideration should be material to the financial statement, communicated to the audit committee, and involve especially challenging, subjective, or complex auditor judgment (Strauss, et al., 2018; PCAOB, 2019a).

An auditor's determination of a CAM is principles-based and influenced by the audit context (PCAOB, 2019a). While auditors may determine that there is no CAM, the PCAOB expects that auditors will identify at least one CAM (PCAOB, 2019a; Hollie, 2020). The PCAOB requires auditors to state that they did not identify any CAM, if applicable, and for each reported CAM, to (a) identify the CAM; (b) describe the main considerations that led to the CAM determination; (c) describe how the CAM was addressed in the audit; (d) reference the applicable financial statement accounts or disclosures (PCAOB, 2017).

CAMs are not areas the auditor is uncomfortable with the client-reported information. Instead, CAMs reflect areas that require increased audit attention and effort (Christensen, et al., 2014; Pelzer, 2016), which the auditors communicate to users to minimize information asymmetry. The value users derive from CAMs differs depending on their informational needs. At the 17th Annual Financial Reporting Conference, Mark LaMonte, managing director at Moody's Investor's Service, stated, "…analysts are, by and large, more interested in the company's results and future outlook than the difficulty of auditing a particular matter" (Strauss, et al., 2018, p.48). Nonetheless, CAMs inform users of matters relating to financial statement accounts and disclosures that require special audit consideration and how the auditor addressed the matters (PCAOB, 2017; PCAOB, 2019a).

Internal Control Over Financial Reporting

A perfect ICFR is non-existent because of inherent internal control limitations. Nonetheless, users expect effective ICFR to provide reasonable assurance regarding the reliability of financial reporting (PCAOB, 2007; COSO, 2013). As stated by Sarah Ovuka, professional accounting fellow at Financial Executives International, at the 17th Annual Financial Reporting Conference, "internal control is the foundation of good reporting... and preparers are looking for more help to better understand what good internal control looks like and how it can be more consistently applied across companies." (Strauss, et al., 2018, p.49).

Sarbanes Oxley Act section 404(b) requires auditors of U.S. listed firms to assess ICFR effectiveness and report any material weaknesses (United States House of Representatives, 2002; Lawson, et al., 2017; Udeh, 2020). In an integrated audit, auditors first understand the ICFR design effectiveness. Subsequently, they evaluate and report on its operating effectiveness and determine if they can rely on the ICFR to reduce substantive audit procedures (PCAOB, 2007). While assessing the ICFR, auditors may identify control deficiencies, significant deficiencies, or material weaknesses, depending on the severity (Krishnan and Visvanathan, 2007; Naiker and Sharma, 2009; Guragai and Hutchison, 2019). An auditor's response to any identified deficiency will align with the severity of the deficiency. The response to a material weakness will be more extensive than the response to a significant deficiency, and the response to a significant deficiency will be more extensive than the response to a control deficiency. If a material weakness exists, the ICFR is ineffective (PCAOB, 2007; Guragai and Hutchison, 2019), and auditors will state so in their ICFR audit reports.

Although a material weakness increases the risk of having materially misstated financial statements (Krishnan and Visvanathan, 2007; Myllymäki, 2014), an ICFR deficiency is not a CAM because it is not a material financial statement account or disclosure. However, an ICFR deficiency may relate to a material financial statement area. As the PCAOB notes, "the evaluation of the severity of control deficiencies… would not, in and of itself, be a CAM. [But]…the deficiency could be among the considerations that led the auditor to determine such CAMs" (PCAOB, 2019b, p.5). Auditors of U.S. listed firms do not report all the ICFR deficiencies they identified; they typically only state material weaknesses in the audit report (Myllymäki, 2014; Guragai and Hutchison, 2019). Thus, although the ICFR audit report provides information about ICFR effectiveness, it does not communicate information about other ICFR-related considerations that made the auditor determine that a matter is a CAM. Auditors can use the reported CAM to provide such information. Hence, we expect an association between ICFR and reported CAMs.

The PCAOB requires auditors to describe how they addressed the CAM (PCAOB, 2017). From reading the reported CAMs, we note that internal control testing over the matter under

consideration was common. The testing of internal controls related to a matter by auditors suggests an association between ICFR and CAMs. Below is an excerpt showing how KPMG LLP partially addressed a CAM, relating to the write-down of inventories, identified in the audit of AAR CORP for the fiscal year ended May 31, 2020[3].

> "The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's inventory process, including controls over the Company's evaluation of the impact on the estimate of net realizable value… We also tested relevant information technology application controls over the determination of the number of days transpiring from the date the inventory was originally received…"

We argue that if firms maintain effective ICFR, their financial statements and related disclosures will be less challenging to audit. We acknowledge that more subjective and complex accounting areas will require more scrutiny (Gold, et al., 2020). However, an effective and reliable financial reporting process will moderate the effort needed (Tan and Yeo, 2022) and minimize the need for auditors to provide more information as CAMs. In contrast, if firms have ICFR issues associated with significant financial statement areas, auditors will provide more information as CAMs. Hence, we expect auditors of firms with effective ICFR to report fewer CAMs, and we state the following hypothesis.

H1: Effective ICFR is negatively associated with the number of CAMs reported.

Going Concern Opinion

An accounting assumption is that an entity will remain a going concern in the foreseeable future. Accordingly, the PCAOB's AS 2415.02 states that "the auditor has a responsibility to evaluate whether there is substantial doubt about the entity's ability to continue as a going concern for a reasonable period, not to exceed one year beyond the date of the financial statements being

[3] This excerpt is from the Report of Independent Registered Public Accounting Firm included in the Form 10-K (Annual report) filed with the Securities and Exchange Commission by AAR CORP on July 21, 2020. (https://www.sec.gov/Archives/edgar/data/1750/000110465920085310/air-20200531x10k.htm#ITEM8FINANCIALSTATEMENTSANDSUPPLEMENTARY).

audited" (PCAOB, 2002). Although the going concern assumption is understandable, the forward-looking analysis prone to economic, operational, and regulatory changes makes it challenging to determine when a going concern opinion is necessary (Eickemeyer and Love, 2016). This constraint may be the reason some firms remain in operation after receiving consecutive going concern opinions (Rodgers, 2011; Khan, et al., 2017; Coleman, et al., 2022).

When considering a firm's ability to continue as a going concern, auditors evaluate management's plan to address any going concern issue. Management's plan may involve assumptions that are "material to the prospective financial information, especially sensitive or susceptible to change, and inconsistent with historical trends" (PCAOB, 2002, AS 2415 paragraph 9). Therefore, characteristically, management's plan is an area auditors may identify CAMs since auditors are likely to identify CAMs in areas involving significant management estimates and judgments, increased financial statement and audit risks, unusual transactions, and other significant changes in the financial statements (PCAOB, 2016).

The auditor reports substantial doubt about a firm's viability and describes the nature of the uncertainty in an explanatory paragraph (PCAOB, 2002). However, auditors are usually conservative in issuing GC when the perceived litigation and reputation risks are high (Chen, et al., 2013). Evaluating a firm's viability involves uncertainty, and studies show CAMs involving significant measurement uncertainty issues decrease perceptions of auditor culpability in the event of a material misstatement (Kachelmeier, et al., 2020; Kitiwong and Sarapaivanich, 2020). Hence, supplementary to an explanatory paragraph, auditors may opt to provide more information through CAMs when going concern issues exist to minimize litigation risk. This is likely because the explanatory paragraph addresses a going concern issue in a manner that leaves no latitude for other information that may be helpful to users. Below is an explanatory paragraph example from PCAOB AS 2415, paragraph 13.

> "The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note X to the financial statements, the Company has suffered recurring losses from operations and has a

> net capital deficiency that raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note X. The financial statements do not include any adjustments that might result from the outcome of this uncertainty."

Given the likelihood of auditor culpability, Gimbar et al. (2016) highlighted the need for increased audit risk assessment and effort when auditors identify an accounting issue as a CAM. Similarly, Backof (2015) noted that better documentation, alternative considerations, linking issues to regulatory standards, identifying specific risks, and addressing those risks, minimize adverse outcomes for auditors. The PCAOB's requirements for a description of the considerations leading to the CAM determination, disclosures of how the auditor addressed the CAM, and the affected financial statement areas (PCAOB, 2017) align with the recommendations from Gimbar et al. (2016) and Backof (2015) and indicates an expectation of increased audit effort.

Regarding increased audit effort, Rosner (2003) documented that the discovery of going concern issues prompted auditors to exert more effort and closely examine financial statements which led to the reversal of income-increasing earnings manipulation among failing firms. Likewise, Blay et al. (2007) found auditors used more persuasive evidence and increased their audit effort when faced with high or moderate levels of going concern issues. This heightened audit scrutiny can result in auditors providing more information through CAMs when going concern risk exists. Nguyen and Kend (2021) noted that auditors increased their efforts post-KAM through more client consultation and meetings, more auditor training, and expanded audit review processes. Relatedly, Li et al. (2019) partly explained their finding of higher audit fees post-KAMs as a factor of increased audit effort, and Tan and Yeo (2022) found that CAM reporting by auditors, who are highly independent of their clients, signaled increased auditor scrutiny.

Therefore, when substantial doubt exists about a firm's ability to continue as a going concern, we expect that the increased audit effort and scrutiny, and the need to provide additional helpful

information to users for analysis and decision-making, will lead auditors to report more CAMs. Hence, we state the following hypothesis.

H2: Going concern opinion is positively associated with the number of CAMs reported.

Methods

Sample Determination

CAM reporting was effective beginning June 30, 2019, for large accelerated filers in the U.S., and our study covers June 30, 2019, to June 29, 2020. We acknowledge that using data solely from the initial reported CAMs of large accelerated filers may affect the generalizability of the findings of this study. Nonetheless, our sample is from data on 2,468 firm observations from Audit Analytics and WDRS. We eliminate 418 observations representing non-active filers, shell companies, duplicates, and incomplete data. The final sample represents 2,050 unique firms (Table I). We summarize the variables and how we measured them in Table II.

Table I
Sample Determination

Initial data (June 30, 2019, to June 29, 2020)	2,468
Less:	
Non-active filers	(202)
Shell companies	(94)
Firms with incomplete data	(23)
Firms with duplicate observations	(99)
	2,050

Dependent Variable

The dependent variable is the number of reported CAMs for each firm. Studies showed that many users do not thoroughly read the audit report. Gray et al. (2011) found that many users only verify if the audit report includes an unqualified opinion and if a Big 4 audit firm performed the audit. Similarly, Segal (2019) found minimal engagement with KAM disclosures in audit reports. If these two findings still hold, observing the extent of the reported CAMs could provide valuable information about a firm, even if users only glance through the audit report.

We use a quantitative measure for reported CAMs following prior studies (Kitiwong and Sarapaivanich, 2020; Suttipun, 2020; Wuttichindanon and Issarawornrawanich, 2020; Fera, et al., 2021). We obtain the reported CAM data from AuditAnalaytics, and we determine the number of reported CAMs from the CAM title. Next, we read the CAM description to determine if the auditors discussed multiple matters under a specific CAM title. We count each matter as a unique CAM (PCAOB, 2017; Fera, et al., 2021).

Independent Variables

For our first hypothesis, the variable of interest is ICFR, measured as an indicator variable that equals one if a firm has effective ICFR and zero otherwise. We use the auditor's ICFR opinion because it is more objective, and users may find it more credible than the management's ICFR assessment (Christensen, et al., 2014; Udeh, 2020). The variable of interest for our second hypothesis is the issued GC. We measure GC as an indicator variable that equals one if an auditor issued GC and zero otherwise.

Control Variables

We include control variables for firm characteristics. These characteristics affect the financial statement audit through their inherent risks. We include a control variable for firm size (SIZE), measured as the natural logarithm of total assets, and for firm complexity via segment reporting (SEG). We measure SEG as an indicator variable that equals one if a firm has segment reports and zero otherwise. Auditors will perform more procedures for clients with increased variety and amount of assets. Likewise, the risks associated with diversified operations and segment reporting require more audit effort. Hence, we expect positive associations between SIZE, SEG, and CAMs (Pinto and Morais, 2019; Suttipun, 2020; Wuttichindanon and Issarawornrawanich, 2020; Fera, et al., 2021).

Table II

Variables, their Notations, and Measurements

Variables	Notation	Measurement
Dependent Variable		
Reported CAM	CAM	A count of the reported CAM
Independent Variables		
Effectiveness of ICFR	ICFR	Dummy variable; 1 equals effective ICFR, and 0 otherwise
Going concern opinion	GC	Dummy variable; 1 equals going concern opinion issued, and 0 otherwise
Control Variables		
Firm size	SIZE	The natural logarithm of total assets
Firm complexity	SEG	Dummy variable; 1 equals firm reports segments, and 0 otherwise
Firm profitability	PROFIT	The return on assets ratio (ROA)
Firm liquidity	LIQUIDITY	The ratio of operating cashflow to net income
Leverage	LEV	The ratio of total debt to total assets
Auditor type	AUDITOR	Dummy variable; 1 equals Big 4 audit firm, and 0 otherwise
Industry	Industry	The industry classification based on the two-digit SIC codes

We include control variables for varying measures of financial performance following prior studies (Pinto and Morais, 2019; Suttipun, 2020; Wuttichindanon and Issarawornrawanich, 2020; Fera, et al., 2021). Since a negative operating cash flow is a going concern issue indicator, we measure firm liquidity (LIQUIDITY) as the operating cash flow to net income ratio. This ratio relates to the consistency or lack thereof between a firm's operating cash flow and net income. We measure leverage (LEV) as the total debt to total assets ratio. Highly leveraged firms are riskier, making securing funding more challenging for them. Due to the financial risks associated with these ratios and the likelihood that auditors may provide more information about the related accounts, we expect positive associations between LIQUIDITY, LEV, and CAMs.

We include a variable for firm profitability (PROFIT) measured as the return on assets. Following prior studies (Suttipun, 2020; Fera, et al., 2021), we expect a negative association between PROFIT and CAMs. The negative perception and impact of a loss or significantly reduced profit may motivate more information disclosure from the client and the auditors. We also control for auditor type (AUDITOR) using an indicator variable that equals one for a Big 4 audit firm and zero otherwise. Since auditors determine CAMs based on their perception of what involves challenging, subjective, or complex judgment, we make no directional prediction. Nonetheless, we acknowledge that this control variable may not represent auditor behavioral factors. We include a control variable for industry type. Based on the two-digit SIC codes, about 38.9 percent of firms in our sample are in the manufacturing industry.

Research Design

We perform a descriptive statistical analysis to understand the characteristics of our data. We use a correlation test to determine the relationships between the variables and if multicollinearity exists. We perform a multiple regression to analyze the association between the dependent and independent variables. Here is our multiple regression model.

$$CAMs = \beta_0 + \beta_1 ICFR + \beta_2 GC + \beta_3 SIZE + \beta_4 SEG + \beta_5 PROFIT + \beta_6 LIQUIDITY + \beta_7 LEV + \beta_8 AUDITOR + \beta_9 Industry + \varepsilon$$

RESULTS

Descriptive Statistics and Correlation Matrix

Table III presents the descriptive statistics. The average number of CAMs reported is less than two. Some firms reported no CAM, and the maximum number of CAM reported is seven. About 96 percent of the firms in the sample have effective ICFR, and Big 4 audit firms audit about 92 percent of the sample firms. The auditors of a few firms in the sample had substantial doubt about their client's viability. The firms in the sample are large, and about 99% of them have segment reporting. The sample firms are mostly profitable, and their average return on assets ratio is 0.023. On average, the sample firms have a positive cash flow per dollar of net income, and with an average leverage ratio of 0.252, the sample firms are not highly leveraged.

Table IV shows low correlation coefficients between our variables. The highest variance inflation factor (VIF) among the variables is 1.09, and the mean VIF is 1.03. These statistics indicate that multicollinearity is not an issue (Suttipun, 2020). The correlation matrix also shows significant correlations between some of the variables.

Table III
Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max
CAM	1.6620	0.8722	0.0000	7.0000
ICFR	0.9590	0.1983	0.0000	1.0000
GC	0.0049	0.0697	0.0000	1.0000
SIZE	9.7698	0.7462	6.8396	12.5445
SEG	0.9898	0.1007	0.0000	1.0000
PROFIT	0.0234	0.1937	-1.5360	6.3711
LIQUIDITY	1.6452	59.7362	-2061.0190	1346.5000
LEV	0.2517	0.2617	0.0000	2.2197
AUDITOR	0.9151	0.2788	0.0000	1.0000
Industry		Included		

Table IV
Correlation Matrix

Variable	CAM	ICFR	GC	SIZE	SEG	PROFIT	LIQUIDITY	LEV	AUDITOR
CAM	1.0000								
ICFR	-0.0773***	1.0000							
GC	0.0753***	-0.0208	1.0000						
SIZE	0.2974***	0.0391*	-0.0128	1.0000					
SEG	0.0161	0.0034	0.0071	-0.0374*	1.0000				
PROFIT	-0.0439**	0.0468**	-0.0527**	0.0759***	-0.0017	1.0000			
LIQUIDITY	0.0424*	0.0015	0.0017	0.0104	0.0013	0.0027	1.0000		
LEV	0.0056	-0.0544**	0.0643***	-0.1764***	0.0391*	-0.0448**	0.0079	1.0000	
AUDITOR	0.0405*	0.0077	-0.0038	0.1613***	-0.0310	-0.0284	-0.0028	0.0543**	1.0000
Industry					Included				
VIF		1.0100	1.0100	1.0900	1.0100	1.0200	1.0000	1.0700	1.0400
Tolerance		0.9940	0.9921	0.9162	0.9885	0.9822	0.9997	0.9369	0.9642

Note: ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.1 p-levels, respectively.

Univariate Analyses

Table V compares firms with effective ICFR and those with ineffective ICFR. The result shows a statistically significant difference, at the 0.01 p-level, in the means of CAMs. The sample firms with ineffective ICFR have a higher CAM mean of approximately 1.99, while the sample firms with effective ICFR have a lower CAM mean of about 1.65. There are also statistically significant differences between the groups for SIZE and PROFIT. Firms with ineffective ICFR are, on average, marginally smaller in size and less profitable. Also, on average, sample firms with an ineffective ICFR have a return on assets ratio of -0.020, while sample firms with an effective ICFR have a return on assets ratio of 0.025. There are no statistically significant differences for other variables.

Table V
Univariate Analysis of Internal Control over Financial Reporting

	ICFR = 0 (n = 84)		ICFR = 1 (n = 1,966)				
Variables	Mean	Std. Dev.	Mean	Std. Dev.	Difference	t-test	p-value
CAM	1.9881	1.0585	1.6480	0.8609	0.3401	3.5093	0.0005***
GC	0.0119	0.1091	0.0046	0.0675	0.0073	0.9436	0.3455
SIZE	9.6285	0.8107	9.7759	0.7430	-0.1473	-1.7730	0.0764*
SEG	0.9881	0.1091	0.9898	0.1004	-0.0017	-0.1543	0.8774
PROFIT	-0.0204	0.1843	0.0253	0.1939	-0.0457	-2.1210	0.0340**
LIQUIDITY	1.2182	7.0859	1.6635	60.9822	-0.4453	-0.0669	0.9467
LEV	0.3206	0.2895	0.2488	0.2602	0.0718	2.4642	0.0138
AUDITOR	0.9048	0.2953	0.9156	0.2781	-0.0108	-0.3477	0.7281
Industry				Included			

Note: ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.1 p-levels, respectively.

Table VI compares firms with GC and those without GC and shows a statistically significant difference, at the 0.01 p-level, between the groups' means of CAMs. The sample firms with GC have a higher CAM mean of about 1.78, while the sample firms without GC have a lower CAM mean of about 1.66. There are also statistically significant differences between both groups for PROFIT and LEV. The sample firms with GC are less profitable and less effective in using assets to

generate revenue. The sample firms with GC are also more leveraged. There are no statistically significant differences for other variables.

Table VI
Univariate Analysis of Going Concern Opinion

	GC = 0 (n = 2,040)		GC = 1 (n = 10)				
Variables	Mean	Std. Dev.	Mean	Std. Dev.	Difference	t-test	p-value
CAM	1.6574	0.8638	2.6000	1.7764	-0.9426	-3.4182	0.0006***
ICFR	0.9593	0.1976	0.9000	0.3162	0.0593	0.9436	0.3455
SIZE	9.7705	0.7457	9.6334	0.8742	0.1371	0.5796	0.5623
SEG	0.9897	0.1010	1.0000	0.0000	-0.0103	-0.3224	0.7472
PROFIT	0.0242	0.1933	-0.1223	0.2233	0.1464	2.3875	0.0171**
LIQUIDITY	1.6381	59.8817	3.1075	4.5600	-1.4695	-0.0776	0.9382
LEV	0.2506	0.2600	0.4920	0.4625	-0.2415	-2.9156	0.0036***
AUDITOR	0.9152	0.2787	0.9000	0.3162	0.0152	0.1719	0.8635
Industry				Included			

Note: *** and ** indicate statistical significance at the 0.01 and 0.05 p-levels, respectively.

Multivariate Analysis

Table VII presents the results of the multiple regression analysis, and the results support our hypotheses. We find a negative and statistically significant association, at the 0.01 p-level, between ICFR and CAMs, indicating that auditors of firms with effective ICFR are likely to report fewer CAMs. Our result aligns with Fera et al. (2021), who examined and found a negative relationship between corporate governance and KAMs. Effective ICFR ensures the financial information is verifiable, timely, and complies with applicable regulations. A firm that maintains an effective ICFR will have reliable financial reporting and adequate information disclosure. Auditors of such firms can obtain sufficient, appropriate evidence to verify financial information and determine the reasonableness of management estimates. Hence, auditors of firms with effective ICFR report fewer CAMs. Though CAM reporting is not an adverse outcome, having no or few CAMs reported show information asymmetry between users, auditors, and management may not have existed.

Table VII
Multiple Regression Analysis

Variables	Expected Sign	Estimated Coefficient	Std. Dev.	t	P-value
ICFR	-	-0.3645	0.0921	-3.96	0.000***
GC	+	0.8900	0.2624	3.39	0.001***
SIZE	+	0.3711	0.0255	14.55	0.000***
SEG	+	0.2185	0.1819	1.20	0.230
PROFIT	-	-0.2635	0.0949	-2.78	0.006***
LIQUIDITY	+	0.0006	0.0003	1.86	0.063*
LEV	+	0.1648	0.0719	2.29	0.022**
AUDITOR	?	-0.0415	0.0665	-0.62	0.533
Constant		-1.8323	0.3206	-5.71	0.000***
Industry			Included		

R-squared	0.1105
Adj. R-squared	0.1066
F-stat	28.17
P-value	0.0000***
N	2,050

Note: ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.1 p-levels, respectively.

We find a positive and statistically significant association, at the 0.01 p-level, between GC and CAMs, indicating that auditors with substantial doubt about firms' viability are likely to report more CAMs. Going concern determination is a challenging and subjective process. It requires careful attention, and auditors heighten their professional skepticism and effort when they observe going concern risk factors. The enhanced scrutiny of the financial statements results in auditors' identification and reporting of more CAMs, and these CAMs will draw users' attention to the matters not stated in the explanatory paragraph and minimize information asymmetry.

We find positive and statistically significant associations between SIZE, LIQUIDITY, LEV, and CAMs. The results show that auditors report more CAMs for larger firms, firms with more liquidity, and firms with higher leverage. We attribute these results to the audit risks and challenges associated with firms with more operational magnitude, financial risks of earnings

growth without corresponding operating cash flow effects, and greater risks of failing due to high leverage. We also find a negative and statistically strong association between PROFIT and CAMs, suggesting that auditors of profitable firms are likely to report fewer CAMs. Profitability is a going concern indicator, and auditors do not usually provide more information relating to going concern if a firm is profitable and has good financial condition. We find no statistically significant association between SEG, AUDITOR, Industry, and CAMs.

CONCLUSION

This study examines the associations between ICFR, GC, and CAMs. We predicted a negative association between effective ICFR and CAMs, and a positive association between GC and CAMs, and our findings support our predictions. Our results show that firms with effective ICFR have fewer CAMs reported, and distressed firms have more CAMs reported. CAMs provide valuable information about significant and challenging account and disclosure matters faced by auditors during a financial statement audit. The reporting of fewer CAMs when ICFR is effective indicates that by establishing and maintaining effective ICFR, firms make the auditing of their financial statements less challenging. Likewise, the reporting of more CAMs when the viability of a firm raises substantial doubt, suggests the need to reduce information asymmetry between auditors, management, and financial statement users by providing more information not already communicated in a going concern opinion and any associated explanatory paragraph.

Our study contributes to the growing literature on CAMs by identifying and examining two factors - ICFR and going concern opinion - that affect CAM reporting. Although auditors of U.S. listed firms issue ICFR audit opinions as part of an integrated audit, and when necessary, a going concern opinion, reported CAMs provide additional helpful information to users. For example, an ICFR audit opinion conveys the presence or absence of material weaknesses and provides insight into a firm's corporate governance (Gray, et al., 2011). However, more reported CAMs may signal the presence of other ICFR deficiencies that are not material weaknesses. Likewise, more reported CAMs may disclose accounting areas that involve significant management estimates or unusual transactions (PCAOB, 2016) impacted by going concern issues.

While CAMs are determined by auditors, our findings suggest that an audit client can affect favorably reported CAMs by maintaining a broader effective internal control system over its financial reporting, operations, and compliance. Though CAMs are not negative, more CAMs show auditors are reducing (or attempting to reduce) information asymmetry between users and management, which may have implications for how users perceive management credibility and the financial statement reliability. By maintaining an effective internal control system and consequently, minimizing reported CAMs, management may enhance users' perception of their credibility and the reliability of the financial information they communicate. This makes our study and its findings of interest to management and users, auditors, and regulators alike.

This study has several limitations, which provide opportunities for future research. First, our sample includes only large accelerated filers, which means that our findings may not generalize to filers with the later effective date for reporting CAMs of December 15, 2020. Therefore, future research may broaden the sample to include all filers and examine differences in the factors that affect CAM reporting between the different filers. Second, our sample comprises the initial observations of reported CAMs. CAMs may change as auditors become more familiar with the expectations of regulators and users regarding CAMs. Therefore, future research may conduct a longitudinal study that examines trends in factors that impact reported CAMs, and how reported CAMs may have changed over time. In this context, the studies may use both quantitative and qualitative measures of CAMs. Finally, auditors determine CAMs, and while we include a control variable for auditor type, we do not capture auditor behavioral factors that may affect the identification and reporting of CAMs. Future research may explore auditor behavioral factors using an experiment to determine their impact on the reporting of CAMs.

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AN ECONOMIC ANALYSIS OF CONSOLIDATION ACCOUNTING: THE PROPERTY RIGHTS APPROACH

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AN ECONOMIC ANALYSIS OF CONSOLIDATION ACCOUNTING: THE PROPERTY RIGHTS APPROACH

ABSTRACT

This study examines the consistency of IFRS 10 Consolidated Financial Statements with the property rights theory (PRT). Our findings are fourfold. First, with respect to a basis for consolidation, IFRS 10 is consistent with PRT in that it regards both power over—and claims to the returns from—the subsidiary as requirements for consolidation. However, the meanings of power and returns in IFRS 10 are not necessarily the same as those in PRT. Second, PRT and IFRS 10 hold different views on the object over which the parent's power is exercised: the former focuses on the subsidiary assets, the latter, on the subsidiary's relevant activities. Third, the accounting treatments of a non-controlling interest (NCI) in IFRS 10 are largely consistent with PRT. Last, regarding SPEs that may differ from subsidiaries as their activities are strictly determined by contracts, it is not clear from PRT how such characteristics should be reflected in their accounting treatments. (*JEL* G34, M41, P14)

INTRODUCTION

As a member of the International Accounting Standards Board (IASB), Barth (2007) states that research grounded in economic theory can be helpful to standard setters. For the purpose of providing useful inputs to standard-setting debates, this study examines how the current consolidation accounting standard corresponds with the property rights theory (PRT). PRT is a well-established economic theory that predicts how the boundaries of the firm are determined.[1] As consolidated financial statements are prepared to report firms' financial position and performance after acquisitions, PRT is an appropriate theory to apply when analyzing issues related to consolidation accounting. Barth (2007) discusses the role of research in standard setting from the perspective of an IASB member, and the adoption of them for public companies is spreading worldwide (Nobes, 2005; Ball, 2016); as such, this study focuses on the International Financial Reporting Standards (IFRS).

[1] According to Holmstrom and Roberts (1998), PRT was pioneered by Grossman and Hart (1986) and developed by Hart and Moore (1990) and many others. In 2016, Oliver Hart won the Nobel Prize in Economics.

Table 1 presents motivating questions (MQs) and research questions (RQs) of this study, in which MQs are "the questions to which standard setters would like to have the answer" and RQs are "the questions to which researchers can provide the answer" (Barth, 2007, p. 14). Barth (2007) argues that the linkage between MQs and RQs is important in designing research on standard-setting issues. Thus, we derive MQs from Section 5 of Barth (2007) and develop several RQs based on PRT for each group of MQs.

Barth (2007) further argues that researchers need to specify which standard-setting criteria in the conceptual frameworks they focus on. As a standard-setting criterion of interest, we select a faithful representation of financial information. The IASB's Conceptual Framework for Financial Reporting published in 2018 (hereafter, Conceptual Framework) states that financial information must "faithfully represent the substance of the phenomena that it purports to represent" (par. 2.12). To set accounting standards that help financial reporting to faithfully represent the substance of business groups, it is important to understand the economic nature of consolidation. According to Varian (2014, p. 1), an economic model is "a simplified representation of reality," which enables us to understand the essential features of social phenomena by eliminating irrelevant detail. Thus, the formalized model of PRT is expected to provide insight into discussion about the faithful representation of consolidated financial statements. Although prior studies (e.g., Kohler, 1938; Childs, 1949; Moonitz, 1951; Nobes, 2014) propose plausible consolidation accounting procedures, they do not appear to discuss theoretically why one firm acquires another and what happens after acquisitions. This study thus proposes PRT-based consolidation accounting procedures and examines the similarities and differences between the PRT and IFRS 10 models.

Table 1

Motivating questions (MQs) and research questions (RQs)

This table presents MQs about consolidations (Barth, 2007, Section 5) and RQs developed to examine MQs in terms of PRT. Following Barth (2007, p. 14), we define MQs as "the questions to which standard setters would like to have the answer" and RQs as "the questions to which researchers can provide the answer."

No.	Motivating questions (MQs)	Research questions (RQs)
1	Should consolidation be based on control or on some other criteria? If it should be based on some other criteria, what are they? For example, is exposure to risks and rewards itself an appropriate criterion, or it is an indicator of control?	(i) What is the meaning of consolidation in PRT? (ii) How is it associated with the concept of control? (iii) Is IFRS 10 consistent with PRT?
2	What are features of control? Presently, entities controlled by the reporting entity are included in consolidated financial statements. Should control refer to control over an entity's equity? Or, should it refer to control over the entity's operating and financing decisions? Or, should it refer to control over the entity's assets and liabilities? Are these different? In all circumstances? If not, why? If so, how?	(i) Over what is power in PRT exercised? (ii) Is IFRS 10 consistent with PRT?
3	What are features of equity? This question is relevant in consolidations if control over equity is relevant in determining which entities to include in a consolidated group. It also is relevant in determining whether a non-controlling interest in a controlled entity is equity of the consolidated group.	(i) From the perspective of PRT, what is equity considered to represent? (ii) How is it associated with the concept of NCIs? (iii) Is IFRS 10 consistent with PRT?
4	How should different risks be aggregated and measured? Which risks? These questions are potentially relevant for determining whether an entity controls a so-called special purpose entity that has no equity.	(i) How can the establishment of SPEs be viewed from the perspective of PRT? (ii) Is IFRS 10 consistent with PRT?

OVERVIEW OF THE PROPERTY RIGHTS THEORY (PRT)

This research relies on PRT because, according to Hart (1995), other established theories of the firm do not satisfactorily explain the boundaries of the firm. For instance, the neoclassical theory does not address the difference between a situation in which two firms with the same production and cost functions and facing the same output price operate independently, and one in which they are merged into a single firm and operate as divisions of it. Similarly, the agency theory does not clarify how a situation in which the purchaser and supplier are independent firms linked by arm's-length contracts differs from one in which they are divisions of a larger firm linked by optimal incentive contracts. Last, the transaction cost theory argues that two firms are integrated to reduce the costs of haggling problems and hold-up behaviors in the relationship between two independent firms. However, the theory is somewhat ambiguous as to how and why such costs change after the two firms are merged into a single firm. PRT analyzes the boundaries of the firm while taking this question into account.

PRT assumes incomplete contracts. In the real world, people cannot write complete contracts because it is impossible to anticipate all the things that could happen and specify what should be done in each situation. When contracts are incomplete, in that they inevitably leave out many contingencies, it matters who owns the private properties (Hart, 1995).

In PRT, the concept of ownership comprises two aspects: residual control rights and residual income rights. The former refer to the rights to the usage of assets. When some aspects of the usage of assets are not specified, the owner of the assets possesses the right to decide on the unspecified usages; this right is called the residual control right, defined as "the right to decide all usages of the asset in any way not inconsistent with a prior contract, custom, or law" (Hart, 1995, p. 30). The latter are the rights to the returns from assets. The owner of an asset is entitled to receive the residual returns from the asset, including current cash flows or changes in the current value of the asset (Milgrom and Roberts, 1992). Thus, the residual income right is defined as the claim right to "whatever remains after all revenues have been collected and all debts,

expenses, and other contractual obligations have been paid" (Milgrom and Roberts, 1992, p. 291).

According to Hart (1995), through integration, the acquiring firm becomes the owner of the acquired firm's (non-human) assets.[2] When two firms are separate, each has the residual control rights of its respective assets. If one acquires the other, the acquiring firm can exercise residual powers over both firms' assets. Thus, through integration, the residual control rights of the subsidiary assets are transferred from the subsidiary to the parent. Simultaneously, the parent, as the controlling shareholder, acquires the majority of the residual income rights from the subsidiary's shareholders.

The formal PRT model in Hart (1995) predicts that the boundaries of the firm are determined by the optimal allocation of the residual control rights between the parties to the transaction. For example, if the complementary assets of two separate firms are brought under the control of one, this leads to efficient relationship-specific investments and an increase of overall profits.[3] In this case, one firm will acquire the other, thereby expanding the boundary of the firm. Meanwhile, if the independent assets of two firms are brought under the control of one, net benefits cannot be expected. In this case, there will be no change in the boundary of the firm.

ANALYSES OF STANDARD-SETTING ISSUES ON CONSOLIDATIONS

Basis For Consolidation

As shown in Table 1, the first group of MQs (hereinafter, MQ1) is about the basis for consolidation. We then investigate the following RQs: (i) What is the meaning of consolidation in PRT? (ii) How is it associated with the concept of control? (iii) Is IFRS 10 consistent with PRT? For

[2] The human capital of employees working for the acquired firm is excluded because "given the absence of slavery, the human capital of these workers belongs to them both before and after the acquisition" (Hart, 1995, p. 29).

[3] Two assets are considered as complementary when "each makes the other valuable" (Milgrom and Roberts, 1992, p. 17). A relationship-specific investment is defined as "a prior investment, which creates value if the parties' economic relationship extends over time, but does not if the parties split up" (Hart, 1995, p. 26).

a definition of control, we refer to Oxford Advanced Learner's Dictionary, 10th edition, which states that control is "the power to make decisions about how a country, an area, an organization, etc. is run." We follow this general definition unless we refer to specific concepts of control as used in PRT or IFRS 10.

The Conceptual Framework states that "(c)onsolidated financial statements provide information about the assets, liabilities, equity, income and expenses of both the parent and its subsidiaries as a single reporting entity" (par. 3.15). This description implies that consolidation is about creating a business group that consists of the parent and its subsidiaries. According to Hart (1995), when two independent firms enter into a parent-subsidiary relationship, the parent acquires the residual control rights of the subsidiary assets. Thus, it is reasonable to say that the concept of control is closely associated with consolidation in PRT.

As implied in MQ1, the IASB has discussed two models of a basis for consolidation.[4] The controlling entity model considers that the scope of business activities is determined by the extent of control an entity has over other entities (IASB, 2008c, par. 64). The risks and rewards model considers that two entities belong to a business group when the actions of the second entity impact the wealth of the shareholders (or residual claimants) of the first (IASB, 2008c, par. 97). IFRS 10 concludes that the exposure to risks and rewards is an element of control (par. BC36) and requires an entity to prepare consolidated financial statements if it controls one or more other entities (par. 2).

In IFRS 10, the entity or the investor is considered to control the other entity or the investee when the investor has (a) power over the investee, (b) exposure, or rights, to variable returns from its involvement with the investee, and (c) the ability to use its power over the investee to

[4] Besides these two models, IASB (2008c) discusses the common control model, which focuses on entities controlled by an individual investor or family. As our interest is in a parent-subsidiary relationship, this model is beyond the scope of this study.

affect the amount of the investor's returns (par. 7). We examine the consistency of each prerequisite with PRT below.

First, prerequisite (a) seems to build on the controlling entity model because power is a key concept of control. IFRS 10 states that, although assessing power over an investee is straightforward when it is obtained directly from shareholdings, it can be more complex when power results from contractual arrangements (par. 11). In PRT, power comes from holding the residual control rights, or the rights to decide usages of assets that are not specified by contracts. Thus, although IFRS 10 and PRT regard power as a prime determinant of consolidation, the source of power assumed in the former seems to be broader than that in the latter. According to PRT, power from contractual arrangements is not a key factor in consolidation because if the parties can make a satisfactory contract, they do not necessarily have to be integrated.

Second, prerequisite (b) appears to be based on the risks and rewards model because "variable returns" are synonyms of "risks and rewards" (IFRS 10, par. BC32). As mentioned above, the risks and rewards model focuses on the effect of the investee's activities on the wealth of the residual claimants (IASB, 2008c, par. 97). While IASB (2008c) does not specify what the residual claimant is, Milgrom and Roberts (1992, p. 291) define it as "the one who is entitled to any net income that the firm produces." If IASB (2008c) uses the residual claimant in the same sense that Milgrom and Roberts (1992) uses it, it is reasonable to say that risks and rewards in IASB (2008c) and residual income in PRT are fundamentally the same concepts. Meanwhile, IFRS 10 defines variable returns as "returns that are not fixed and have the potential to vary as a result of the performance of an investee" (par. B56), which include not only "dividends" and "changes in the value of changes in the value of the investor's investment in that investee" but also "remuneration for servicing an investee's assets or liabilities" and "fees and exposure to loss from providing credit or liquidity support" (par. B57). Although IFRS 10 states that variable returns and risks and rewards are more or less equal, the former seem to indicate broader returns to the investor than the latter and the concept of residual income in PRT. Are variable returns and risks

and rewards really identical terms? If so, what does the IASB mean by the residual claimant? These questions might be worth discussing.

Last, regarding prerequisite (c), IFRS 10 states that even when one party (P1) has decision-making rights, if those rights have been delegated from another party (P2) and P1 is expected to act in P2's interest, then it is not P1 but P2 that holds those rights in essence (par. B59). Although PRT does not explicitly discuss such a situation, IFRS 10's notion does not seem to contradict our arguments. In the business group, the parent, as a legal entity, delegates the residual control rights of the subsidiary assets to its management. In this case, the parent is still regarded as owning these assets.

Object Over Which Power Is Exercised

As shown in Table 1, the second group of MQs (hereinafter, MQ2) is about the object over which power is exercised. We then investigate the following RQs: (i) Over what is power in PRT exercised? (ii) Is IFRS 10 consistent with PRT?

According to PRT, the parent acquires the residual control rights of the subsidiary assets by integration. Thus, in PRT, the subsidiary assets are key objects over which power is exercised. Meanwhile, IFRS 10 considers relevant activities or "activities that significantly affect the investee's returns" to be key objects over which power is exercised (par. 10). Specifically, relevant activities include, but are not limited to (a) selling and purchasing of goods or services; (b) managing financial assets during their life (including upon default); (c) selecting, acquiring or disposing of assets; (d) researching and developing new products or processes; and (e) determining a funding structure or obtaining funding (par. B11). Here, power over (b) and (c) appears to be similar to power over the subsidiary assets emphasized in PRT, while power over (a), (d), and (e) is not.

The discussion above suggests that the PRT and IFRS 10 models do not necessarily lead to the same outcomes. As an example, let us consider a situation in which two investors each have the

unilateral ability to direct different activities. Investor 1 holds the majority of the subsidiary shares and, hence, has ultimate power over the usage of the subsidiary assets, including selection, acquisition, and disposition. Investor 2 is a minority shareholder, with expertise in technologies closely related to the subsidiary's business domain.[5] A contractual arrangement between the two investors gives Investor 2 dominant power over the subsidiary's research and development (R&D) activities. According to the PRT model, Investor 1 is regarded as the parent because the investor has the residual control rights of the subsidiary assets. Meanwhile, IFRS 10 states that when multiple investors have the unilateral ability to direct different activities, the investor with the ability to direct the activities that most significantly affect the investee's returns has power over the investee (par. 13). Therefore, if the success or failure of R&D activities has a critical impact on the subsidiary's performance, the IFRS 10 model possibly considers Investor 2 to be the parent.

In the past, IASB (2008c) discussed whether the boundary of a reporting entity should be based on control over assets, concluding that it should not, mainly to avoid a circulation in terms as follows. In this argument, IASB (2008c) uses the term "group reporting entity," or "a reporting entity that comprises two or more entities that are presented as a single unit" (par. 29). In determining the boundary of a reporting entity based on control over assets, the group reporting entity can be regarded as the one that controls group assets. However, this would be cyclical because an asset is defined as an economic resource controlled by an entity. Thus, control over assets in IASB (2008c) appears to mean control over group assets by a group reporting entity. Meanwhile, PRT focuses on the parent's control over the subsidiary assets. According to PRT, it is not that the parent and the subsidiary control group assets as a single unit, but that the parent exercises power over the subsidiary assets to make them operate as if they are a single unit.

[5] The next subsection discusses the relationship between the controlling shareholder and the minority shareholders of the subsidiary from the perspective of PRT.

Equity And Non-Controlling Interests (NCIs)

As shown in Table 1, the third group of MQs (hereinafter, MQ3) is about equity and NCIs. As discussed earlier, under PRT, the key to determining the boundaries of the firm is power over assets rather than over equity. Additionally, PRT does not explicitly discuss the situation in which an NCI comes into existence. However, the relationship between the controlling shareholder (i.e., the parent) and the minority shareholders of the subsidiary can be analyzed in terms of the residual control and residual income rights. We then investigate the following RQs: (i) From the perspective of PRT, what is equity considered to represent? (ii) How is it associated with the concept of NCIs? (iii) Is IFRS 10 consistent with PRT?

According to Oxford Advanced Learner's Dictionary, 10th edition, equity is "the value of a company's shares" or "the value of a property after all charges and debts have been paid." As discussed earlier, the owner of an asset receives the residual returns from it, including changes in its current value. Changes in values of shares are, of course, attributable to shareholders. Furthermore, if the corporation is liquidated, the residual returns are distributed to the shareholders after the payment of debts and taxes (Milgrom and Roberts, 1992).

The discussion above suggests that equity describes some aspect of residual income rights. Consistently, the Conceptual Framework defines equity as "the residual interest in the assets of the entity after deducting all its liabilities" (par. 4.63). Although the meaning of residual here is unclear as is the case with IASB (2008c), equity on the unconsolidated statement of financial position (hereafter, unconsolidated equity) can be regarded as the representation of the parent shareholders' residual income rights. What about equity on the consolidated statement of financial position (hereafter, consolidated equity)? Consolidated financial statements are prepared by offsetting "the carrying amount of the parent's investment in each subsidiary and the parent's portion of equity of each subsidiary" (IFRS 10, par. B86). Therefore, if an NCI does not exist, the amount of consolidated equity corresponds to that of unconsolidated equity in principle, implying that consolidated equity also represents the parent shareholders' residual income rights.

NCIs are recorded on the consolidated statement of financial position when not only the parent but also the minority shareholders hold the subsidiary shares. Although the latter are endowed with the claim rights to the subsidiary income in proportion to the numbers of shares they hold, they generally do not have adequate voting rights to exercise power over the subsidiary assets. As for such a subsidiary, the residual control rights are mainly held by the parent, although the residual income rights are divided between the parent and the minority shareholders. Thus, NCIs can be regarded as the representation of the minority shareholders' residual income rights, which suggests that they should be classified as equity. When the parent has such a subsidiary, its consolidated equity represents not only the parent shareholders' but also the minority shareholders' residual income rights. However, the scope of residual income rights is entirely different between them. While the minority shareholders have claim rights to only part of the subsidiary income, the parent shareholders are virtually the residual claimants to the whole income earned by a business group excluding that attributable to the minority shareholders.[6]

IFRS 10 states that NCIs are involved in the risks and benefits of an investment in the subsidiary (par. BCZ165) and represent the residual interest in its net assets (par. BCZ159). As the latter feature corresponds with the definition of equity, IFRS 10 defines an NCI as "(e)quity in a subsidiary not attributable, directly or indirectly, to a parent" (Appendix A). It also states that despite NCIs having significant influence, such as protective rights that limits the power of the parent, it does not mean that they have power over the subsidiary (pars. 14 and BC70). These descriptions are largely consistent with our arguments based on PRT. In IFRS 10, NCIs are required to be presented in equity, separately from that of the parent shareholders (par. 22). Related to this, the Conceptual Framework states that presenting equity claims of different characteristics separately may be useful (par. 7.12). Thus, the IASB seems to consider that NCIs do not represent

[6] The scope of residual income rights is not the only difference between them. According to the literature on corporate governance, the interests of controlling shareholders are not necessarily aligned with those of other stakeholders (e.g., Shleifer and Vishny, 1997). In that case, controlling shareholders have strong incentive to use their power to reap private benefits. Their opportunistic behavior is called tunneling, the typical form of which involves the expropriation of minority shareholders (Johnson, La Porta, Lopez-de-Silanes, and Shleifer, 2000).

the same claim rights as does the equity attributable to the parent shareholders. This notion is also consistent with our arguments. As the scope of residual income rights is entirely different between the parent and the minority shareholders, it makes sense to report NCIs as a separate item of equity.

Special Purpose Entities (SPEs)

As shown in Table 1, the fourth group of MQs (hereinafter, MQ4) is about SPEs. According to (IASC, 1998, pars. 1–2), an SPE is an entity established with the purpose of achieving a narrow and clearly defined objective, such as lease, R&D activities, and a securitization of financial assets. SPEs can assume various forms, such as a corporation, trust, partnership, or unincorporated entity, and some of them have no equity, as MQ4 indicates. When establishing an SPE, the sponsor typically transfers assets to the SPE and obtains the right to use them, while outside investors offer funding to the SPE.

It should be noted here that the sponsor's power over the SPE's ongoing activities is strictly limited. SPEs are often said to operate on autopilot because most rights, obligations, and activities regarding these are predetermined and limited by contractual provisions specified at the start (IASC, 1998, par. 14). In addition, the sponsor frequently guarantees returns or credit protection to outside investors through the SPE while assuming residual or ownership risks (IASC, 1998, Appendix (d)). Given these characteristics of SPEs, we investigate two RQs regarding MQ4: (i) How can the establishment of SPEs be viewed from the perspective of PRT? (ii) Is IFRS 10 consistent with PRT?

As mentioned above, the sponsor establishes an SPE by transferring assets to it—the reverse action of the parent acquiring the subsidiary to obtain the residual control rights of its assets. Thus, from the perspective of PRT, if the sponsor keeps the residual control rights of the transferred assets after the SPE is established, the SPE can be regarded as being owned by the sponsor.[7] In that case, consolidating the SPE is consistent with PRT. By contrast, if the sponsor

[7] As discussed earlier, PRT assumes that residual control rights are closely linked with residual

surrenders the residual control rights of the transferred assets by establishing the SPE, it is not reasonable to consolidate the SPE. As power over assets is the key concept of PRT, these policies about consolidation are applicable to SPEs that have no equity.

Here, a question arises: Is there any residual control right when the SPE operates on autopilot? SPEs' activities are typically predetermined by contracts, but this does not necessarily mean that the parties to SPEs can anticipate *everything* that could happen and specify a course of action for each situation. As discussed earlier, PRT assumes that contracts are inevitably incomplete in the real world. Under this assumption, even SPE contracts are incomplete, implying that someone has the residual control rights of the SPE assets. However, if the SPE operates on autopilot, the residual control rights of the SPE assets may not be as economically important as are those of the subsidiary assets. Whether the SPE should be consolidated even in such a case is not clear from PRT. This question should be addressed in future studies.

The IASC and IASB used to specify the indicators of control over an SPE, separately from those over a subsidiary (e.g., IASC, 1998; IASB, 2008a). The accounting treatment of SPEs was often said to be more consistent with the risks and rewards model than with the controlling entity model (IASB, 2008c, par. 71). However, having two control models could lead to inconsistent application and, as a result, create opportunities for exploiting differing characteristics of the investee (IFRS 10, par. BC74). To address this issue, the IASB decided to merge the guidance for assessing control of an investee into a single section, aiming for a unified basis of consolidation that can be applied to all investees (IFRS 10, BC75). At present, whether an SPE is consolidated is decided in accordance with the requirements of IFRS 10, whose consistency with PRT has already been discussed in the previous subsections.[8]

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income rights. Thus, we discuss ownership of SPE mainly from the view of residual control rights.

[8] In the current IFRS, "structured entity" is the term that corresponds to SPE (IFRS 12, par. BC82). A structured entity is defined as "(a)n entity that has been designed so that voting or similar rights are not the dominant factor in deciding who controls the entity, such as when any voting rights relate to administrative tasks only and the relevant activities are directed by means of contractual arrangements" (IFRS 12, Appendix A).

DISCUSSION AND IMPLICATIONS

Our analyses so far have at least two limitations. First, as an economic model eliminates irrelevant details to focus on the essential feature of the reality of interest (Varian, 2014), accounting treatments that correspond with the formalized model of PRT may not necessarily provide useful financial information. Although the Conceptual Framework cites relevance and faithful representation as the fundamental qualitative characteristics of useful financial information (par. 2.5), this study only addresses the latter. Second, the incentive for relationship-specific investment emphasized in PRT is only one of many factors that determine the boundaries of the firm (Holmstrom and Roberts, 1998). With these limitations in mind, we discuss our findings and their implications below.

First, with respect to a basis for consolidation (MQ1), IFRS 10 is consistent with PRT, in the sense that it requires the parent to have not only power over but also access to returns from the subsidiary. The source of power and the meaning of returns in IFRS 10, however, seem to differ from those in PRT. To add to the terminology, while IFRS 10 regards power and exposure to returns as indicators of control, PRT makes a distinction between residual control rights and residual income rights, considering them to be two aspects of ownership. Control is about the process of utilizing properties, which conceptually differs from the exposure to the outcome of utilizing properties. Therefore, using ownership instead of control when referring to a concept that incorporates both power and exposure to returns would be more consistent with PRT. To the best of our knowledge, such suggestion has not been presented in the literature. Many prior studies argue that the appropriate basis for consolidation is control, which is enabled by power deriving from large shareholdings (Kohler, 1938; Childs, 1949; Moonitz, 1951; Nobes, 2014). However, they do not seem to specify what kind of power is brought by large shareholdings.

Second, with respect to object over which the parent's power is exercised (MQ2), IFRS 10 is not consistent with PRT regarding the object over which power is exercised; further, the IFRS 10 model focusing on relevant activities and the PRT model focusing on assets possibly make different decisions about who the parent is. In practice, identifying the specific activities that

have the greatest impact on the investee's returns become difficult when multiple investors have the unilateral ability to direct different activities (IASB, 2021, par. 10). Compared to that, determining who has the ultimate power over the usage of the subsidiary assets might be easier. To the best of our knowledge, power over assets has not been explicitly emphasized in the literature. For instance, Kohler (1938) uses power as a synonym of control. Childs (1949) focuses on control over the policies and operations of the subsidiary. Moonitz (1951) states that control is most effectively achieved through dominating the board of directors, which suggests that he emphasizes control over the managers of the subsidiary. Nobes (2014) argues that standard setters do not use such terms as "control" and "power" in a consistent manner, but he does not examine the object over which the parent's power is exercised in detail.

Third, with respect to NCIs (MQ3), the accounting treatments of NCIs in IFRS 10 are largely consistent with PRT. The residual income rights of the subsidiary assets are divided between the parent and the minority shareholders, but the scope of residual income rights is entirely different between them. As equity can be regarded as the representation of residual income rights, IFRS 10's method of reporting NCIs as a separate item of equity appears to be in line with PRT. Prior studies have various views on NCIs. For instance, Kohler (1938) argues that NCIs are classified as liabilities because their interests do not align with those of the controlling equities. Meanwhile, Childs (1949) states that NCIs should not be regarded as liabilities because they do not have a lien on any corporate asset. He then proposes to present NCIs as a separate item from a controlling interest in equity because combining both interests into one item results in some information loss about a business group. Similarly, Moonitz (1951) takes a negative view of treating NCI as liabilities because there is no obligation to repay the minority shareholders. He also states that NCIs should be presented as an explicit deduction from consolidated equity in order to prevent an overstatement of the parent shareholders' interest. Additionally, several empirical studies have examined the value relevance of NCI reporting, but their findings are mixed (Abad et al., 2000; So and Smith, 2009). Among these, Childs's (1949) proposal is most consistent with our arguments based on PRT. However, the reason behind it differs from ours.

Last, with respect to SPEs (MQ4), the foregoing discussion on consolidation of subsidiaries applies to that of SPEs because indicators of control over SPEs are same as those over subsidiaries in current IFRS 10. Regarding the point that SPEs may differ from subsidiaries as their activities are strictly determined by contracts, it is not clear from PRT how such characteristics should be reflected in their accounting treatments. Until the Enron Corporation's failure, many accounting experts did not pay attention to SPEs; hence, accounting for SPEs has rarely been mentioned in the academic literature (Hartgraves and Benston, 2002). More recent studies conduct a case study of comment letters regarding consolidation of SPEs (Larson, 2008) and examine SPEs' role in earnings management (Feng, Gramlich, and Gupta, 2009), how the revision of interpretations for SPEs affects earnings informativeness (Luo and Warfield, 2014), and the effects of SPEs on corporate tax avoidance (Demere, Donohoe, and Lisowsky, 2020). However, to the best of our knowledge, no prior literature theoretically addresses the question of what a basis for consolidation of SPEs is and how it is associated with the characteristics of SPEs. Thus, it is difficult to associate our arguments with the existing research.

CONCLUSIONS

This study analyzed IFRS 10 from the perspective of PRT, suggesting that the principal difference between PRT and IFRS 10 is in the object over which power is exercised: while the former considers that by integration, the parent acquires power over the subsidiary assets, the latter focuses on power over relevant activities. In defining an asset, however, the Conceptual Framework appears to mention two aspects of ownership in PRT: "(a)n entity controls an economic resource if it has the present ability to direct the use of the economic resource and obtain the economic benefits that may flow from it" (par. 4.20). Regarding the different definitions of control between the Conceptual Framework and IFRS 10, the former states that they are basically the same concepts (par. BC4.40). If so, it would be more consistent with PRT to regard control over the subsidiary assets as a basis for the boundaries of the firm.

Regarding terminology, we also suggested using "ownership" instead of "control" when referring to a concept that includes both power and exposure to returns. Thus, we can conclude from the

perspective of PRT that a basis for consolidation should be ownership; and the parent should be regarded as owning the subsidiary when it has both residual control and residual income rights of the subsidiary assets. Recently, the IASB concluded that the requirements of IFRS 10 are working as intended (IASB, 2022). Even so, the debate on a basis for consolidation is likely to continue. If standard setters consider the consistency of accounting standards with PRT to be important, the implications of this study will contribute to their debates on consolidation accounting.

Our research also contributes to the academic literature. To the best of our knowledge, the association between the economic theory of the boundaries of the firm and consolidation accounting has not been clarified in the literature. More than 30 years ago, Coase (1990) argued that the theory of the firm incorporates the theory of the accounting system and advocated interdisciplinary studies between economics and accounting. While such research has been conducted mainly regarding the role of accounting information in financial contracting (e.g., Watts and Zimmerman, 1986; Armstrong, Guay, and Weber, 2010; Christensen, Nikolaev, and Moerman, 2016), the theory of the firm has rarely been applied to an analysis of accounting *standards*. In this study, analyzing IFRS 10 from the perspective of PRT enables us to propose theory-based consolidation accounting procedures. This underscores the importance of accounting standard research based on the theory of the firm.

Future studies could apply our approach to address other standard-setting issues. As examples, we raise following three potential questions about consolidation accounting. First, regarding the measurement of NCIs, which is more consistent with PRT—the fair value or the proportionate share in the recognized amounts of the subsidiary's identifiable net assets? IFRS 3 allows a choice between them (par. 19). Second, with respect to accounting for joint controlled entities, which is more consistent with PRT—the equity method or the proportionate consolidation? While both treatments used to be allowed in IAS 31, at present, only the former is acceptable in IFRS 11. Last, more theoretical question is: How is PRT associated with the basic concepts of consolidation in the accounting literature? Baxter and Spinney (1975) advocate four basic concepts underlying

the preparation of consolidated financial statements: proprietary, entity, parent company, and parent company extension. Although some concepts are discussed by standard-setters, their relevance is somewhat vague (IASB, 2008c).

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ACCOUNTING PROGRAMS: INFUSING DATA ANALYTICS

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ACCOUNTING PROGRAMS: INFUSING DATA ANALYTICS

ABSTRACT

Academic curricula are constantly changing to match the demand of industry. This is particularly applicable in accounting where the demands of the profession are continuously evolving. One aspect of this evolution can be attributed to significant technological advancements. In particular, the accounting profession has experienced a transformation due to increased accessibility to and advancement in digitization. Such advancements have transformed the accounting profession and the role of an accountant has expanded. An accountant now must be able to demonstrate data analytic skills. Accounting programs must be responsive by continuously updating the curriculum alignment with the demands of the industry. This article presents how one institution of higher education infused data analytics into the accounting curricula.

ACCOUNTING ROLE TECHNOLOGICALLY DRIVEN TRANSFORMATION

Academic curricula are constantly changing to match the demands of industry. This notion is particularly applicable in accounting where the demands of the profession are continuously evolving. One aspect of this evolution can be attributed to significant technological advancements that have had a major impact.

The accounting profession has experienced a transformation due to increased accessibility to and advancement in digitization (Pandula Gamage, "Big Data: Are Accounting Educators Ready*?*" *Journal of Accounting and Management Information Systems*, Vol. 15, Issue 3, 2016, 588-604). Such transformation, in part, can be attributed to the vast amount of data that is available, the innumerable types of data which exist, and the rapidity of data revisions. Due to businesses relying on their accountants for the interpretation of the data, their role is to, not only provide the traditional preparation and reporting of the data, but also includes the ability to extract, organize, analyze, and forecast trends. (Khadija Dewu and Yasser Barghathi, "The Accounting Curriculum and the Emergence of Big Data," *Journal of Accounting and Management Information Systems*, Vol. 18, Issue 3, 2019, 417-442). As one author summarized, an accountant will "use data analytics to uncover valuable insights within their financials, identify process improvements that can increase efficiency, and better manage risk" (University of North Carolina Kenan-Flagler

Business School, “Why Data Analytics Matters to Accountants,” https://www.kenan-flagler.unc.edu/perspectives/why-data-analytics-matter-to-accountants/).

Michael Prosser, CPA and managing partner of King, Reinsch, Prosser & Co., recognizes the importance of accountants possessing the necessary data analytics skills. He stated, “Data analytic skills, coupled with business acumen, provides the necessary toolset to empower today’s accountant to make a significant impact for their clients.” (Michael Prosser, email message to author, January 25, 2023).

By expanding their role in a business environment, accountants are serving in a much more strategic capacity for the business. Businesses recognize that an accountant’s substantive knowledge, teamed with a high degree of proficiency in data analytics, will result in the cultivation of more valuable and optimal recommendations for businesses. This, in turn, will give the business a competitive advantage. As senior associate at Casey Peterson CPAs and Financial Advisors, Katelyn Woten noted, “Data analytics proficiencies are increasingly an important aspect of the day-to-day work requirements of accountants and have made a significant impact in how they provide services to clients.” (Katelyn Woten, email message to author, January 13, 2023).

Enterprises have also acknowledged the importance of hiring a CPA firm which embraces the data analytics culture. As Senior National Sales Director with Primerica Financial Services, Brian Mehmen, CFP, PFA, recognized, “We view our CPA firm as an invaluable business partner. Our accountants are proficient in data analytics, and this allows them to provide valuable insights as we make important business decisions. Input from the accountants leads to increased efficiency, improved risk management, and a competitive edge for our business as we navigate our industry” (Brian Mehman, phone interview with author, December 14, 2022).

RESPONSE OF THE ACCOUNTING DISCIPLINE

As the accounting profession continues to be at the forefront of data analytics applications, this has prompted the academy to be cognizant of the role expansion for accountants. In addition,

with the inclusion of data analytics on the CPA exam, in the NASBSA requirements, and in some state regulations; academic accounting programs must be responsive by continuously monitoring and updating their curriculum.

PERCEPTIONS OF THE NEXTGEN CPA

With recent technological advancements such as specialized accounting software, cloud-based accounting systems, and mobile accounting, along with big data, increased computing power, artificial intelligence, and blockchain, the accounting profession demands that graduates possess much more than theory-based knowledge (Bernard Marr, 2020, "The 6 Biggest Technology Trends in Accounting and Finance," *Forbes*, July 27, 2020, https://www.forbes.com/sites/bernardmarr/2020/07/27/the-6-biggest-technology-trends-in-accounting-and-finance/). Such changes require accountants to have analytical skills, which include being proficient in areas such as data analytics, database design, data mining, data sharing, visualization software and information systems (Joseph M. Woodside, Fred A. Augustine Jr., Valrie Chambers, and Monica Mendoza, "Integrative Learning and Interdisciplinary Information Systems Curriculum Development in Accounting Analytics", *Journal of Information Systems Education*, Vol. 31, Issue 2, 2020, 147-156). As CPA Chris Wardell recounts from his recent tenure as a senior associate at PricewaterhouseCoopers (PwC) in Minneapolis, "The role of intern/associate/senior associate very much evolved when I was at the firm, and I think it is safe to say now that comfort with data analytics in general and being able to use the associated tools is becoming less of a differentiator and more of a requirement to succeed" (Chris Wardell, email message to author, June 27, 2022).

In consistent fashion, the Pathways Commission reported, as early as 2015, that members of the accounting profession recognize data analytics as being one of the top skills required for graduates (Pathways Commission, American Accounting Association and American Institute of Certified Public Accountants, "In Pursuit of Accounting's Curricula of the Future," November 2015, https://aahq.org/portals/0/images/education/pathways/15-9-61866.pdf). In addition, Angie McDonnell, who recently passed the CPA exam, secured employment as a tax associate

with a top 200 CPA firm known as Ketel Thorstenson upon her 2021 college graduation. She noted, "Data analytics most definitely plays a huge role in the accounting field. Skills essential for someone in my position (include) analyzing and interpreting data to recognize trends and make recommendations and communicate findings. Had I known more about data analytics starting my position, I think it would have been easier to apply my skills and grow from there" (Angie McDonnell, email message to author, July 6, 2022).

CPA EXAM MODIFICATIONS

In addition to the profession recognizing the need for data analytics proficiencies, the CPA exam is also reflective of this reality. As of 2019, the exam includes data analytics in both the Auditing (AUD) and Business Environment and Concepts (BEC) sections. https://us.aicpa.org/content/dam/aicpa/becomeacpa/cpaexam/examinationcontent/downloadabledocuments/cpa-exam-blueprint-bec-section-jan-2019.pdf and file:///E:/EMTEC/MISCELLANEOUS/Research%202022/2023%20Updates/summary-of-changes-to-exam-blueprints-effective-july-2019.pdf

While the CPA exam is constantly being updated, a significant revision is coming in January 2024 when the CPA exam will be transformed into a new format. This new format focuses on "a deep and strong core in accounting, auditing, tax and technology that all candidates will be required to complete." (American Association of Certified Public Accountants and National Association of State Boards of Accountancy, "CPA Evolution: New CPA Licensure Model," May 2021, https://evolutionofcpa.org/Documents/CPA%20Evolution%20Brochure%20-%20May%202021.pdf). Technology is a key component of the exam core. The emphasis on analytics and technology does not stop there. One of the three discipline choice areas will focus specifically on data analytics. The revised exam will assess technology and analytics in all sections of the exam. Specifically, the Business Analysis and Reporting Section (BAR) will include: "Determination of methods to transform data to make it useful for decision-making. Determination of attribute structures, formats and sources of data needed to prepare financial statement analysis. Use of outputs from data analytic techniques to identify patterns, trends and

correlations to explain an entity's results." (American Institute of Certified Public Accountants, "Exposure Draft: Maintaining the Relevance of the Uniform CPA Examination – Aligning the Exam with the CPA Evolution Licensure Model," June 27, 2022, https://www.aicipa.org/resources/download/exposure-draft-proposed-2024-cpa-exam-changes). This is a recognition that enhanced skillsets are being required of accountants, including data analytics. NASBA and the American Institute of Certified Public Accountants (AICPA) strongly believe that the intended changes are responsive to the needs of clients in today's tech-dependent world. They believe that the changes will protect the industry's interests by preparing newly licensed accountants for the future while creating a flexible model to allow for future changes (Controllers Council, "New Model for CPA Licensure: New Exam Expected in 2024," Sept. 28, 2021, https://controllerscouncil.org/new-model-for-cpa-licensure-new-exam-expected-in-2024/).

ADDITIONAL AREAS OF IMPACT

The accrediting entity for business programs, Association to Advance Collegiate Schools of Business International (AACSB), also places importance on the incorporation of data analytics skills into an accounting curriculum. According to the Standard A5 of the Accounting Accreditation, such skills are necessary "to adapt to emerging technologies as well as the mastery of current technology" (Association to Advance Collegiate Schools of Business International, "2018 Eligibility Procedures and Accreditation Standards for Accounting Accreditation," April 23, 2018, https://www.aacsb.edu/-/media/documents/accreditation/accounting/standards-and-tables/2018-accounting-standards.pdf).

Interestingly, almost a decade ago, the Association of Chartered Certified Accountants (ACCA), in conjunction with the Institute of Management Accountants (IMA), published a report predicting that the role of accountants will be transformed into a "new professional hybrid" position, requiring both accounting and technology skills (Association of Chartered Certified Accountants and Institute of Management Accountants, "Big Data: Its Power and Perils," November 2013, https://www.imanet.org/insights-and-trends/technology-enablement/big-data-its-power-and-

perils?ssopc1). As predicted, the role of an accountant has evolved into one which requires knowledge in accounting theory and data analytic skills.

REDESIGNING ACCOUNTING CURRICULA

That said, accounting programs are faced with the challenge of redesigning curricula that are both collaborative among various business specialties and responsive to the accounting profession's and client's expectations. In order to address those challenges, the curricula should be infused with data analytics at various delivery points within the program to ensure that students are learning these skills.

Program goals should strive for the graduates to possess the skills to liaise and be conversant with business professionals from all disciplines (Pandula Gamage, "Big Data: Are Accounting Educators Ready*?"* *Journal of Accounting and Management Information Systems*, Vol. 15, Issue 3, 2016, 588-604). It is recommended that an integrative approach be taken when redesigning the curriculum, one that capitalizes on multiple disciplines (Jean Charroin, "Business Schools Need to Change", Association to Advance Collegiate Schools of Business, June 22, 2022, https://www.aacsb.edu/insights/articles/2022/06/business-schools-need-to-change). This general sentiment was recently discussed by the Dean of the ESSCA School of Management, "Our traditional business school offerings are not sufficient to train students to address complex and systematic problems. If we want to continue to add value and make a positive impact, we must design curricula that train leaders to work comfortably across different fields of expertise" (Jean Charroin, "Business Schools Need to Change", Association to Advance Collegiate Schools of Business, June 22, 2022, https://www.aacsb.edu/insights/articles/2022/06/business-schools-need-to-change). By incorporating aspects from two disciplinary fields, accounting and data analytics, the resultant curriculum will produce graduates who are equipped to approach accounting complexities with both innovative and creative solutions. Dean Charroin recommends that, "Schools need to recruit faculty with different backgrounds, insights, and experiences and create new opportunities for different academic disciplines to collaborate" (Jean Charroin, "Business Schools Need to Change", Association to Advance Collegiate Schools of

Business, June 22, 2022, https://www.aacsb.edu/insights/articles/2022/06/business-schools-need-to-change). By incorporating these changes into the curricula, students will be better prepared when entering the accounting profession.

ONE INSTITUTION'S JOURNEY

How are institutions of higher education approaching the infusion of data analytics into accounting curricula? For one institution, the change did not happen instantaneously, rather it has been a process. Black Hills State University (BHSU) offers students an opportunity to earn either a 120-credit hour bachelors degree in business administration, with a specialization in accounting, or alternatively, a 150-credit hour professional accountancy program. The latter will satisfy the state hour requirement for the CPA exam. Both programs are included in the AACSB accreditation which was initially attained in 2014. Prior to the CPA exam content changes and AACSB increased expectations in data analytics, both degrees included several classes where students learned basic technology which was deemed necessary for workforce preparedness. For example, the students were required to successfully take 3 credits in database management and 3 credits in computer applications which include programs such as Excel, Word, and PowerPoint. In addition, 6 credits were required in business statistics. All of these courses were required for baccalaureate degree completion.

Curriculum improvements

Five years ago, the accounting faculty at BHSU recognized the importance of accounting graduates attaining proficiencies in data analytics, in order to be successful on the CPA exam and meet AACSB standards. The faculty then began to strategize how best to infuse these skills into the programs. One option was the addition of a new analytics course. However, at this point, this proposition was problematic for two reasons. First, the accounting program was already perceived as having an overly robust number of required classes within the program. Thus, by adding yet another course to the curriculum, it would merely compound the issue of credit hour requirements. The second factor was not only the lack of faculty availability to teach an

additional course, but also identifying an individual that had the specialized data analytics qualifications.

Updates in existing courses

Based on the foregoing factors, the accounting faculty decided to immerse data analytic learning opportunities into existing accounting courses. The focus was placed in various areas of data analytics, including descriptive, diagnostic, predictive and prescriptive. Descriptive analytics is the most often used category and includes categorization and classification of information. Diagnostic analytics are used to monitor changes in data. Predictive analytics assess the likelihood of future outcomes while prescriptive analytics facilitates the decision-making process in businesses (University of North Carolina Kenan-Flagler Business School, "Why Data Analytics Matters to Accountants," https://www.kenan-flagler.unc.edu/perspectives/why-data-analytics-matter-to-accountants/).

Several courses were identified as points of delivery. In Principles of Accounting I, Principles of Accounting II and Managerial Accounting, students are required to complete ongoing chapter assignments within Microsoft Excel, which focus on utilizing advanced components and techniques effectively. In the Accounting Computer Applications course, implementation of Extract, Transform, and Load (ETL) and data visualization tools were incorporated. "ETL is the process data engineers use to extract data from different sources, transform the data into a usable and trusted resource, and load that data into the systems end-users can access and use downstream to solve business problems" (Databricks.com, "Extract Transform Load (ETL)," https://databricks.com/glossary/extract-trasnform-load#~text). Diagnostic analytics is the focus for a capstone project in Principles of Accounting II, where students are required to develop a presentation utilizing information from SEC Forms 10-K for public companies. Students are required to answer descriptive analytics questions by employing ratio analysis and trend analysis based on financial statements.

Intermediate Accounting I and II require students to use data cleaning techniques, along with prescriptive and descriptive data mining. Students also contrast developed and emergent analytics while working to define a data analytics mindset. In addition, students also perform data analytics and data visualization techniques. Projects include financial statement analysis, assessing the impact of a change in depreciation methods, goodwill analysis and assessment, and lease classification.

Inclusion of prescriptive analytics was combined with descriptive analytics in the Income Tax course where a project was included that required students to not only analyze tax information found in the notes of financial statements of a publicly traded company, but also to determine the suitability of taking on the company as a client.

Recognizing additional need

The accounting faculty continued to evaluate the effectiveness of data analytic skillsets delivery, continuously taking into account the expectations and demands from various stakeholders, including Business Advisory Board members, local CPA firms, AACSB, and AICPA. Recognizing that additional preparedness was needed for graduates, faculty discussions pivoted back to the original proposal of adding an entire data analytics course to the degree. To that end, the School of Business reviewed the core business courses included in the accounting specialization needed for degree completion. At this point, all business administration majors (including the accounting specialization) required an upper division economics elective. In order to accommodate the addition of a data analytics course in the accounting specialization, this economics requirement was eliminated.

Creation of new analytics course

With faculty discussions moving in the direction of adding an entire data analytics course to the degree, the need for a new faculty position was recognized. This position would require a successful candidate to possess a degree in data analytics. The approach is also consistent with Dean Charroin's recommendation that, "schools need to recruit faculty with different

backgrounds, insights, and experiences and create new opportunities for different academic disciplines to collaborate" (Jean Charroin, "Business Schools Need to Change", Association to Advance Collegiate Schools of Business, June 22, 2022, https://www.aacsb.edu/insights/articles/2022/06/business-schools-need-to-change). As such, a request for such a position was made and granted by the University, which demonstrated the level of commitment to the accounting program on campus. By adding a data analytics position to the faculty, the accounting department was effectively positioning itself to be responsive to the accounting profession's needs.

This new faculty position was created with the successful candidate possessing a doctorate in data analytics. The position was filled in the summer 2021 with a faculty member who was a doctoral candidate in data analytics. Accounting faculty immediately set out to collaborate with this professor on the creation of a new data analytics course for accounting students. Discussions centered around choice of textbook, skills inclusion, and specific software usage. The new business course, although available to all majors, was focused on the needs of the accounting program as such it was included in the accounting programs as a required business course. The new class replaced an open business elective so did not add to the total required credits and maintains compliance with state regulatory requirements. This course, entitled *Analytics,* has the following course description,

> *"This course covers essential decision models and strategic metrics that form the cornerstone of analytics with a primary focus on business applications. This course emphasizes case studies and hand-on learning so students can immediately apply the tools and techniques in their organizations. A variety of relevant topics are discussed, such as sizing, forecasting, budget allocation, profit maximization, and communicating to senior executives through data-driven presentations."*

The professor wanted the students enrolled in this class to obtain two certificates as part of the course requirements. Therefore, upon course completion, students will have attained two Google Analytics certificates: Google Analytics for Beginners and Advanced Google Analytics. The initial course offering is slated for the spring 2023 semester and is available to all students,

running the gamut from business and accounting to math. According to Ganga Basyal, professor for the Analytics course at BHSU, "I am really excited to offer such a wonderful interdisciplinary course designed to serve as the knowledge tool for all students from all backgrounds. This course will be a great way for students from various backgrounds to learn and understand fundamentals of data analytics. This unique course will also prepare students to take any advanced analytics course" (Ganga Basyal, email message to author, July 11, 2022). This course, combined with the specific accounting applications embedded throughout the accounting coursework, will provide accounting students with a solid foundation in data analytics concepts and applications.

Assessment and evaluation

The accounting faculty are taking steps to effectively position the program to ensure flexibility and adaptability as the accounting profession continues to change. A data analytics proficiency map as seen in Exhibit 1, is in development for tracking purposes. This will enable faculty to easily ascertain which data skills are being taught and specific program placement of such skills. The four dimensions of data analytics (descriptive, diagnostic, predictive and prescriptive) have traditionally been foundations of accounting. Data analytics provides accountants with the means to expand their competencies. By recognizing the importance of and the increasing demand for additional competencies in data technology areas, the accounting faculty are also currently in discussions about the creation of a second, more advanced data analytics course for inclusion in the accounting program. This course could potentially delve into the areas of machine Learning (ML) and deep Learning (DL) methodologies of analytics.

Exhibit 1: Data Analytics Proficiency Map

Course/Skill	Descriptive	Diagnostic	Predictive	Prescriptive
ACCT 210 Principles of Accounting I	X	X		
ACCT 211 Principles of Accounting II		X		
ACCT 310 Intermediate Accounting I			X	X
ACCT 311 Intermediate Accounting II			X	X
ACCT 361 Accounting Computer Applications	X	X	X	
ACCT 430 Income Tax	X			X
ACCT 431 Advanced Income Tax	X			X
ACCT 460 Managerial Accounting	X	X	X	

Additional Academic Opportunities

Faculty are also exploring the possibility of new program offerings, such as the creation of a certificate, which would focus on data analytics. To that end, accounting students are being advised to enhance their accounting degrees by adding one or more data-centric certificates, which are currently available within the state's regental system. Certificates, typically 12-credit hours, are specialized programs in a highly focused area of a particular discipline. Students may stack multiple certificates which results in a customized educational plan. Suggested certificates for an accounting student who would like to further develop their data analytics skills include such areas as data mining, data analytics, and artificial intelligence. Other regental institutions currently provide numerous online certificates, which are available to the students. By way of background, the South Dakota regental system embraces a collaborative approach to its six institutions, which is reflected in its structure. This structure provides a pathway which enables students to seamlessly take classes and complete programs at any of the six regental institutions, with those credits counting at any of the universities. The result is that a student may be completing their baccalaureate degree at one institution, while simultaneously earning a minor or certificate from another regental institution. For example, Dakota State University offers an online Data Analytics certificate, consisting of 12 credits. The program requires courses in database management systems, business intelligence and big data, and programming in analysis. To round out the 12 credits, a student may select a course from a list of restricted electives such as an introductory computer science course. Other certificates offered at DSU that may be of

interest to an accounting major are cybersecurity, information technology management and network services. Another regental institution, the University of South Dakota, offers a certificate in artificial intelligence. By adding one or more certificates, an accounting student can customize their degree program to become proficient in many different skills. The student is then strategically well positioned and would be a highly competitive candidate in the marketplace when entering the accounting profession.

In addition to institutions of higher education offering certificates, the AICPA also offers several certificates running the gamut from Cybersecurity Fundamentals to Robotic Process Automation. Several data analytics certificates are also available. They include Data Analytics Core Concepts, Application of Data Analysis Essentials, Data Analytics Modeling, Forecasting and Predictive Analytics, and Data Visualization (American Institute of Certified Public Accountants, "Certificate Program," https://www.aicpa.org/cpe-learning/certificate-program).

Accounting programs must continuously adapt and evolve to reflect the technological changes occurring in accounting services. Programs must be designed to be innovative and collaborative to successfully equip graduates with the knowledge and proficiencies to be successful in this rapidly changing profession. Accounting faculty must maintain partnerships with members of the profession, accreditation bodies, and the AICPA to identify opportunities and challenges. By redesigning program requirements using a synthetic approach, faculty will deliver programs that are relevant and highly effective in preparing the next generation of accountants.

PRACTICAL GUIDANCE

This article chronicles the steps for one academic institution's journey in redesigning accounting programs by infusing data analytics. As other institutions of higher education recognize the demands from the accounting profession for producing graduates that possess additional data analytics skills, those entities may utilize some or all of the processes outlined here. As accounting departments approach such endeavors, it is always important to take in account the accounting industry's guidance and expertise in this matter. Communication between industry

and the academy must be a top priority, in order to create an accounting program that is relevant and produces successful graduates.

Assessment should be the first step for accounting departments as they update and improve their accounting programs in order to infuse data analytics into accounting programs. Three assessments are imperative at this juncture. First, an assessment of the needs of the accounting profession and their clients should be completed. This will serve as a baseline in determining the data analytic skills that are in demand. This assessment would also include the CPA exam requirements and the NASBA requirements, as they relate to data analytics. Second, an assessment of the accounting curricula should be completed. This will include an examination of the classes in order to identify the data analytics points of delivery, which currently exist within the program. As a result of this assessment, a proficiency map should be created. Thirdly, an assessment of the faculty expertise, as it relates to data analytics should be performed. Perhaps, the result of this assessment may lead to faculty educational and training opportunities in the area of data analytics. In addition, the result of this assessment may include the decision to add a data analytics faculty member.

Accounting curricula is constantly changing. By infusing data analytics into such curricula, universities will be ensuring that accounting graduates are well equipped to meet those needs of the accounting profession.

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IMPACT OF REGULATORY INTERVENTIONS AND TRANSITIONS ON BROKER-DEALER AUDIT QUALITY

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IMPACT OF REGULATORY INTERVENTIONS AND TRANSITIONS ON BROKER-DEALER AUDIT QUALITY

ABSTRACT

The purpose of this proposed study is to examine the audit quality of public U.S. broker-dealer (BD) entities after the passage of the Dodd-Frank Wall Street and Consumer Protection Act of 2010 (Dodd-Frank Act). Specifically, this study investigates whether there are associations between BD regulatory efforts to protect capital market investors and auditor decision-making during BD audit engagements that occurred post Dodd-Frank. The Public Company Accounting Oversight Board (PCAOB) BD audit inspection reports and the enforcement actions lodged against entities provide support for legislators' and regulators' concern over BD audit quality following the 2008 financial crisis. This study examines whether BD auditors respond to publicly traded BD audit client oversight by assessing whether there is an association between BD audit quality and both regulatory enforcement actions and increased state-level regulatory presence. In addition, the study examines whether audit quality improved following the transfer of BD audit standard-setting responsibility from the accounting industry to the PCAOB.

"We observed that the percentage of deficiencies for audit and attestation engagements remained high and continued improvement is needed." (PCAOB 2018 *Annual Report on the Interim Inspection Program Related Audits of Brokers and Dealers*, p. 1).

INTRODUCTION

The Securities Act of 1933 and the Securities Exchange Act of 1934 identify brokers and dealers as a key part of the capital market system because of their roles in providing capital to publicly traded companies and in allowing public access to capital markets. Brokers are entities that handle securities transactions on behalf of others, while dealers buy and sell securities for their own accounts (SEC, 2008). Numerous broker-dealer (BD) entities carry out both the functions of a broker and a dealer. These range from small boutique entities to large companies such as Charles Schwab and Edward Jones. Today, BD entities provide financial planning and execute over $50 trillion in trade transactions annually (Kowaleski, 2020).

There is no question as to the important role BD entities play but there are many questions concerning audit quality in the BD industry. For example, in the PCAOB's 2017 *Annual Report on the Interim Inspection Program Related to Audits of Brokers and Dealers*, the PCAOB reported

that audit and other deficiencies were found in 78 percent, 83 percent, and 76 percent of the audits inspected during 2015, 2016, and 2017, respectively (PCAOB, 2018). The lack of audit quality documented in the inspection reports of the BD industry auditors highlights the importance of examining the BD audit sector and its auditors (Bedard, Cannon, & Schnader, 2014). The purpose of this paper is to investigate audit quality in the BD industry. Specifically, we examine whether: 1. regulatory enforcement actions within the broker-dealer (BD) industry improved audit quality; 2. increased risk from government monitoring enhanced BD audit quality; and 3. changes in BD attestation and review auditing guidance positively impacted audit outcomes.

BDs are critical to capital market access for institutional and individual investors. However, these organizations are not without their own shortcomings. In March 2018, the Attorney General of the State of New York Investor Protection Bureau fined Merrill Lynch $42 million for inappropriately routing $141 billion of customer orders through their systems (FINRA, 2018, CRD#7691). In December 2018, the SEC fined Central States Capital Markets for allowing its owner, Scott Tucker, to transfer $40 million from accounts held by "certain tribal corporations" in an effort to hide his payday lending business (SEC, 2018). Scott Tucker was sentenced to 17 years in prison for racketeering, wire fraud, and money laundering in January 2018 (Rubenfeld, 2018).

Evidence from regulatory reports and enforcement actions supports that internal control weaknesses and noncompliance with securities regulations concerns continue to exist within the BD industry. Ineffective and non-existent internal control procedures at BD organizations contributed to the 2008 financial crisis (Bedard et al., 2014). More than a decade has passed since the global financial crisis, yet the Securities Investor Protection Corporation (SIPC) is still handling claims and litigation related to the Madoff scheme and the insolvency of Lehman Brothers (SIPC, 2019). However, there is scant academic research investigating the audit quality of the BD industry (Schnader, Bedard, & Cannon, 2015).

Systemic risk due to interconnected entities also contributed to the 2008 financial crisis (Sikka, 2009; U.S. House of Representatives, 2012; Schwarcz & Zaring, 2017). Deficiencies pertaining to auditing related party relationships and transactions were detected in 32 percent of the inspected BD audits during 2017 (PCAOB, 2018). The PCAOB noted the relevance and significance of related parties and related party transactions in the 2017 *Annual Report on the Interim Inspection Related to the Audits of Brokers and Dealers*. Prior to this study, there was no research that examined interconnected entities as a single organization within the BD industry. This study assesses whether the combined regulatory actions lodged against a public BD parent company and/or its BD subsidiaries impact parent company audit quality.

The second part of this study examines whether investor protection efforts from multiple regulators influence audit quality. Prior research provides evidence that higher investor protection and enforcement activities improve audit quality (Choi, Kim, Liu, & Simunic, 2008; Jaggi and Low, 2011; Persakis & Iatridis, 2016). However, these studies examine national-level investor protection efforts. Our study investigates whether additional oversight from more localized BD regulatory agencies like state-level authorities within the U.S. increase audit quality. We theorize that the number of state registrations[1] may be important in the BD industry because regulatory compliance considerations could increase significantly during an audit engagement. Increased BD entity accountability through multiple state registrations may impact BD parent company audit quality due to the amplified risk from wrongdoing detection by state-level regulators.

The final part of this study examines whether the change in standard setting authority affected audit quality. The SEC amended Rule 17a-5 of the Securities Exchange Act of 1934 changing BD reporting requirements and requiring BD audits to be performed under PCAOB standards rather than American Institute of Certified Public Accountants' (AICPA) guidelines for fiscal years ending

[1] Brokers and dealers are required to register with each state in which they plan to conduct business (SEC, 2008).

on or after June 1, 2014.[2] While standards are applicable to the FINRA-registered BD entities, it is not clear how the transition from AICPA guidelines to the PCAOB standards has impacted parent company audit quality. This study examines whether BD parent company audit quality differs between audits performed under the AICPA guidelines versus the PCAOB standards.

This study provides several contributions to academic literature. First, the study contributes to audit quality research, specifically within the BD industry. Differences in accounting and auditing standards make it difficult to generalize prior audit quality literature to the BD industry. This study differs from the Schnader, Bedard and Cannon (2019) and Kowaleski (2020) studies because it examines regulatory accountability for the primary BD entity and its subsidiaries as one observation. By examining the primary public BD and its U.S. affiliates as a single entity, we can assess whether adverse actions at related parties are impacting audit quality.

Second, the study extends the research on the influence of regulatory accountability on audit quality conducted by Schnader et al. (2019). By examining the audit clients' culpability to regulators that do not oversee auditors, an assessment could be made whether signals from regulatory sources other than the SEC or PCAOB impact BD auditors' decisions for other proxies of audit quality. Issues from other BD regulators such as FINRA and state investor protection bureaus could indicate internal control deficiencies or noncompliance with laws and regulations (Schnader et al., 2019). In relation to state regulatory oversight, BD industry regulatory complexity is studied to determine whether the additional oversight prompted by U.S. state and territory registrations influence audit quality.

Third, this study examines the transition of BD auditing guidance from the AICPA guidelines to the PCAOB standards. The implications to the audit practice and BD audit clients are highly speculative as Congress and the regulators continue to change the rules and standards under

[2] To address the two-tiered reporting requirements, the PCAOB issued new Attestation Standards (AT). AT No. 1, *Examination Engagements Regarding Compliance Reports of Brokers and Dealers*, and AT No. 2, *Review Engagements Regarding Exemption Reports of Brokers and Dealers*

which BD audit clients and auditors operate. The rest of the paper is organized as follows: literature review and hypotheses development, proposed research design, and conclusion.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Uniqueness of the Broker-Dealer Industry and Audit Environment

Auditing Standard (AS) 2101 requires auditors to consider industry-specific characteristics when planning the audit (PCAOB, 2010). Several distinct and unique characteristics persist within the BD industry that create unique challenges to auditors and warrant the attention of academic research. However, as part of the financial services industries, observations related to the BD industry are often excluded from the literature. The broker-dealers' importance to capital market access and securities transaction processing elevates the need to understand audit quality within the industry (Bedard et al., 2014; Schnader et al., 2015; Kowaleski, Cannon, Schnader, & Bedard, 2018; Schnader et al., 2019; Kowaleski, 2020). Audit quality concerns persist as the PCAOB continues to identify deficiencies in the BD financial statement audits, as well as the accompanying examination and attestation engagements (PCAOB, 2019). Additionally, the special regulatory and legislative attention given to the BD industry following the 2008 financial crisis sets the industry apart from other sectors.

Regulators' and legislators' awareness of BD audit quality issues existed prior to the passage of the Sarbanes-Oxley Act of 2002 (SOX). Their concerns originated from the BD industry's expansion into riskier and more complex products and the increase in securities trading volume during the 1990's and early 2000's (Kowaleski et al., 2018). While SOX required PCAOB registration for all BD auditors, the SEC deferred compliance with this mandate for private BD auditors until fiscal years ending after December 31, 2008 (Bedard et al., 2014; Kowaleski et al., 2018; Schnader et al., 2019). However, the 2008 financial crisis and the BD scandals pressed the urgency for legislative and regulatory reforms targeting BD accountability and audit quality concerns (Bedard et al., 2014).

First, the SEC required all BD auditors, including those that did not audit public companies, to register with the PCAOB in compliance with SOX for fiscal years ended December 31, 2008 (Bedard et al., 2014). According to the authors, the temporary reprieves granted by the SEC had allowed 84 percent of the BD auditors to avoid PCAOB oversight and inspection prior to this mandate. However, after the SEC lifted the final deferment, the BD industry became the only sector where auditors of both public and private companies are subject to PCAOB oversight (Kowaleski et al., 2018). The 2017 PCAOB annual inspection report still cited audit deficiencies related to quality control systems, independence, and assessing risk of material misstatement due to fraud (PCAOB, 2018). However, most BD audit deficiencies can be attributed to firms that do not audit issuers (Schnader et al., 2019).

Second, the SEC amended Rule 17a-5, which updated the reporting requirements of BD entities for the purposes of increasing BD entity accountability, especially related to internal controls over compliance. All BD entities must submit annually audited financial statements (SEC, 2013). Under certain conditions, BD audit clients may have to comply with all or some of the amended Financial Responsibility Rules (SEC, 2013).[3]

Rule 17a-5 differentiates the reporting requirements of brokers and dealers based on whether they are carrying or non-carrying entities. Carrying BDs offer clearing, settlement, and custodial services to other BDs. In addition to the audited financial statements, they issue compliance reports that contain statements attesting to the establishment, maintenance, and effectiveness of internal controls (SEC, 2013). In addition, BD entities are required to provide a description of each material weakness in the report on Internal Control over Compliance or of any noncompliance with the Net Capital Rule or Determination of the Reserve Requirements, if applicable. Non-carrying BD entities submit an exemption report that identifies the provision that exempts the BD entity, a statement that the BD entity complied with the exemption status

[3] The financial responsibility rules consist of the Net Capital Rule (Rule 15c-1), the Broker-Dealer Customer Protection Rule (Rule 15c3-3), the Broker-Dealer Quarterly Securities Count Rule (Rule 17a-13), and the Account Statements Rule (SEC, 2013).

throughout the fiscal year, and a description of instances when the exception was not met if applicable.

Under the new reporting guidelines, the supplemental information focuses on controls over compliance with the financial responsibility rules rather than internal controls over financial reporting. These changes significantly altered the scope and breadth of the BD auditors' fieldwork and reporting requirements for BD audit engagements since auditors were no longer required to issue reports on internal control over financial reporting for BD entities that are not associated with an accelerated filer (Kowaleski et al., 2018). Audit practitioners expressed their concerns over the omission of internal control reporting in their comments on the draft Rule 17a-5 amendments (SEC, 2013).

Section 982 of the Dodd-Frank Act amended SOX by delegating standard-setting responsibilities for audits of issuers, brokers, and dealers to the PCAOB and by establishing the interim BD audit inspection program (U.S. Congress, 2010). The PCAOB issued AT No. 1, AT No. 2, and AS No. 17 for fiscal years ending on or after June 1, 2014. To assess the effectiveness of the new standards, the PCAOB inspected five (5) audits that should have been conducted under the new guidelines and found that the auditors continued to use the "old" AICPA standards for BD audit engagements (PCAOB, 2015).

Concerns remained regarding auditors' understanding and application of the new PCAOB BD auditing standards based on the deficiencies reported in the *Annual Report on the Interim Inspection Program Related to Audits of Brokers and Dealers* for 2018 (PCAOB, 2019). However, the percentage of audit deficiencies declined between 2017 and 2018 for audit procedures related to the Net Capital Rule, Customer Protection Rule, and audit procedures examining revenue, risks of material misstatement due to fraud, and fair value measurements, among others. Dodd-Frank and the amended Rule 17a-5 transformed the BD audit landscape by implementing the interim BD audit inspection program, amending BD reporting requirements, and changing the agency that establishes BD auditing standards. The primary purpose of these

modifications was to enhance broker-dealers' accountability to the regulators and to the investors that rely on BD processes for access to the capital markets (SEC, 2013).

Accountability Theory and BD Audits

Oversight of the U.S. broker-dealer industry resides with the SEC, state-level regulators, and self-regulatory organizations (SROs) like FINRA and the national securities exchanges (SEC, 2008; Bedard et al., 2014).[4] While the SEC has primary monitoring responsibility over the U.S. capital markets, it explicitly relies on SROs to assist with its oversight responsibilities over the BD entities (SEC, 2008). However, Section 17(d) of the Securities Exchange Act and Rule 17d-2 provide that the SROs can allocate regulatory responsibilities to a designated examining authority in order to alleviate some of the burden of BD accountability to multiple regulators for the same compliance concerns. State-level regulators focus on securities firms within the local communities that are operating within their states' borders (North American Securities Administration Association (NASAA), 2019). As noted by Bedard et al. (2014), BD entities are accountable to multiple levels of regulators with varying laws and rules guiding BDs' responsibilities for providing public access to the capital markets.

Accountability theory helps explain this dynamic using two primary assumptions. The first assumption is that responsibility for an outcome or event is assigned to a specific actor, (individual, group, organization) who is guided by specified rules and principles (Schlenker, Britt, Pennington, Murphy & Doherty, 1994; Schlenker, 1997). The second assumption of accountability theory hinges on the idea that accountability will prevent entities from conducting bad acts and making incorrect decisions (Kennedy, 1993; Schlenker, 1997). According to Schlenker (1997), while the first assumption above dealt with responsibility for wrongdoing, the second assumption deals with accountability to oversight audiences when the wrongdoing and bad acts have been discovered. Therefore, responsibility and accountability are not synonymous.

[4] National securities exchanges include the Chicago Stock Exchange, Inc., Miami International Securities Exchange, the NASDAQ Stock Exchange, New York Stock Market, and others (SEC, 2019).

Public BD entities with subsidiaries can complicate these accountability assumptions. Public BD companies often use subsidiary entities whose relationships are defined by complex organizational structures, including indirect ownership through pass-through private corporations, to carry out their BD functions. Oftentimes, parent companies, regardless of direct or indirect ownership, have policy and management influence over the subsidiaries. While there is no consensus on the cause of the 2008 financial crisis, one reason that has been cited by regulators and researchers is the systemic risk that exists due to interconnected entities (Sikka, 2009; Coffee, 2012; Omarova, 2012; U.S. House of Representatives, 2012).

BD Entity Accountability

The complexity of the interrelationships between the BD parent company and its subsidiaries may hamper regulators' and auditors' ability to assess the parent company's responsibility and accountability for bad acts associated with its subsidiaries. Large, complex corporate groups such as those that exist in the BD industry are attractive organizational structures for three (3) primary reasons. First, complex corporations can limit shareholders' responsibility for liabilities and wrongdoings derived from third-party transactions with customers and suppliers (Wiggins & Metrick, 2014; Petrin & Choudhury, 2018; Schaefer, 2019). A foundation of corporate law is the viewpoint that parent companies are not responsible or accountable for the transgressions and liabilities of its subsidiaries (Petrin & Choudhury, 2018; Schaefer, 2019). This viewpoint is grounded on the principle that each corporation is a separate, legal entity even when it is part of a corporate group (Chiu & Donovan, 2017). Second, large corporate groups can maximize profits by strategically placing individual businesses in locations based on the political and legal climate of the geographic region. The decentralization of corporate governance mechanisms (i.e., accounting, compliance, and reporting) creates structural holes that corporate executives and employees can exploit to advance their personal agendas (Prechel & Zheng, 2016). Third, complex organizations use subsidiaries to segregate regulated operations from nonregulated activities (Wiggins & Metrick, 2014). By separating regulated operations, corporate groups can control compliance risks from regulatory requirements by implanting corporate resources with specialized knowledge and practices and by compartmentalizing regulatory oversight.

Despite corporate groups' efforts to manage liability risk using subsidiaries, Prechel and Zheng (2016) provide evidence that the presence of subsidiaries in the financial, insurance, and real estate (FIRE) sectors can have the opposite effect. Documented cases also support that regulators are willing to circumvent traditional limited liability assumptions to punish parent companies for transgressions committed by their subsidiaries. For example, Och-Ziff Capital Management Group and its subsidiary, OZ Africa Management GP, LLC were punished by the SEC because the subsidiary made illegal payments that are disallowed under the Foreign Corrupt Practices Act (SEC, 2016; Sokenu, 2017).

Regulators justify the inclusion of parent companies for subsidiaries' violations when the parent company has direct liability because of active participation or when subsidiaries have been found to act on behalf of the parent company as an agent or alter ego (Schaefer, 2019). Through the lens of regulators, parent companies can be held accountable for subsidiaries' actions. But there is little evidence to support whether this viewpoint is shared by auditors although they are required to consider related parties under AS No. 2410, *Related Parties*. In addition, BD subsidiaries can be used as service organizations and provide carrying and clearing services for their corporate group. Therefore, BD auditors of parent companies may also be required to consider procedures delineated in AS No. 2601, *Consideration of an Entity's Use of a Service Organization*. However, the 2018 PCAOB annual report on the BD audit inspection program documents the lack of audit quality in procedures that examine related party transactions and relationships, as well as the use of service organizations (PCAOB, 2019).

FINRA Disclosure Events

Regulatory oversight can only be effective if results are communicated to the populations that regulators are sworn to protect and that require the information to make informed decisions. FINRA requires its registrants to report disclosure events, which include any regulatory actions, criminal judicial proceedings, civil judicial proceedings, and other similar adverse events, within 30 days (FINRA, 2015). Disclosure events are accumulated in the Central Registration Depository

database[5] maintained by regulators and disseminated to the public through the FINRA BrokerCheck website[6] (Honigsberg & Jacob, 2018). The presence of disclosure events in a BD entity's BrokerCheck report may indicate internal controls issues or financial reporting concerns (Schnader et al., 2019).

Although the results have been mixed, studies have predominantly supported the notion that regulatory monitoring over audit clients and auditors improves audit quality and increases audit effort (Ashbaugh-Skaife, Collins, & Kinney, 2007; Gramling, Krishnan, & Zhang, 2011; Kedia & Rajgopal, 2011; Barua & Smith, 2013; Gunny & Zhang, 2013; Firth, Lai Lan Mo, & Wong, 2014; DeFond, Francis, & Hallman, 2018; Leventis, 2018). But prior audit quality research primarily focuses on accountability to national agencies such as the SEC or PCAOB to whom the audit client and auditor are accountable. SEC efforts to monitor the financial reporting quality of BDs are supplemented by organizations that specialize in the financial services industry like FINRA and state-level securities regulators (Bedard et al., 2014). However, there is little empirical evidence to support how auditors respond to disciplinary actions lodged against interconnected audit clients on the parent company's audit quality.

Schnader et al. (2019) report that less than 30 percent of the FINRA-sanctioned BD entities received adverse internal control weakness reports from their auditors during the 2005 – 2012 fiscal periods. These results support the assertion made by Bedard et al. (2014) that audit quality in the BD industry is questionable. However, Schnader et al. (2019) did not fully consider the interconnectivity between public parent BD entities and their subsidiaries. The PCAOB is concerned about related party audit quality, especially under shared service agreements (PCAOB, 2018). The potential that disclosure events could signal issues in internal control or potential

[5] The Central Registration Depository contains more information than what is disclosed in the BrokerCheck reports (Honigsberg & Jacob, 2018).

[6] The BrokerCheck report is maintained by FINRA and contains relevant information about BD entities, including ownership structure, the business activities the BD is engaged in, and details of adverse regulatory, civil, or other actions lodged against the BD entity for public use. In the BrokerCheck reports, ownership relations are disclosed, and the reporting entity indicate whether owners (direct and indirect) have management control over their operations.

fraud should cause audit quality to vary with the total number of disclosure events in the BrokerCheck reports of all entities associated with a single corporate group.

Currently, there is no evidence to support whether disclosure events that are reported in the BrokerCheck reports of related parties have an impact on parent company audit quality. In fact, the 2018 BD audit inspection annual report documents auditors' lack of effort in examining related party transactions and relationships in 45 percent of the audits that were inspected (PCAOB, 2019). Schlenker et al. (1994) theorizes that there could be situations where the accountability link is not investigated and an examination of the BD industry may provide evidence to support the theory. The interconnectedness of BD entities and the recordkeeping of disclosure events from multiple sources in the FINRA BrokerCheck reports provide a context in which to assess the accountability link between subsidiary bad acts and parent company audit quality. To determine whether accountability to regulators at interconnected entities influences audit quality at the parent level, the following hypothesis will be tested:

H1: The total number of BD disclosure events lodged against a corporate group will positively impact parent company audit quality.

State Registrations

BD investor protection responsibility within the U.S. does not reside solely with national regulators like the SEC and FINRA. Each U.S state and territory have their own securities regulations that BDs are required to follow and regulatory agencies to monitor BD activities (SEC, 2008; Finke & Langdon, 2012). BD entities are required to register with each state in which it plans to conduct business.

As BD entities increase U.S. state and territory registrations, they are simultaneously increasing the regulatory agencies to which they will be accountable. State investor protection efforts are reported annually in the NASAA's enforcement report and any wrongdoings are required to be reported by the BD entity to FINRA. During 2018, U.S. NASAA jurisdictions assessed nearly $490 million in fines and recovered nearly $558 million for injured investors (NASAA, 2019).

Furthermore, NASAA member agencies' investigations yielded over 1,700 years of criminal penalties including 1,058 years in incarceration time and 705 years of probation. Part of the defining concept of investor protection relates to regulators' ability to enforce the laws and regulations they establish and to detect wrongdoing (DeFond & Hung, 2004; Newman, Patterson, & Smith, 2005). Research examining international investor protection variations supports that higher investor protection and enforcement activities increase audit quality (Choi et al., 2008; Jaggi & Low, 2011; Persakis & Iatridis, 2016).

Auditors' incentive to conduct high-quality audits in countries with stricter regulatory agencies is driven by adverse reputation and litigation risks (Francis & Wang, 2008). However, to tout the importance of national-level regulators on audit quality is an incomplete viewpoint within the U.S. BD industry. State securities regulators also have regulatory and enforcement powers over the BD industry (Bedard et al., 2014). We submit that the additional monitoring and enforcement activities of state-level securities oversight institutions can also impact audit quality. Finke and Langdon (2012) recognize that there could be variations in state regulations. Therefore, BD entities could be operating under the regulatory authority of 53 U.S. states and territories in addition to SEC, FINRA, and other SRO oversight. This additional level of oversight could increase the detection of BD entity wrongdoing, which the auditor should consider during the audit engagement.

State securities regulators can act independently in their oversight responsibilities. Additionally, state noncompliance and fraud concerns can be investigated through multi-state collaborations or elevated to national BD regulators like the SEC or FINRA (NASAA, 2019). Therefore, state-level investigations can be an important part of the national BD regulatory landscape. Furthermore, the severe resource limitations faced by the SEC impact its enforcement efforts (Kedia & Rajgopal, 2011). While state BD regulatory entities may encounter budgetary constraints as well, their resources can be used to focus on localized issues or leveraged to supplement national-level regulators' oversight efforts. Variations in state regulations, in addition to the increased oversight opportunities provided by state regulators, can heighten audit risk and auditors' incentive to

produce high-quality audits like the response to national-level regulators. In order to assess whether the number of state regulators to which BD entities are accountable influence audit quality, the following hypothesis will be examined:

H2: BD regulatory complexity will positively impact audit quality.

BD Auditor Accountability and Change of Standard Setting

In response to BD audit quality concerns, the Dodd-Frank Act and Rule 17a-5 amendments were adopted to reform BD reporting requirements and to reduce variability in BD audit quality. Rule 17a-5 of the Securities Exchange Act of 1934, as amended, provides for reporting requirements specific to the broker-dealer (BD) industry. The BD industry has bifurcated reporting standards for the broker-dealers. Reporting requirements are applied based on whether the BD is a carrying or non-carrying entity (Bedard et al., 2014). The additional reporting requirements are not mandatory for other industries. To address the differences in reporting requirements, the PCAOB expanded the auditing standards subsequent to requiring auditors of public and private BDs to register with the PCAOB.

In addition to the changes in BD reporting requirements, the Rule 17a-5 amendment removes the American Institute of Certified Public Accountants (AICPA) as the BD industry standard-setter and delegates the responsibility to the PCAOB. In response to the two-tiered reporting requirements and its new designation as the BD auditing standard-setter, the PCAOB issued AT No. 1 and AT No. 2 that were in effect for audits completed on or after June 1, 2014. AT No. 1 requires that auditors' examination of the compliance report be coordinated with the financial statement audit and must meet the objectives of the financial statement audit and the examination engagements (PCAOB, 2013a). In addition to issuing a financial statement audit opinion, BD auditors are required to issue an examination report regarding the BD's compliance report (PCAOB, 2013a; PCAOB, 2013b). AT No. 2 requires auditors to issue a financial statement audit opinion and review BD's exemption reports (PCAOB, 2013b).

While the SEC has Congressional authority to set standards related to the capital market, the accounting profession was delegated the responsibility through the AICPA. But over the decades,

the AICPA and the accounting profession have lost this privilege primarily due to regulators' and legislators' perceptions that the profession was losing its objectivity (Zeff, 2003a; Zeff, 2003b).

Strong research interest culminated from the transfer of the audit inspection program to the PCAOB and its impact on audit quality. Studies also exist that examine changes in auditing standards and regulations, but these efforts primarily assess changes that originate from the same standard-setting body, namely the PCAOB. Unlike the standard-setting transition that occurred due to SOX, the transfer of BD audit standard-setting resulted in the PCAOB establishing its own standards rather than initially adopting the AICPA standards and then amending them. This clean transformation allows for a comparison of the standard-setting influence on audit quality between the two organizations.

Standard-setting transitions and audit quality

The significance of this transfer of standard-setting duties is grounded in the revelation that BD audit standard-setting and inspection responsibilities will reside within one organization. The X-17A-5 focus report submissions of the BD entities were audited under the generally accepted auditing standards of the AICPA (PCAOB, 2013a; PCAOB, 2013b). However, BD audit inspections have been performed by the PCAOB. PCAOB annual reports on BD audit inspections have documented audit quality concerns. There is the potential that there was a misalignment between the BD auditing standards established by the AICPA and the expectations of the PCAOB inspectors.

Regulators are aware of the impact auditing standards can impose on audit effectiveness and efficiency in the capital markets. When the PCAOB issued AS No. 2, and No. 3, it was trying to improve audit quality (Bronson, Hogan, Johnson, & Ramesh, 2011). AS No. 2 and AS No. 3 were promulgated in order to improve audit quality related to auditors' examination of internal controls under Section 404(b) of SOX and to audit documentation. Bronson et al. (2011) noted an increase in mean audit report lag of approximately 12 days between 2003 and 2004, while preliminary earning announcements were preceding audit report dates at increasing intervals. In

addition, preliminary earnings announcement revisions became more prominent during the same periods. Thus, Bronson et al. (2011) asserted that AS2 and AS3 increased audit report lag, decreased audit efficiency, and reduced the reliability of preliminary earnings announcements.

Based on its assessment of AS No. 2 audits, the PCAOB determined that the demands of AS No. 2 imperiled Big 4 audit capacity (Schroeder & Hogan, 2013). Driving regulators' worries was the realization that the Big 4 audited a significant share of total market capitalization following the demise of Arthur Andersen. Simultaneously, there was concern about the costs and benefits related to Section 404 assurance procedures (Wang & Zhou, 2012; Schroeder & Hogan, 2013). To address these concerns, the PCAOB adopted AS No. 5.

Studies have examined how changes in auditing standards promulgated by the PCAOB have influenced audit quality. Krishnan, Krishnan, & Song, (2011) and Wang and Zhou (2012) investigated the impact of the replacement of AS No. 2 with AS No. 5 on audit costs. Both studies provide evidence that audit fees declined significantly following AS No. 5 implementation. Wang and Zhou (2012) also note that discretionary accruals did not differ between the pre-AS NO. 5 and post-AS No. 5 fiscal periods. Based on the results related to discretionary accruals, they conclude that audit quality did not decline with audit fees. Mitra, Song, and Yang (2015) examined whether AS No. 5 influenced audit report lag during 2006 to 2011. Their study provides evidence that audit report lags were lower during the AS No. 5 audit periods and audit efficiency improved.

The research of Krishnan et al. (2011), Bronson et al. (2011), Wang and Zhou (2012) demonstrate how the PCAOB can expand and contract audit quality demand and supply through the issuance of audit standards. However, the Krishnan et al. (2011) and Wang and Zhou (2012) studies examine amendments to standards that are both products of the PCAOB. Limited research can be found that examine how the transition of standard-setting duties from the AICPA to the PCAOB has influenced audit quality. The transfer of the BD industry standard-setting obligations to the PCAOB provides a final opportunity to examine whether the PCAOB's standard-setting

efforts positively impact audit quality. Since AT No. 1 and AT No. 2 are more closely aligned with the reporting requirements under the Rule 17a-5 amendments, it is expected that BD audit quality under PCAOB standards will not be similar to BD audit quality under AICPA standards.

H3: BD industry audit quality will differ between PCAOB audit standard-setting periods (e.g., 2016-2018) and AICPA audit standard-setting periods (e.g., 2011-2013).

RESEARCH DESIGN

Sample Selection and Data Collection

The proposed sample will consist of U.S-based BDs that are assigned to North American Industrial Classification System (NAICS) code 523 (Securities, Commodity Contracts, and Other Financial Investments and Related Activities) and that have financial data during the post Dodd-Frank fiscal year periods in the Compustat database. Data for the audit quality proxies will be primarily obtained from the AuditAnalytics database. In addition to the NAICS code classification, the selected companies and/or their subsidiaries were registered with FINRA as BD entities. Table 1 documents the data collection sources for each of the proxies for audit quality that would be used as dependent variables.

Table 1: Data Collection Sources

Data	Primary Source
Audit opinions	AuditAnalytics
Reports on internal control weaknesses	AuditAnalytics
Restatements	AuditAnalytics
Audit fee data	Audit Analytics
Audit report dates	Audit Analytics
Financial data (i.e., assets, liabilities)	Compustat
Number of disclosure Events	FINRA BrokerCheck reports
Number of state registrations	FINRA BrokerCheck reports
Other entity specific data	Audit Analytics, Compustat, FINRA BrokerCheck reports. SEC EDGAR database, or S&P Capital IQ

Table 1: The sources of the data required to complete the study are detailed in the table.

Inclusion of the BD subsidiaries within the observations for the selected companies is consistent with the audit approach required by AU 316 that the auditor considers the financial statements taken as a whole. In order to identify affiliated companies, we will determine corporate group relationships using the following resources:

- AuditAnalytics Broker-Dealer database,
- BrokerCheck website,
- SEC Edgar system (10-K reports and X-17A-5 focus reports),
- S & P Capital IQ, and
- News reports documenting mergers and acquisitions.

In addition, we will identify other BD relationships within corporate groups from affiliation information contained in initial related BD BrokerCheck reports.[7] Observations for hypothesis testing will include only those entities that have FINRA-registered BD entities as subsidiaries.

Dependent variables will be one of the following audit quality (AQ) proxies:

GCO(CY) = 1 if going concern opinion is issued, 0 otherwise.

ICW(CY) = 1 if internal control weakness is reported by the auditor, 0 otherwise.

RESTATE = 1 if financial statements are restated, 0 otherwise.

AUDFEE = Natural log of audit fees.

REPORTLAG = Natural log of audit report lag measured using the number of days between the fiscal year end and the audit opinion report date.

Hypothesis Testing for H_1 and H_2

H_1 and H_2 will be examined by adapting the research approach of Ashbaugh-Skaife et al. (2007) for observations related to *GCO(CY)*, *ICW(CY)*, and *RESTATE*. Going concern opinion analysis is limited to companies that were financially distressed. Following Blay, Geiger, and North (2011), financially distressed companies are defined as companies that experienced a bottom-line net

[7] When a FINRA-registered BD is identified, the BD subsidiary's focus report will be reviewed to confirm the parent relationship. Once the relationship is confirmed for the fiscal years under review, then the Organization Affiliates section of the BrokerCheck report will be reviewed for other FINRA-registered subsidiaries that are associated with the parent company during the fiscal periods.

loss. The continuous variables, *AUDFEE* and *REPORTLAG* will be assessed using the regression model similar to Knechel, Sharma, and Sharma (2012).

BD Regulatory Enforcement and BD Audit Quality (H_1)

Prior research has found that audit client accountability to regulatory authorities improves audit quality (Ashbaugh-Skaife et al., 2007; Kedia & Rajgopal, 2011; Gunny & Zhang, 2013; Barua & Smith, 2013; DeFond et al., 2018; Leventis, 2018). Client accountability to regulatory authorities is the focus of this study and is measured based on the count of regulatory disclosure events *(DISCEV)* contained in the FINRA BrokerCheck reports of the public BD parent companies and their subsidiaries. BrokerCheck reports contain adverse actions against BD entities from various regulatory agencies including the SEC, FINRA, state regulatory authorities, and other self-regulating organizations. FINRA does not consolidate BrokerCheck reports based on the parent company but identifies related companies and the nature of the associations within their BrokerCheck reports. To examine the association between BD regulatory enforcement and audit quality, we will use the following regression model where *DISCEV* is the test variable, *AQ* is one of the audit quality proxies, and the control variables are measures of client-related, auditor-related, and environmental characteristics:

$$AQ = \beta_0 + \beta_1(DISCEV) + (\beta_4 - \beta_{25})(CONTROLS) + \varepsilon, \quad (1)$$

Where

DISCEV = Natural log of the total number of disclosure events contained within the parent companies' and their subsidiaries' BrokerCheck reports for the year.

BD Regulatory Complexity and BD Audit Quality

STATREG and *STATREGP* serve as proxies for regulatory complexity. Generally, regulatory complexity research (i.e., Choi et al., 2008; Jaggi and Low, 2011; Persakis and Iatridis, 2016) examines national-level indicators that could differentiate among countries on audit quality. No prior research examines how state-level regulatory complexity impacts audit quality. To test the association between regulatory complexity and audit quality, the following models will be used:

$$AQ = \beta_0 + \beta_2(STATREG) + (\beta_4 - \beta_{25})(CONTROLS) + \varepsilon, \quad (2)$$

$$AQ = \beta_0 + \beta_2(STATREGP) + (\beta_4 - \beta_{25})(CONTROLS) + \varepsilon, \quad (3)$$

Where

AQ is one of the measures of audit quality

STATREG = Natural log of the maximum number of unduplicated states the BD parent company and/or its subsidiaries are registered to conduct business in.

STATREGP = The proportion of the maximum number of unduplicated states the BD parent company and/or its subsidiaries are registered to conduct business in divided by the maximum number of available U.S. states and territories (53).

Regulatory Transition and Audit Quality (H_3)

The primary analysis for H_3 is based on the methodology of Krishnan et al. (2011) for a six-year period. Two sub-samples can be developed from the full sample that will be comprised of observations from the fiscal years 2011-2013 and 2016-2018. Like the Krishnan et al. (2011) study, we require that the same auditor in 2010 and 2015 completed the audit engagements during 2011 and 2016, respectively. This ensures that the audit client was not being audited by the audit firm for the first time. In addition, fiscal years 2014 and 2015 are excluded from the analysis to reduce the impact of the transition from AICPA guidance to PCAOB standards for completing BD audit engagements. The test variable for H_3 is *AUDITST*. The empirical model to examine H_3 is:

$$AQ = \beta_0 + \beta_3(AUDITST) + (\beta_4 - \beta_{25})(CONTROLS) + \varepsilon, \quad (4)$$

Where

AQ is one of the proxies for audit quality.

AUDITST = 1 if BD auditing standards issued by PCAOB (2016-2018), 0 otherwise.

Control Variables

Based on the results of prior studies, audit quality frameworks like those depicted by DeFond and Zhang (2014) and Gaynor, Kelton, Mercer, and Yohn (2016) document audit client, audit firms, and environmental characteristics that can impact audit quality. First, we control for audit client characteristics that influenced audit quality. Parent company governance characteristics (e.g.,

chief executive officer (CEO) duality, number of board members, number of audit committee members), the size of the entity (e.g., number of BD business activities, log of the total assets), and the client's financial performance (e.g., prior year audit opinion, current year profitability, current year return on assets (ROA) ratio, leverage) are incorporated in the model. Second, we utilize control variables that regulate audit firm size, audit firm tenure, the occurrence of a prior year PCAOB inspection, and whether the audit firm had attestation engagements in other industries within the model. Third, we control for environmental influences that are related to the BD regulatory environment including whether the parent company had carrying entity within its corporate group and the proximity of the BD and audit firm to relevant regulators (e.g., SEC and FINRA). Finally, fiscal year variables are also included. See Table 2 for a full variable list.

Table 2: Control Variables

Control Variable	Measurement
BUSSEG	Natural log of business segments operated by the parent.
DUALITY	1 if Chief Executive Officer is also Chairman of the Board, 0 otherwise.
SIZE	Natural log of total assets.
BDSIZE	Number of members on the board of directors.
AUDCOM	Number of members on the audit committee.
GCOPY	1 if prior year opinion is a going concern opinion, 0 otherwise.
LOSS	1 if current loss, 0 otherwise.
LEV_CY	Yearend total debt/yearend total assets.
ROA	Net income/current yearend total assets.
INSPECT	1 if audit firm was inspected by PCAOB in the prior year, 0 otherwise.
BIGN	1 if firm is a Big 4 firm, 0 otherwise.
FIRMTEN	Natural logarithm of the number of consecutive years auditor has audited the client.
ISSUER1	1 if the firm audits issuers in other industries, 0 otherwise.
ISSUER2	Log of the number of audit clients that issuers in other financial services.
INDSPECT	Percent of firm audit fees to total audit fees within NAICS code 523.

CARRY	1 if the entity is a carrying broker or dealer, 0 otherwise.
SECPROXC	Natural log of the number of miles or kilometers between the client's home office and the nearest SEC office.
SECPROXA	Natural log of the number of miles or kilometers between the auditor's home office and the nearest SEC office.
FINRAPROXC	Natural log of the number of miles or kilometers between the client's home office and the nearest FINRA office.
FINRAPROXA	Natural log of the number of miles or kilometers between the auditor's home office and the nearest FINRA office.

Table 2: Table 2 shows the measurements for all control variables.

CONCLUSION

This study would contribute to audit quality research in a number of ways. First, the study uses a novel approach by examining how regulatory compliance and oversight targeting a public company's subsidiary influence parent company audit quality. Second this study would provide insight into how large, complex corporations can manage regulatory risks and to avoid accountability through their multitiered organizational structures even when their subsidiaries operate in industries critical to world economies and engage in wrongdoing. Finally, this study would examine the standard-setting transition from the AICPA to the PCAOB for BD industry audits. In addition, this study would have implications for future public company audit research, regulatory actions, and the audit practice in general.

However, the study's contribution to audit quality literature and implications to the BD audit practice are difficult to define due to several characteristics of the BD industry and the related data. First, consistent with all research that uses secondary data sources, there remains limitations based on the accuracy and completeness of the data used. For example, the state registration information for BD entities that are no longer in existence is expunged from the BrokerCheck reports to prevent the public from using nonregistered entities for securities

transactions. Second, conclusions may not be generalized to the private BD industry and public company audit quality since the observations are limited to U.S. BDs that are public entities. Finally, this study is limited by its examination of only one facet of large, multinational corporations that could operate corporate group members in multiple industries and that could be a subsidiary of larger corporate groups themselves. Despite these limitations, the relevance of the BD industry to the well-being of world economies is so critical that the limitations should be disregarded.

Prechel and Zhang (2016) discuss how asymmetric information and power imbalance created as companies engaged in forming complex corporate groups with multiple levels of subsidiaries helped facilitate corporate malfeasance in the FIRE industries. Qualitative and quantitative research should be conducted to examine whether asymmetric information and power imbalance have similar influence over audit and financial reporting quality within other industries. Research should also be conducted to obtain an understanding of the communications between parent company board of directors and audit committees with their counterparts at the subsidiary level regarding matters relevant to audit and financial reporting quality. In addition, auditors and regulators need to understand how corporate management overlap (i.e., shared board members, CEOs, CFOs, and audit committee members) impacts audit and financial reporting quality. Researchers should also investigate how audit engagement partners within the same audit firms and with their equals from different firms communicate to facilitate the corporate group's audit.

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CITY-LEVEL AUDIT FEE PRESSURE, AUDITOR OFFICE SIZE, AND AUDIT QUALITY

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CITY-LEVEL AUDIT FEE PRESSURE, AUDITOR OFFICE SIZE, AND AUDIT QUALITY

ABSTRACT

Much research has examined how engagement-level audit fees impact audit quality. Several studies suggest that unusually high or low audit fees charged at the engagement level detrimentally affect audit quality. In this study, we investigate how fee pressure in the auditor's local environment affects audit quality by developing a measure of citywide audit fee pressure and examining its effect on audit quality, (as measured by earnings management and restatements). We analyze the audits of small and large Big Four offices both together and separately and find similar results for the overall sample as we do for both sub-groups—that audit quality is diminished in cities with greater fee pressure (while controlling for engagement-specific audit fee pressure, auditor competition, and other audit and city attributes). Interestingly, the effects appear to be the greatest for larger Big Four offices. While prior research has largely treated audit fee pressure as an engagement-specific construct, our results suggest that audit quality is impacted by city-level fee pressure and therefore it may be beneficial for the PCAOB to scrutinize audits in high-fee-pressure markets more carefully.

INTRODUCTION

Audit fees have been the subject of much attention from regulators and academics, who frequently cite concerns that audit quality may be compromised when the audit fees charged for an engagement are either unusually high or unusually low. Regulators and academics have argued that *high* audit fees and/or non-audit fees can create economic bonding, thereby impairing auditor independence (DeAngelo, 1981; Hoitash et al. 2007; Kinney and Libby 2002, among others). Alternatively, ethical concerns have been raised that *low* audit fees may harm audit quality as they encourage auditors to keep audit costs down by reducing the scope of testing on engagements (International Federation of Accountants, 2016). A large stream of research investigates whether there is an association between the level of audit fees (i.e. abnormal audit fees) charged for an engagement and audit quality. These studies focus on fees at the *engagement level* and present conflicting results. Several researchers find a positive association between the magnitude of audit fees (or abnormal audit fees) and proxies for audit quality, suggesting that larger fees may be indicative of greater audit effort (Geiger and Rama 2003; Larcker and Richardson 2004; Srinidhi and Gul 2007; Eshleman and Guo 2014). Similarly,

Blankley, Hurtt, and MacGregor (2012) document that abnormally low audit fees are associated with a greater likelihood of financial restatement. In contrast, other researchers document that higher audit fees or abnormal audit fees are associated with inferior audit quality, consistent with the view that large fees may impair auditor independence (Antle et al. 2006; Hoitash et al. 2007).

A further issue of contention within the literature has been the interpretation of abnormal audit fees.[1] While some studies suggest that large audit fees may reflect greater audit effort, Moon, Shipman, Swanquist, and Whited (2019) conclude that engagement-specific audit fee premiums are not indicative of higher quality auditing. Meanwhile, Doogar, Sivadasan, and Solomon (2015) argue that audit fee residuals largely reflect audit costs that are unobservable to researchers but consistent in nature across audit engagements. In summary, although the relation between audit fees (abnormal audit fees) and audit quality has been studied extensively, the emphasis has been on analyzing the impact of *engagement-specific* fee influences on audit quality. We are unaware of any research that specifically examines how the quality of audits is affected by fee pressure that auditors confront in their local environments outside of individual engagements. We posit that auditors will also be susceptible to other, perhaps more pervasive sources of audit fee pressure—namely city-level fee pressure.

Audit fees are negotiated at the local level and we posit that local fee pressure, (e.g., the level of citywide audit fee pressure), can affect the manner in which audits are executed. In high-fee-pressure environments, audit efficiency is vital to maintaining profitability. As a direct consequence of fee pressure, auditors may be inclined to restrict time budgets and reduce the scope of audits to restore profitability to an engagement or to the office as a whole. Due to the importance of cost control, we expect offices in high-fee-pressure environments to emphasize audit efficiency in performance evaluation, thereby reinforcing time pressure.[2] We expect these

[1] Abnormal audit fees are typically defined in the literature as the residuals from an audit fee determinants model such as Simunic (1980).

[2] While audit efficiency may or may not be formally measured in performance evaluations, the auditor's successful completion of the audit within the budgeted time is often a specific component of the performance evaluation. However, even if it is not explicitly part of the evaluation criteria, an auditor's completion of tasks in a timely manner is likely to influence evaluations by superiors.

efficiency-related pressures to adversely affect audit quality. Fee pressure can arise from individual engagements, but it can also permeate the engagements of an entire office or city. This study seeks to evaluate the impact of city-level fee pressure on audit quality. We contend that local offices respond to the level of fee pressure that auditors encounter from each of these sources and that auditors who have adapted to managing audit workloads in a high-fee-pressure environment will be unlikely to modify their audit behaviors and approaches when confronting less engagement fee pressure. Auditors are unlikely to completely recalibrate or "reset" their mentalities when moving from engagement to engagement. The stress caused by fee pressure and tactics used to address it are likely to persist. The notion that city-level fee pressure can have contagion effects that spill over to other audits is similar to the line of reasoning espoused by Diaz, Martin, and Thomas (2017) and Francis, Michas, and Yu (2013) who examine contagion effects associated with lower quality auditing within an audit office and/or metropolitan statistical area (MSA) and argue that contagion effects cause the financial reporting behavior among the clients (companies) within an office (MSA) to be correlated.

In this study, we examine whether audit quality at the engagement level is affected by local (city-level) audit fee pressure. We investigate whether city-level fee pressure has an incremental impact on audit engagement quality, as measured by earnings management and restatements, after controlling for engagement-level audit fee pressure. We specifically examine the impact on Big Four audits. We restrict the focus of our study to Big Four firms because they are likely to have different cost structures, training, and resources than smaller firms and are therefore likely to employ different pricing strategies. Due to economies of scale and their ability to spread fixed costs over a large volume of engagements, Big Four firms may be able to supply audits at a considerably lower cost than smaller firms in the area that may perceive immense fee pressure at the same fee level. Given the importance of establishing a suitable baseline for audit fees to ascertain when fee pressure is present, we restrict our sample to Big Four audits to achieve better comparability among the cost structures of the firms that can drive engagements' pricing. We analyze the effects of city-level fee pressure on Big Four audit quality overall and also examine the effects separately based on auditor office size, partitioning Big Four offices into two size

categories—small offices and large offices—as prior research indicates that auditor office size can impact audit quality. Within each partition, we examine the impact of city-level fee pressure on audit quality. Incremental to prior research, we develop a measure of the level of local audit fee pressure that is present at the city level. Our calculation of city-level fee pressure excludes the engagement at hand and other engagements of the same local office and is based on the fee pressure present on the audits performed by other Big Four offices in the same city. We can thereby avoid inducing a mechanical association between city-level fee pressure and engagement-level fee pressure and better disentangle the effects of the two phenomena and assess specifically how fee pressure stemming from the auditor's local environment *outside* of the firm affects audit quality.[3] Our objective is to evaluate the spillover effects of city-level fee pressure on audit quality. Although common factors will affect the pricing of engagements within a city, we believe that engagement pricing by *other* Big Four auditors in a city will be plausibly exogenous with respect to any given engagement in an office since the choices are being made by separate decision-making units wherein each Big Four office can be regarded as a distinct decision-making unit.

Our data indicate that there is considerable variation in the level of fee pressure that is present across different cities, with smaller Big Four offices being subject to a higher mean level of citywide fee pressure. We find that city-level fee pressure is incrementally significant in explaining audit quality, even after controlling for engagement-level fee pressure, auditor competition, and other audit attributes. We demonstrate that the audit quality of Big Four offices tends to be systematically lower in cities that have higher levels of audit fee pressure as city-level fee pressure is positively and significantly associated with earnings management and greater incidence of subsequent financial restatements for audit clients of these offices. We further investigate whether city-level fee pressure impacts small and large Big Four offices differently by analyzing them separately. Ex-ante, there are several reasons why adverse effects could be muted for larger offices. First, large offices tend to provide higher quality audits (Francis and Yu

[3] If we were to include other engagements of the office in the city-level fee pressure calculation, the city-level fee pressure variable would be endogenously determined.

2009, Choi et al. 2010b, and Francis et al. 2013). Second, large offices may be more insulated from any detrimental effects of city-level fee pressure due to their ability to spread fixed costs out over a larger number of engagements. Finally, the somewhat lower incidence of city-level fee pressure that we document in the city markets of larger Big Four offices could make it more difficult to detect an effect.

Despite the potential for differences, we document consistent results for both groups when we split them, suggesting that neither office group in particular is driving our overall finding that city-level fee pressure impacts audit quality. Yet, we do find a greater effect size for large offices. The results are robust to the inclusion of a battery of control variables, including a commonly employed auditor competition measure. An important implication is that auditors respond not only to fee pressure arising from the specific engagements they are performing, but also more broadly to the level of fee pressure that prevails in their cities. Even if auditors are not experiencing significant fee pressure from the client on a particular engagement, there are multiple reasons why fee pressure at the city level could have spillover effects. First, auditors may be inclined to reduce the scope of engagements to subsidize losses from other engagements that are subject to high levels of fee pressure. Second, offices operating in high-fee-pressure cities may tend to stress audit efficiency and emphasize efficiency metrics in performance evaluations. This could encourage auditors at all levels, (staff through partner), to be more time-conscious in general, even on engagements that are not encumbered by fee pressure, simply due to the salience of the efficiency metrics in the evaluation process. Third, local fee pressure can affect the desirability of replacing an existing client with another client in the same city market. When deciding whether or not to acquiesce to client pressure regarding a reporting matter, auditors may consider consciously and/or sub-consciously the availability of suitable replacement clients in the geographical area. All else being equal, as city-level fee pressure intensifies, the more attractive it will be to retain existing clients due to difficulties in recovering audit start-up costs. Finally, although city-level fee pressure captures a broader construct than bargaining power, it can provide an aggregate measure of the collective bargaining power of clients in a city. In high-fee-pressure cities, where clients have the upper hand, we would expect auditors to be

more submissive when accounting controversies arise. In summary, we conjecture that there are multiple mechanisms through which citywide fee pressure can impact audit quality.

We contribute to the existing literature in several ways. First, we develop a measure of city-level fee pressure and present empirical evidence that audit firms are affected by this pressure. Our measure provides incremental explanatory power relative to fee pressure surrogates that are measured at the engagement level. Our results demonstrate that there can be systematic differences in the quality of Big Four audits based on city-level fee pressure and that that city-level fee pressure is harmful to both small and large Big Four offices.

In summary, our study finds that city-level audit fee pressure has an adverse impact on the audit quality of Big Four offices. A regulatory implication is that it may be prudent for the Public Company Accounting Oversight Board (PCAOB) to allocate greater inspection resources to audits performed by offices located in high-fee-pressure cities.

BACKGROUND, RELATED LITERATURE, AND HYPOTHESIS DEVELOPMENT

Audit Fees and Audit Quality

While several studies have examined the impact of audit fees (abnormal audit fees) on audit quality, the research to-date has been focused on engagement-specific audit fee measures, largely regarding audit fee pressure as an engagement-specific construct. As discussed in earlier, researchers have arrived at conflicting conclusions regarding the effects of abnormal fees and/or engagement fee pressure. Earlier research has used financial reporting variables as a proxy for audit quality and has examined a host of factors that can affect audit quality such as audit fees, abnormal audit fees, non-audit fees, auditor industry expertise, auditor tenure, auditor competition, auditor size, auditor office size, client importance, client pressure, and time budget pressure, among other issues. Asthana and Boone (2012) examine the impact of abnormal audit fees on audit quality, as measured by discretionary accruals and meeting/beating of analysts' earnings forecasts. They find evidence of deterioration in audit quality as the magnitude of negative abnormal audit fees becomes larger. Ettredge, Fuerherm, and Li (2014) examine the

impact of audit fee pressure on audit quality during the 2008-2009 recession and document a similar result, that fee pressure is negatively associated with audit quality. Geiger and Rama (2003) find that after controlling for financial distress, higher audit fees are associated with a greater likelihood of an auditor issuing a going concern opinion. Lobo and Zhao (2013) and Blankley et al. (2012) show that larger positive abnormal audit fees are associated with a lower likelihood of a subsequent financial restatement. Similarly, Larcker and Richardson (2004) find that larger positive audit fees are associated with smaller accruals and Eshleman and Guo (2014) find that companies that pay larger abnormal fees to their auditors are less likely to utilize discretionary accruals to meet or beat consensus earnings forecasts by analysts. Srinidhi and Gul (2007) document that larger audit fees are associated with superior accruals quality. Together, these studies suggest that larger audit fees have a favorable impact on audit quality.

In contrast, Antle et al. (2006) model jointly the determination of audit fees, non-audit fees, and abnormal accruals and find the opposite result—that larger audit fees are associated with higher abnormal accruals (lower audit quality). Hoitash et al. (2007) find a similar result for both audit fees and abnormal audit fees. Choi, Kim, and Zhang (2010a) examine separately the impacts of positive and negative abnormal audit fees on audit quality. While they do not find a significant association between negative abnormal audit fees and audit quality, they do find that positive abnormal audit fees are associated with larger accruals (lower audit quality).

Overall, despite the discordant findings in this stream of literature, a prevailing conclusion of many of the studies is that audit quality tends to be compromised when audit fees are positioned at either the very low end or very high end of the spectrum. Given that engagement-specific audit fee pressure has been shown to have an adverse effect on audit quality, we conjecture that, as another source of fee pressure, city-level audit fee pressure, too, will detrimentally affect audit quality. We believe that there are multiple mechanisms through which this can take place and conjecture that city-level fee pressure can have contagion effects that permeate the quality of audits in a city—even audits that are not plagued by fee pressure.

City-Level Fee Pressure and Audit Quality Hypothesis

Our study draws upon the earlier research of Francis and Michas (2013) and Diaz et al. (2017) who examine contagion effects of audit quality with respect to companies' financial reporting. Diaz et al. (2017) investigate the financial reporting quality of clients of Big N audit offices located in the same MSA and find a correlation among their reporting quality. Specifically, they document a phenomenon whereby an "overstatement of earnings for one firm" is associated with "higher abnormal accruals for another firm in that same year, where both firms' auditors are located in the same MSA." The authors conclude that this is driven by contagion in practices between auditors and that auditor competition is one mechanism through which contagion effects occur. A similar contagion effect has been documented in the performance of audits within offices (Francis and Michas 2013) and there is evidence that the capital markets perceive contagion effects within an industry, as evidenced by share price declines in response to restatements (Gleason et al. 2008). Several reasons lead us to believe that city-level fee pressure will impact audit quality vis-à-vis contagion effects.

First, auditors may be inclined to reduce the scope of their audits, which would impair their *ability* to detect misstatements. Auditors who face high levels of fee pressure have incentives to cut costs and reduce audit hours (Houston 1999; Bierstaker and Wright 2001). Even if a particular client is not exerting fee pressure, auditors might reduce the scope of an audit to make up for lost profitability on other engagements. Auditors who are operating in high-fee-pressure cities are likely to experience fee pressure on at least some of their engagements. A component of partner compensation is often dependent upon engagement profitability and it is widely known that public accounting firms monitor time budget variances and engagement realization metrics, creating an emphasis on cost control (Gist and Davidson 1999; Ettredge et al. 2008). Target realization percentages are set at the individual engagement level. Audit personnel who are aware of targeted realizations not being met on other engagements might try to come in under budget to help offset losses and/or reduced profitability on other engagements in the office, particularly if there is overlap among the individuals who are supervising them and evaluating their performance. Auditors who have been personally responsible for budget overruns on other

engagements may especially feel obliged to come in under budget. In high-fee-pressure environments, audit firms have a propensity to establish unrealistically low time budgets (Houston 1999). Thus, it would not be surprising for auditors to have a predisposition to go over budget.

Prior research supports our conjecture that auditors can and do feel pressure to make up for budget overruns by improving efficiency in other audit areas. In a survey of Big-Eight audit personnel in Texas, Alderman and Deitrick (1992) find that 69 percent of staff auditors, 52 percent of audit seniors, 34 percent of managers, and 19 percent of partners perceived a need to save time in another area of an audit if they went over the allotted time budget in one audit area. This corresponds to almost half of the survey respondents, overall. We posit that auditors will apply this line of reasoning and that the effects of time pressure will spill over to other audits.

A further reason why auditors may intentionally limit the amount of time spent on procedures is to demonstrate efficiency in an effort to overcome poor performance evaluations received on previous audits due to time budget overruns. Even lower-level auditors who are not particularly concerned with engagement economics would have strong incentives to come in under budget and demonstrate that they can work efficiently if they have fallen under criticism for exceeding times budgets on other recent engagements (or have witnessed other auditors being critiqued for doing so). Such reductions in audit scope would directly impact audit quality.

A related stream of research links time pressure to undesirable audit behaviors/outcomes. McDaniel (1990) conducts an experiment that evaluates the joint effects of time pressure and audit program structure on audit outcomes and finds that “auditors’ processing accuracy,” the sufficiency of their samples, and the overall effectiveness of audits declines as time pressure intensifies. Other studies (e.g., Alderman and Deitrick 1982; Kelley and Margheim 1990; Carcello et al. 1996) find that auditors engage in more dysfunctional behaviors when confronted with

greater client pressure and/or time budget pressure.[4] High-fee-pressure environments accentuate incentives to engage in dysfunctional behaviors and audit quality-reducing acts.

Earlier research shows that *fee pressure* specifically exacerbates *time pressure* on engagements and adversely affects audit quality. In an experiment that manipulates the levels of client risk and client fee pressure, Houston (1999) finds that when auditors are faced with greater *fee* pressure, they budget fewer audit hours for riskier clients and are less responsive to risk in regards to their planned procedures. Fee pressure hinders their ability to perceive greater levels of inherent risk that are present. Bierstaker and Wright (2001) conclude that client fee pressure and pressure from the engagement partner to improve efficiencies on an audit appear to be substitutable in that they have equivalent effects on planned audit procedures. In their experiment, even if auditors are simply told that the fee for an engagement is lower and the partner does not explicitly comment on how the engagement team may be able to improve audit efficiencies, audit planning decisions reveal that auditors are still sensitive to client fee pressure, as indicated by a reduction in planned audit tests. Bierstaker and Wright (2001) conclude that awareness of client fee pressure alone can trigger auditors to behave as if they were specifically instructed to improve audit efficiencies. In a high-fee-pressure environment, auditors may face implicit incentives/pressure from superiors to reduce the scope of engagements to compensate for the reduced profitability of other engagements, even if a particular client is not imposing intense fee pressure. Audit scope restrictions will impede auditors' ability to detect material misstatements. In summary, earlier research demonstrates that 1) audit fee pressure tends to increase time budget pressure and 2) time pressure is harmful to audit quality. We posit that city-level fee pressure will affect audit quality adversely vis-à-vis scope limitations resulting from time pressure.

A second and related mechanism through which city-level audit fee pressure may impact audit quality is through increased *emphasis* on audit efficiency and efficiency-related metrics to

[4] Examples of such behaviors are pre-mature audit sign-offs, under-reporting of audit hours worked, and audit quality-reducing behaviors.

evaluate performance, which could reinforce and exacerbate the problems discussed earlier. The timely completion of audit work within budget has consistently been a component of the performance appraisal of audit personnel (Fleming 1980; Alderman and Deitrick 1992). Alderman and Deitrick (1992) find in their survey that adherence to time budgets is perceived to have a significant impact on job performance, as indicated by more than 51 percent of the respondents to their survey. They find that 66 percent of staff, 47 percent of seniors, 47 percent of managers, and 25 percent of the partners in their survey indicate that they agree or strongly agree that compliance with time budgets significantly affects job performance. Their survey also indicates that 58 percent of the respondents perceive time pressure as a cause for turnover among audit staff and seniors. Fleming (1980) surveyed one office of each of the 13 largest accounting firms at the time about their approach to budgeting. All of the ten responding firms indicated that completion of work before deadlines was an aspect of their performance evaluations. Given that efficiency metrics are already important, we conjecture that their emphasis will be even more prominent in high-fee-pressure environments and that the salience of such metrics could encourage auditors to reduce the scope of audits or sign off on procedures prematurely. This, would lead to lower audit quality and clients being able to manage earnings to a greater extent.

A third mechanism through which city-level audit fee pressure may affect audit quality is through auditors' *willingness* to constrain earnings management activity. Earlier audit fee research (e.g., Casterella, Francis, Lewis, and Walker (2004)) has established that audit fees are inversely related to client bargaining power. When auditors have an inferior bargaining position, we expect them to be more likely to acquiesce to client demands, leading to lower reporting quality. Asthana and Boone (2012) argue that abnormally low audit fees portend inferior auditor bargaining power and show that they have a deleterious effect on audit quality. They find that weaker auditor (higher client) bargaining power, as measured by the magnitude of negative abnormal audit fees, is associated with higher levels of earnings management and that this effect is amplified as client bargaining power increases. Other studies concur. Barnes (2004) demonstrates analytically that auditor bargaining power affects the direction of going concern reporting decision errors, illustrating that weaker auditor (greater client) bargaining power has a harmful effect on audit

quality. Nagy (2005) reports that forced auditor changes away from Arthur Anderson were accompanied by greater improvements in financial reporting quality when clients had weaker bargaining power. Higher city-level fee pressure not only signifies greater client bargaining power, but it also encourages retention of aggressive clients that may not be particularly profitable, as it becomes increasingly difficult for auditors to recover initial investments made in learning new clients. Thus, we expect that as city-level fee pressure increases, auditors' *willingness* to constrain earnings management behavior will decline.

Finally, some theories advanced in the psychology and management literatures—social learning theory and emotional contagion theory—also offer insights regarding mechanisms through which audit contagion effects may occur. Social learning theory suggests that humans imitate behaviors displayed by others in their environment and that various factors such as the observation of rewards and punishments for either those modeling the behaviors or the anticipation thereof by the observers can impact whether or not behaviors will be mimicked (Bandura, 1965). Based on social learning theory, we posit that auditors will tend to imitate dysfunctional audit behaviors displayed by others in their local offices to the extent that they observe or anticipate such behaviors being rewarded (or opposite/alternative behaviors being punished). Emotional contagion theory suggests that transfer of moods can occur in a team setting (Barsade, 2002). Thus, the stress and negative affect resulting from audits conducted under fee pressure may spill over to other audits sharing team members in common.

We expect these effects and the other effects discussed above to occur for *both* large and small Big Four offices. However, city-level fee pressure may not uniformly affect the behavior of auditors in small and large offices to the same degree. We conduct both pooled and separate regressions to evaluate the effects of city-level fee pressure on small and large Big Four offices[5] and present the following hypotheses:

[5] This allows the sign and magnitude of the coefficients on the city-level fee pressure to vary. A further advantage of this regression approach is that it does not constrain the coefficients on the control variables in the regressions to be the same across small and large Big Four offices. Further, by examining the impacts on small and large Big Four offices separately, we reduce the likelihood of confounding variables related to city/office size impacting our results.

H1a: Overall, there will be a positive association between city-level fee pressure and earnings management (restatements) among Big Four offices.

H1b: There will be a positive association between city-level fee pressure and earnings management (restatements) among small Big Four offices.

H1c: There will be a positive association between city-level fee pressure and earnings management (restatements) among large Big Four offices.

City-Level Fee Pressure and Auditor Office Size

There are several reasons why the magnitude of the effect of city-level fee pressure might vary based on Big Four auditor office size. These reasons could relate to market attributes or to attributes of the audit offices or clients within these markets. We discuss these possibilities here. First, there may be systematic differences, ex-ante, in the level of fee pressure that tends to be present in the markets in which large and small offices are located. Our ability to detect an effect of city-level fee pressure on audit quality will be dependent on the existence of citywide fee pressure in the first place and this may not be constant across the small and large office markets. Second, city-level fee pressure may affect large and small offices differently due to fundamental differences in their structural features such as their clienteles, performance evaluation criteria, or office structures. If large offices service more complex clients, they may be more adversely affected by fee pressure, experiencing a sharper decline in audit quality compared to small offices serving fewer complex clients. Also related to differences in clienteles, the performance metrics emphasized in small and large offices may differ and this may have a countervailing effect. If larger offices service clients that are more complex, they will have to compete more on the basis of audit quality differentiation and, thus, their performance evaluation processes are likely to reward auditors who are able to execute complex audit tasks. Meanwhile, smaller offices may reward efficiency if their audit tasks are more homogenous and they are forced to compete more on price. This could reinforce dysfunctional audit behaviors in the face of fee pressure.

A further dimension along which small and large offices may differ concerns the extent of overlap in personnel and interactions across engagement teams. City-level fee pressure contagion effects are likely to be most pronounced where this is greater overlap among personnel across audit

teams and/or greater interaction between audit teams. Large offices are often organized along industry lines and their audit personnel tend to specialize in particular industries. This can result in auditors serving on the same teams repetitively or interacting repetitively with small subsets of individuals in the office who service the same industries and having fewer interlocks and interactions with others. In smaller offices, there tends to be less specialization along industry lines and the smaller personnel headcounts often lead to greater interlocks among the audit engagement teams in an office. Audit personnel in the small office environments may interact more closely with one another (even if they do not share engagements in common). In the smaller markets, there may also be more extensive social ties/interactions between auditors across firms, due to the smaller city sizes and the tendency for small offices to recruit and hire more from the local geographic area rather than doing such on a national level. In these environments, auditors are more likely to be acquainted with personnel from the other audit firms. Together, these structural features could make contagion effects stronger in small offices.

Third, to the extent that large offices have greater bargaining power with clients or are able to spread their fixed costs over a large volume of engagements, they may be more insulated from the effects of fee pressure than smaller offices. However, economies of scale and the ability to spread fixed costs over many engagements may actually facilitate the underpricing of engagements. If “low-balling” practices are more rampant in large offices than small offices that have less ability to absorb the fee discounts, it is unclear as to which group of offices would be impacted more adversely by fee pressure.

Closely related to bargaining power, large and small offices may differ in their willingness and/or ability to constrain earnings management when confronted with a given level of fee pressure. The cost of having failed audits may be higher for large offices, as they have deeper pockets and their clientele tends to consist of larger companies. Reynolds and Francis (2001) argue that the potential litigation costs that could ensue from failed audits of large companies serve to incentivize auditors to maintain high audit quality for such engagements and they document that auditors report more conservatively for and better constrain the accruals of their offices’ larger

clients. Several studies indicate that Big N auditors tend to be associated with higher quality audits (e.g., Palmrose 1988; Becker et al. 1998; Khurana and Raman 2004; Behn et al. 2008; Francis and Yu 2009) and that larger Big N offices tend to perform higher quality audits (Francis and Yu 2009; Choi et al. 2010b; Francis et al. 2013).[6] An implication is that larger offices would seem to have greater capability to conduct high quality audits and/or stronger incentives to protect their reputations and execute high quality audits. If so, they may be more resistant to the effects of city-level fee pressure than small offices. We are aware of only one study that examines how the effects of audit fee pressure may differ for large versus small offices. Ettredge et al. (2014) investigate whether the impact of audit fee pressure on audit quality during the 2007-2009 Recession differs for large and small offices, but they do not find a statistically significant difference.[7] However, their analysis focuses on a narrow time interval and pools Big Four and non-Big-Four firms. Thus, it is unclear how their results might change if the analysis was restricted to Big Four firms.

A fourth reason why large and small offices may react differently to fee pressure is that the salience of local fee pressure to auditors may not only be based on the level of fee concessions in dollars but it may also be an increasing function of the number of local clients that are exerting pressure on the audit firms to restrain fees. In larger city markets, auditors may receive pressure from numerous clients. As the number of companies in a city (particularly, the number of companies in a city within an industry or related industries) increases, there may also be greater potential for communication and coordination among companies, facilitating the application of fee pressure. Further, auditors' awareness of and sensitivity to local fee pressure may also be increasing in the number of clients that are present in a city. Idiosyncratic factors can influence the pricing of audits, such as personal relationships, skill at negotiating, etc. These nuances can be difficult to observe, creating ambiguity about whether audits are underpriced due to fee

[6] More recent research that examines the "Big N" effect after controlling for client characteristics and attempting to address the endogeneity of auditor choice finds mixed results regarding whether or not Big N auditors are actually associated with higher quality.

[7] They measure office size based on total office revenue. They split offices at the median based on their total revenue and define large offices as those that have above-median total revenue and small offices as those that have below-median total revenue.

pressure from clients or due to concessions that auditors are offering to make (e.g., due to personal relationships or benefits that accrue from client name brand recognition). In smaller markets, auditors may not necessarily attribute a few fee discounts to fee pressure. If fee pressure becomes more apparent to auditors in large markets, it would be expected to have a greater impact on the large Big Four offices.

Based on the aforementioned factors, we investigate whether the impact of city-level fee pressure differs across the large and small Big Four offices. Given the potential for countervailing forces, we do not predict a directional effect. Therefore, we present the following hypothesis in null form:

> **H2: There will be no significant difference in the effect of city-level audit fee pressure on the level of earnings management activity (restatements) of audit clients of small versus large Big Four offices.**

METHODOLOGY

Sample Selection for the Audit Fee Model

The initial sample for our study was formed by intersecting data in Audit Analytics and Compustat from 2000-2018.[8] Auditor office information in Audit Analytics first became available in 2000. Due to the inclusion of several lagged variables in our models and the limited availability of auditor office information prior to SOX, we restrict our analyses to the post-SOX period.[9] As there is variability in the timing of firms' implementation of the SOX Section 404 requirements, we restrict our sample to firms' fiscal year 2005 and later. Therefore, our audit fee estimation is based on audit fee data from Compustat fiscal years 2005-2018. We restrict the audit fee estimation sample to audits that were performed by Big N auditors in order to maintain comparability among auditors and among clients. We further restrict the sample to audits where the principal auditor signing the audit report was a Big Four office located in the U.S. and we remove foreign-incorporated companies from the sample. Finally, we exclude financial and utility

[8] We end the sample in 2018 to avoid confounding effects of the COVID-19 pandemic.
[9] Since some of the control variables contain lagged values, our model includes data points measured prior to 2005.

companies and companies in regulated industries. We do this by dropping firms belonging to SIC codes 4,400-4,999 and 6,000-6,999. This leads to 10,833 observations in our audit fee model. Table 1 explains the sample attrition that results from each of the restrictions.

Sample Selection for the Earnings Management and Restatement Models

In the second stage of our analysis, where we estimate earnings management models and restatement models, we impose the same set of sample restrictions along with some further restrictions. First, we restrict our sample to firm years that did not involve an auditor change. Second, in order for the clients of any local Big Four office to enter the sample during a given year, we require that the office be performing a minimum of three public company audits during that year. This ensures that the signing office does not exist solely to serve one or two public audit clients, which could foster an unusually high level of economic dependence on the clients. Third, based on our measurement of city-level fee pressure, we automatically drop companies whose auditors are located in cities in which they are the *only* Big Four firm having a local presence because there are no other engagements upon which to base the city-level fee pressure measure. As a consequence, our sample reflects city-environments in which a certain minimum level of competition is present. Finally, we drop companies in the extractive industry from the earnings management analyses.[10] Table 1, Panel B presents the sample selection for the earnings management and restatement models.

We begin by pooling small and large Big Four firms together in our regression analysis. Then, we bifurcate the sample of firms based on auditor office size by splitting the sample at the median based on the number of publicly listed clients in the offices and we conduct separate regressions for the two office groups.[11] Below-median offices are characterized as "small offices" and above-median offices are referred to as "large offices." We would like to highlight this research design choice for three important reasons. First, this research design allows the coefficients on city-level

[10] Examples of such companies include mining companies and oil and gas companies.

[11] Offices are defined as small versus large offices with respect to the entire sample from Audit Analytics as it appears prior to removal of observations for missing data points, rather than with respect to the offices in the same city. Therefore, all offices within a city could be potentially be classified as "large offices," for example.

fee pressure and other variables that affect earnings management to differ across the sub-samples. Second, conducting separate analyses for the two office groups reduces within-group variation in attributes that have the potential to influence both audit fees and audit quality, allowing comparisons among audits occurring in environments that are more similar. This helps to minimize the likelihood of a confound when interpreting our results.[12] Finally, this analysis allows us to determine whether any results observed for the pooled sample of small and large Big Four offices are driven by one of the two sub-groups.

The analysis is inherently restricted to public company audits due to the availability of audit fee information and other company data. We further restrict the sample to Big N audits to better hold constant the level of training and resources available to auditors so as to avoid confounding effects. Thus, variables such as the number of office clients, number of audit clients in a city, and city-level fee pressure will not capture any private company or non-Big N audit engagements performed in the same office or city.

Measurement of City-Level Fee Pressure

Our measurement of the test variable, city-level fee pressure, (*city_level_fee_pressure*) is based on a two-step process that involves the estimation of an audit fee model to detect fee pressure since audit costs are unobservable.[13] First, we estimate a log-audit fee model following a similar approach to Blankley et al. (2012) and Choi et al. (2010a) and calculate the residuals from this model (Equation 1). We obtain the residuals for all observations from the model. A negative residual indicates that the actual audit fees were lower than the model-based prediction, whereas a positive residual indicates that the actual audit fees charged were higher than the

[12] To the extent that the cities in which large and small Big Four offices are located differ in a systematic way such that certain city attributes coincide with high or low fee pressure and these same attributes also affect audit quality, we could find a spurious correlation between city-level fee pressure and audit quality. For instance, if the labor market characteristics in small and large cities differ, this could affect both city-level fee pressure and audit quality.

[13] Ideally, we would have data on audit costs to ascertain fee pressure. However, since the data are not publicly available, we estimate a cross-sectional audit fee model based on known audit cost drivers to estimate a "normal" level of fees for an engagement based on size, risk, complexity, and other engagement characteristics that have been established as audit fee determinants in the literature.

model-based prediction. We then define city-level fee pressure as the percentage of the total audit engagements in a given year performed by *other* Big Four offices in the same city that have a negative residual from the audit fee model.[14] As noted earlier, we calculate this percentage for each *city* that has at least two Big Four auditors and at least three public company audit engagements in a given year. City-level fee pressure variable ranges from zero to one. It takes on a value of zero when all audits performed by other Big Four firms in a particular city have positive residuals and it takes on a value of one when all audits conducted by other Big Four auditors in the city have negative residuals, an indication of fee pressure. The audit fee model controls for the size, risk, and complexity of engagements, along with the cost of living in the auditor's city and other auditor and client characteristics and is described below.[15]

Audit Fee Model Used to Estimate Normal Audit Fees

We estimate normal audit fees for all companies in our sample using a log-audit fee model similar to those in Blankley et al. (2012) and Choi et al. (2010a). Our line of inquiry is similar in that we also seek to develop an estimate of abnormal fees for use in a second stage model that examines audit quality. The variables are discussed in more detail below. Our audit fee model includes nearly all of the Blankley et al. (2012) controls, several controls based on the Choi et al. (2010a) model, and some additional controls pertinent to our study. We define the dependent variable, *ln_audit_fee* as the natural logarithm of total *audit* fees paid to the auditor.

[14] Audit engagements are assigned to a particular city based on the city location of the Big Four office signing the audit report. Clients may be located geographically in different cities from the offices of the CPA firms performing their audits. The city-level fee pressure measure is calculated based on the geography of the auditor's office location because that is the city market in which the auditor primarily competes.

[15] It is possible that higher fees are charged due to the utilization of more qualified personnel for an engagement or due to excessive testing. We cannot observe the mix of personnel that participate in an engagement or the testing that was performed. We rely on our estimation of a cross-sectional audit fee model to obtain an expected fee for each engagement based on client size, risk, complexity, and other attributes. These factors, which are expected to be the primary underlying drivers for the choice of personnel to perform an engagement, are built into the model. We acknowledge the possibility that the fees for an individual engagement could deviate from expectation due to idiosyncratic reasons such as over-testing, a partner's negotiation skills, a client's name brand recognition, excess capacity in the office, etc. In the cross-section, the impact of such idiosyncrasies should be greatly reduced. We do not have any reason, ex-ante, to expect that any particular firm or partner's engagements will be impacted in any particular direction by these factors. Idiosyncratic factors such as these would only be expected to add noise to our model and therefore bias against finding significant results. When *busy* is equal to one, the audit must be performed in the peak busy season, and the auditor is less likely to have excess capacity.

Following Blankley et al. (2012), we include the following controls with the variable names listed parenthetically: the natural logarithm of total assets as of the end of the year (*lnta*), the current ratio (*cr*), the ratio of current assets to total assets (*ca_ta*), the sum of accounts receivable and inventory as a proportion of total assets (*arinv*), return on assets (*roa*), current year losses (*loss*), the presence of foreign operations (*foreign*), merger & acquisition activity (*merger*), an indicator for whether a firm has a calendar-year-end (*busy*), the current ratio (*liquid*), leverage (*leve*), the ratio of intangible assets to total assets (*intang*), the logarithm of the number of business segments (*bus_seg*), a going concern opinion indicator (*going_concern*), and a material weakness opinion indicator (*material_weak*). With the exception of the current ratio (*cr)*, we expect all of these variables to load positively.[16] Following Choi et al. (2010a), we add controls for the number of geographic segments (*ngs*), the square root of the number of employees (*employ*), long-term debt issuances (*issue*), the presence of extraordinary gains or losses (*exord*), losses in the preceding fiscal year (*loss_lag1*), short auditor tenure (*short_tenure*), a firm's book-to-market ratio (*btm*), change in sales (*chgsale*), the presence or absence of pensions/post-retirement plans (*pension*), and audit report lag (*ln_replag*). With the exception of *short_tenure*, we expect these variables to load positively. We expect *short_tenure* to load negatively, as prior research suggests that auditors frequently discount engagements during the early years. We supplement the Blankley et al. (2012) and Choi et al. (2010a) variables with two additional controls that could impact firms' incentives to manipulate earnings—demand for external financing (*demfin*) and financial distress (*altz*), (measured by Altman-Z Score) and expect positive loadings. We also include an indicator variable, *dsox* to control for whether or not an audit took place in the years during or immediately after implementation of Section 404 of the Sarbanes-Oxley Act. Following Asthana and Boone (2012), we code the *dsox* indicator as 1 if the audit took place during fiscal years 2004-2009 and 0 otherwise. Due to the increased workload for auditors and increased regulatory scrutiny of financial statements, we expect audit fees to be especially high during these years.

[16] Blankley et al. (2012) find a positive association between the current ratio and audit fees. However, a higher current ratio could signal lower risk, in which case we would expect a negative association. Meanwhile, it could also signal greater inventories, which may increase the audit effort required, resulting in a positive association.

In addition, we augment the model further by including several city-level control variables pertinent to this study that we expect will influence audit pricing. One such variable, *rppall* is a control for the overall cost of living in the city in which an auditor's office is located. It is based on a Regional Price Parity (RPP) index (for all goods and services combined) that is available from the Bureau of Economic Analysis and we expect it to load positively.[17] We center *rppall* since the index takes on only non-negative values. We also control for the (square root of) the number of SEC clients in the city as a proxy for the size of the local audit market (*city_clients*) and control for audit practice growth opportunities by including the percentage change in the number of SEC registrants at the city-level (*city_SEC_client_growth*). We do not predict signs for the coefficients on these latter two variables, as larger markets may confer greater bargaining power to auditors but may also increase economies of scale, allowing auditors to charge lower fees.

Finally, we include city fixed effects in our audit fee models, consistent with Blankley et al. (2012), to mitigate the risk that we could incorrectly attribute to city-level pressure audit quality effects that are really driven by concurrent city-level characteristics. The city fixed effects are based on the city in which the opinion signing auditor's office is located. It is possible that city-level financial, economic, political, social, religious, or other characteristics impact audit fees. While we attempt to control for several city-level characteristics, as discussed in the following paragraphs, including city-fixed effects helps address the risk of mismeasurement of fee pressure due to the omission from our models of any innate city-level characteristics that affect audit fees. Fixed effects are helpful for controlling for characteristics that are relatively stable over time and have similar impacts on the dependent variable (audit fees) across time. There are many city characteristics (e.g., culture, education level, corruption, political attributes, religiosity), that are difficult to observe and/or whose measurement is challenging or highly subjective, yet such characteristics are likely to be fairly stable over time and may impact audit pricing. Therefore, we address this issue by including city fixed-effects.

[17] The regional price parities index captures the price level of all goods and services (rents, utilities, and other) at the MSA level as a percentage of the price index level for all goods and services measured at the national level.

We also include controls for several auditor office-level and engagement-level characteristics. The office-level characteristics include the (square root of the number of) office clients (*office_clients*), auditor market share based on the percentage of the total publicly-listed companies in the city that the office audits (*perc_sec_audited*), auditor office growth (*office_growth*), and office-wide restatement rates (*office_restate_rate)*. The engagement-level characteristics include auditor industry expertise (*ind_exp_city_nat*), auditor changes (*auditor_change*), short auditor tenure (*short_tenure*), and recent past history of restatement by the client (*client_restate_past3*). We expect auditor industry expertise and recent client history of restatements to be positively associated with audit fees and auditor changes (first year audits) to be negatively associated with fees. We do not predict signs on the coefficients of the remaining office-level and engagement-level control variables. Larger office size, office growth, and market share could enhance auditor bargaining power but they could also confer greater economies of scale. Higher office-wide restatement rates could impair auditor reputation, leading to fee discounts, but they could also trigger higher audit fees if clients require greater attention.

Due to the importance of the audit fee model residuals in defining the city-level fee pressure measure, we have chosen to include a strenuous set of control variables in the effort to control for auditor, client, and city-related factors that could influence what would be considered a "normal" or baseline level of audit fees for an engagement performed in a particular city. It is important to establish a proper baseline to ascertain whether engagement fees are indicative of fee pressure. Accordingly, we err on the side of estimating a more "inclusive" audit fee model.

We winsorize all continuous variables at the 99th percentile except the city and auditor office client variables, which are measured using a square root, and percentage variables. Detailed variable definitions are provided in the Appendix. We use the following log-audit fee equation to estimate normal audit fees:

$$ln\_audit\_fee_{i,t} = \beta_0 + \beta_1 lnta_{i,t} + \beta_2 cr_{i,t} + \beta_3 ca\_ta_{i,t} + \beta_4 arinv_{i,t} + \beta_5 roa_{i,t} + \beta_6 loss_{i,t} + \beta_7 foreign_{i,t} + \beta_8 merger_{i,t} + \beta_9 busy_{i,t} + \beta_{10} lev_{i,t} + \beta_{11} intang_{i,t} + \beta_{12} bus\_seg_{i,t} + \beta_{13} going\_concern_{i,t} + \beta_{14} material\_weak_{i,t} + \beta_{15} ngs_{i,t} + \beta_{16} employ_{i,t} + \beta_{17} issue_{i,t} + \beta_{18} exord_{i,t} + \beta_{19} loss\_lag1_{i,t} + \beta_{20} liquid_{i,t} + \beta_{21} short\_tenure_{i,t} + \beta_{22} btm_{i,t} + \beta_{23} chgsale_{i,t} + \beta_{24} pension_{i,t} + \beta_{25} ln\_replag_{i,t} + \beta_{26} city\_clients_{i,t} + \beta_{27} office\_clients_{i,t} + \beta_{28} ind\_exp\_city\_nat_{i,t}$$

$+ \beta_{29} city\_client\_growth_{l,t} + \beta_{30} client\_restate\_past3_{l,t} + \beta_{31} demfin_{l,t} + \beta_{32} altz_{l,t} + \beta_{33} auditor\_change_{l,t} + \beta_{34} perc\_sec\_audited_{l,t} + \beta_{35} office\_restate\_rate_{l,t} + \beta_{36} office\_growth_{l,t} + \beta_{37} dsox_{l,t} + \beta_{38} rppall_{l,t}$ + industry dummies $_{l,t}$ + city dummies $_{l,t} + \varepsilon_{l,t}$ (1)

Measurement of Dependent Variables for the Earnings Management and Restatement Models

We utilize four separate measures of earnings management (Percent Operating Accruals, Traditional Operating Accruals, and Traditional Total Accruals, as defined in Hafzalla et al. (2011), and a restatement measure) as our dependent variables to evaluate the impact of city-level fee pressure on audit quality.[18] The calculation of the dependent variables is explained below.

Measurement of Percent Operating Accruals, Traditional Operating Accruals, and Traditional Total Accruals

We calculate Percent Operating Accruals (*POA*) following Hafzalla, Lundholm, and Van Winkle (2011). The numerator is defined as net income less net cash flow from operations for the year. The denominator is defined as the absolute value of net income. This measure captures the relative extent to which earnings are comprised of accruals as opposed to cash. Hafzalla et al. (2011) argue that their percent accruals measure is superior to traditional accruals measures because it captures the "composition of earnings—the relative amounts of cash and accruals" contained in reported earnings. Unlike traditional accruals measures that are heavily influenced by firm size, these measures are insensitive to size, Hafzalla et al. (2011) contend.[19]

For robustness and purposes of comparison, we also examine the impact of city-level fee pressure on Traditional Operating Accruals (*TOA*) and Traditional Total Accruals (*TTA*), following the respective definitions in Hafzalla et al. (2011). Traditional Operating Accruals is defined as net income before extraordinary items minus cash flow from operations, scaled by average total

[18] The Traditional Operating Accruals measure is based on Hafzalla et al. (2011) and Kraft, Leone, and Wasley (2006). The Traditional Total Accruals measure is based on Hafzalla et al. (2011) and Richardson, Sloan, Solimon, and Tuna (2005).

[19] In their paper, Hafzalla et al. (2011) demonstrate that their percent accruals measures are not sensitive to firm size.

assets.[20] Traditional Total Accruals is defined as the quantity of net income before extraordinary items, less net dividends/distributions to/from shareholders, plus the increase in the cash balance, then scaled by average total assets. We winsorize all three variables at the 99th percentile after computing them.

Measurement of Restatements

In addition to examining the impact of city-level fee pressure on earnings management, we also examine how city-level fee pressure impacts the likelihood of future financial restatements. We code the restatement variable as one if a company had reported financial information during a given fiscal year that was subject to a future restatement and 0 otherwise. All restatements are identified from the restatements database contained within Audit Analytics.

Models Used to Estimate the Impact of City-Level Audit Fee Pressure on Earnings Management and Restatements

We run ordinary least squares (OLS) regressions to estimate the effect of city-level fee pressure on the earnings management measures. We employ logistic regression analysis to estimate the impact of city-level fee pressure on the likelihood of a subsequent restatement. When estimating both sets of models, we use similar sets of control variables since many factors associated with earnings management are expected to influence the likelihood of a restatement.

When selecting the control variables for our restatement model, we include virtually all of the same controls that are used by Blankley et al. (2012) who examine the association between abnormal audit fees and restatements.[21] In our earnings management models, we continue to use the same set of control variables with three exceptions—we omit two controls that are functions of the dependent variables. In both sets of models (the restatement models and earnings management models), we omit the material weakness control variable, as we focus on

[20] The FASB eliminated the extraordinary items section of the income statement after December 15, 2015, but the Compustat Database continued to report the data item throughout our sample period, which ends in 2018.

[21] One of the two exceptions is that we create separate variables for negative abnormal engagement fees and positive abnormal engagement fees, allowing them to have different coefficients. Blankley et al. (2012) use one variable for negative abnormal audit fees. The other exception is that we exclude their material weakness variable.

latent variables that affect earnings management/restatements and we supplement the Blankley et al. (2012) controls with several of our own that we believe are important based on the phenomenon that we are examining.[22] First, we discuss the control variables that the models share in common. Then, we discuss the control variables that are model-specific.

We include the following control variables in both sets of models based on the Blankley et al. (2012) study: the natural logarithm of total assets as of the end of the year (*lnta*), leverage (*leve*), a firm's market-to-book ratio (*mtb*), and a proxy for the use of financing (*fin)*, which is defined as the sum of the cash proceeds from issuances of long-term debt, common stock, and preferred stock, deflated by total assets. Also consistent with Blankley et al. (2012), we control for free cash flow (*freec*), which is defined as net operating cash flow less average capital expenditures for the year, scaled by total assets lagged one fiscal year.

Finally, the other two control variables based on the Blankley et al. (2012) restatement model are a control for profitability (*epr)*, which is defined as income from the firm's continuing operations scaled by its end-of-year market capitalization, and *epsgrow*, which is an indicator variable coded as one if the company experienced positive growth in earnings for four quarters in a row and coded as zero otherwise. In the earnings management models, we remove these two control variables due to their mechanical associations with the dependent variables.

We supplement the control variables used by Blankley et al. (2012) with several additional controls. Based on prior literature that examines earnings management and/or firm characteristics associated with incentives to manage earnings (e.g. Choi et al. 2010a; Asthana et al. 2019), we control for sales volatility over the past three years (*sales_vol3*), number of business segments (*nbs*), number of geographic segments (*ngs*), the proportion of the past three years in

[22] Including material weaknesses as a control would "build in" an expectation of a certain level of earnings management/incidence of restatements attributable to a material weakness in our models and auditors often conclude that there are material weaknesses a *result* of uncovering material misstatements in the financial statements. Audit quality can affect the identification of a material weakness and our dependent variables are proxies for audit quality.

which a firm experienced a loss (*past3_loss_prop*), mergers & acquisitions activity (*ma_activity*), lagged return on assets (*roabex_lag1*), cash flow volatility (*sc_oancf_vol3*), demand for external financing (*demfin*), and financial distress (*altz)*, as measured by a company's Altman-Z score, based on Altman (1968). We include an indicator variable, *dsox* based on Asthana and Boone (2012) to control for whether a firm year observation stemmed from the period during or shortly after the implementation of SOX Section 404. Each of these variables is defined in detail in the Appendix.

An important control variable in our study is engagement-level fee pressure. We control for this by including the abnormal audit fee from the engagement at hand (the residual from the aforementioned audit fee model presented in Equation 1), similar to the approach taken by Asthana and Boone (2012), who use separate variables for positive abnormal fees and negative abnormal fees at the engagement level (*pos_ab_fee* and *neg_ab_fee*). This allows them to have different coefficients and avoids any presumption that they would have equal effects.

We also control for the following audit and/or city characteristics: auditor competition, (*herf_comp)*, which is based on the competition measure used by Newton, Wang, and Wilkins (2013), the auditor's local market share, (*perc_sec_audited*), based on percentage of SEC clients audited in the city, client importance, (*client_import_5perc*), as measured by whether or not a given client's audit fees constitute five percent or more of the total office audit fee revenue from public clients, auditor industry expertise (*ind_exp_city_nat*), growth in the local audit market, (*city_SEC_client_growth)*, as measured by the percentage change in number of SEC companies over the past year, whether the company has a non-calendar year-end (*non_calendar*), and whether the auditor had short tenure with the client (*short_tenure*). Variables are defined in the Appendix.

It is important to point to point out that other studies (e.g., Asthana et al. 2019; Newton et al. 2013, and Numan and Willekens 2012) have examined competition in the local audit market. Asthana et al. (2019) and Newton et al. (2013) specifically examine how local audit market

competition impacts audit quality. While we expect that city-level fee pressure will be related to the level of local competition among auditors, making it important to control for auditor competition, we believe that city-level fee pressure will also encapsulate the effects of many *additional* factors apart from competition that affect engagement pricing. For instance, many idiosyncratic factors such as personal relationships between auditors and management, auditor reputations in the local geographic area, auditor industry expertise, auditor tenure, an auditor's local reputation and market share, negotiating skills of audit partners, the presence or absence of excess capacity in local auditor offices, and other audit-related factors can impact the determination of fees and therefore contribute to or mitigate the level of fee pressure that is present in a city. Thus, higher levels of auditor competition in a city will not always lead to high fee pressure and high fee pressure can exist even absent high levels of competition. In an untabulated correlation analysis, we confirm this, as city-level fee pressure only has a positive univariate correlation of .047 with the Herfindahl Index measure of auditor competition and audit fees, themselves only have a positive correlation of .001 with the Herfindahl measure. In contrast with studies that examine competition, our city-level fee pressure focuses specifically on the level of local audit fee pressure to which auditors are subjected.

In the equation specified below, we estimate the impact of city-level fee pressure (*city_level_fee_pressure*) on audit quality using financial reporting quality measures as proxies for audit quality. The financial reporting quality measures encompass several earnings management and restatement measures, each of which was defined in the preceding section.
To examine how city-level fee pressure affects earnings management, we estimate Equation 2 for each earnings management measure using OLS regression analysis, except we omit *epr* and *epsgrow* as discussed earlier. To analyze the impact of city-level fee pressure on restatements, we estimate Equation 2 utilizing logistic regression analysis. We estimate Equation 2 for the pooled sample of large and small Big Four offices and also for each of the sub-groups.

$$\textit{Financial Reporting Quality Measure} = \beta_0 + \beta_1 \textit{city\_level\_fee\_pressure} + \beta_2 \textit{neg\_ab\_fee} + \beta_3 \textit{pos\_ab\_fee} + \beta_4 \textit{herf\_comp} + \beta_5 \textit{perc\_sec\_audited} + \beta_6 \textit{client\_import5perc} + \beta_7 \textit{ind\_exp\_city\_nat} + \beta_8 \textit{office\_growth} + \beta_9 \textit{city\_SEC\_client\_growth} +$$

β_{10}*short_tenure* + β_{11}*non_calendar* + β_{12}*sales_vol3* + β_{13}*nbs* + β_{14}*ngs* + β_{15}*past3_loss_prop* + β_{16}*ma_activity* + β_{17}*roabex_lag1* + β_{18}*sc_oancf_vol3* + β_{19}*lnta*+ β_{20}*leve* + β_{21}*mtb* + β_{22}*fin* + β_{23}*freec* + β_{24}*demfin* + β_{25}*altz* + β_{26}*dsox* + β_{27}*epsgrow* + β_{28}*epr* + ε (2)

EMPIRICAL RESULTS

First Stage Audit Fee Model

In the audit fee estimation, the signs on the control variables are virtually all consistent with those reported in previous literature. All of the control variables that we employ based on Blankley et al. (2012) and Choi et al. (2010a) share the same corresponding signs reported in their studies, except for *liquid, short_tenure, and dsox,* though *short_tenure* and *dsox* are not significant. Our restatement variable, *client_restate_past3*, an indicator for whether a client experienced a restatement during the past 3 years, is similar to the restatement measure used by Choi et al. (2010a), though it is measured a bit differently, and its coefficient is positive and significant, following expectation. The remaining control variables also have signs consistent with expectation. The controls for auditor industry expertise, material weaknesses, going concern opinions, audit report lag, auditor market share, and recent client restatement announcements all have positive and significant coefficients, consistent with expectation. The auditor office-wide restatement rate variable loads negatively, consistent with expectation but is not significant. All else being equal, auditor office size and office growth are significantly and negatively associated with audit fees. Meanwhile, the controls for short tenure and auditor changes (an indicator variable for first-year audit engagements) have positive but insignificant coefficients. We present the sample selection and descriptive statistics for the audit fee model in Table 2. The mean value of the dependent variable, the natural logarithm of total fees paid to the auditor is $7.389 million. 2.8 percent of firm-year observations in the sample received a going concern opinion from their auditor and 8.3 percent of firm-year observations had a material weakness reported by the auditor. 3.7 percent of firm-year observations involved an auditor change from the prior year. 7.2 percent of firm-year observations had short auditor tenure. The mean value for the square root of the number of auditor office clients was 5.108.

Regression results for the audit fee model are presented in Table 3. We ran one regression for the audit fee model, consisting of all audits by both small and large Big Four offices.

Impact of City-Level Audit Fee Pressure on Big Four Audit Quality

Using the residuals obtained from the audit fee model to calculate city-level fee pressure, (as defined earlier), we seek to determine whether city-level audit fee pressure has an incremental impact on audit quality, (as predicted by *H1a, H1b,* and *H1c),* after controlling for engagement-specific audit fee pressure and other factors known to influence audit quality. In Table 4, we tabulate descriptive statistics for the proportions of engagements that are subject to fee pressure in each city, measured on an annual basis, where fee pressure is indicated by a negative audit fee residual for an engagement. In tabulating the descriptive statistics, we include all engagements that were in the sample for the audit fee model and, thus, had a calculated audit fee residual, but we do not impose further sample restrictions.

We analyze the impact of city-level audit fee pressure on four commonly employed financial reporting quality measures – Percent Operating Accruals, Traditional Operating Accruals, Traditional Total Accruals, and restatements. First, we analyze the impact of city-level fee pressure on the overall quality of audits performed by Big Four offices as a whole (by pooling small and large Big Four offices in our regression analysis). Next, we analyze separately the impact of city-level fee pressure on the quality of audits performed by *small* and *large* Big Four offices by conducting separate regressions for the two groups of audit engagements. Descriptive statistics are presented separately for the two sub-samples in Table 5.

Comparing descriptive statistics of the clients of small and large offices, (based on T-tests that are not tabulated in the paper), most of the variables exhibit significant differences. We comment on some of the interesting ones here. We find that the mean level of city-level fee pressure is significantly higher for the smaller Big Four offices as is the incidence of non-calendar-year-end audits ($p<.01$). The incidence of client financial restatements, short auditor tenure, auditor changes, are also significantly higher for the smaller offices as are the mean levels of negative

abnormal audit fees (measured by their absolute value), positive abnormal audit fees, client importance, auditor competition (measured based on the Herfindahl index), auditor office-wide restatement rate, return on assets, leverage, earnings-to-price ratio (*epr*), free cash flow, and number of business segments are also significantly higher for clients of the smaller offices (all with p<.001) while sales volatility is significantly higher (p<.10).

However, the mean levels of auditor market share, auditor industry expertise, city growth (measured as the percentage change in the number of SEC clients in the auditor's city), cost of living, cash flow volatility, mean number of geographic segments, and the loss proportion for clients of the smaller offices are significantly lower (p<.001). The mean market-to-book ratio is also significantly lower for the smaller offices (p<.001).

To test Hypothesis 1a, we estimate pooled regressions for all Big Four offices to analyze the impact of city-level fee pressure on earnings management and restatements. In the pooled regressions, we find that city-level fee pressure is positively and significantly associated with all four dependent measures, consistent with H1a. The p-values are all less than 0.05, except for in the TOA model, where the p-value is equal to .098. In the restatement regression, city-level fee pressure is significant at the 1% level. The pooled sample regression results are presented in Table 6.

In order to test hypotheses 1b and 1c, we re-estimate the same regressions for the small and large offices separately. In the small office regressions, we find that city-level audit fee pressure (*city_level_fee_pressure*) is positively and significantly associated with higher levels of Traditional Total Accruals and subsequent financial restatements (both with $p < 0.1$). Together, these findings provide support for hypothesis 1b. City-level audit fee pressure lacks a significant association with the remaining dependent variables, as the p-values in the POA and TOA regressions are equal to 0.15 and 0.11, respectively.

Examining the results for the large offices, we find that city-level fee pressure is positively and significantly associated with Traditional Total Accruals ($p<.05$) and subsequent financial restatements ($p<.01$). City-level audit fee pressure is insignificantly associated with the remaining dependent variables (POA and TOA), as the p-values are .11 and .33, respectively. Overall, the results that we obtain when we examine the small and large Big Four offices separately are consistent with one another. Two of the regression results observed for city-level fee pressure in the pooled sample are no longer significant for either sub-sample when we partition the full sample into small and large offices. Thus, it appears that the significant results observed in the pooled sample are not driven by one particular group of offices. We attribute the lack of statistical significance on the city-level fee pressure variable in the separate small and large office POA and TOA regressions to a lack of power. The regression results for the small and large offices are both depicted in Table 7.

Examining the control variables in the pooled regressions, we find that the coefficients of *nbs* and *ngs* are each positive and significant in two of the regressions and *roabex_lag1* has a significant positive coefficient in three of the regressions. The *dsox* variable loads negatively and significantly in two regressions while *leve* loads negatively and significantly in three of them. Positive abnormal engagement fees (*pos_ab_fee*) loads positively and significantly in all regressions, while negative abnormal engagement fees (*neg_ab_fee*) has a positive and significant coefficient in three of the four regressions. Auditor industry expertise is only significant in the TOA regression, where it has a negative sign following expectation. Growth in the local audit market (*city_SEC_client_growth)* has a positive and significant impact in the TOA regression. The signs and significance of the remaining controls vary.

Examining the control variables in the small office regressions, we find in the Percent Operating Accruals (POA) regression, that *roabex_lag1, sc_oancf_vol3*, and *pos_ab_fee* are have positive and significant coefficients while *past3_loss_prop* and *freec* have negative and significant coefficients. In the TOA regression, *roabex_lag1* and *lnta* have positive and significant coefficients while *dsox, leve, freec*, and *demfin* load negatively and significantly. In the TTA regression, the

coefficients of *sales_vol3, nbs, ma_activity, roabex_lag1, lnta, fin*, *altz,* and *client_import5perc* are positive and significant while those of *office_growth_past3*, *short_tenure, leve*, and *demfin* are negative and significant. In the restatement regression, *ngs* and *epr* load positively and significantly.

Turning to the control variables in the large office regressions, we find in the POA regression that *roabex_lag1, sc_oancf_vol3*, and *altz* have significant positive coefficients and we find that *past3_loss_prop, fin,* and *freec* have significant negative coefficients. In the TOA regression for the large offices, we find that *city_SEC_client_growth, nbs, roabex_lag1,* and *lnta* load positively and significantly while *ind_exp_city_nat*, *past3_loss_prop*, *leve*, *fin*, *freec,* and *demfin* load negatively and significantly. In the TTA regression for the large offices, *pos_ab_fee, city_SEC_client_growth*, *nbs, ma_activity, sc_oancf_vol3, roabex_lag1*, *lnta, fin*, and *altz* all have positive and significant coefficients while the coefficients of *leve* and *mtb* are negative and significant. Finally, in the restatement regression for the large offices, we find that the coefficients of *perc_sec_audited, city_SEC_client_growth, sales_vol3*, and *roabex_lag1* are positive and significant while those of *client_import5perc, leve,* and *altz* are negative and significant.

Test for Differences in the Effect of City-Level Fee Pressure on Small Versus Large Big Four Offices

In order to test H2 and evaluate whether there are statistically significant differences in the impact that city-level fee pressure has on the earnings management and incidence of restatements of small versus large Big Four offices, we compare the coefficients in the small and large office regressions and conduct a statistical test based on Clogg, Petkova, and Haritou (1995). We observe that each of the corresponding coefficients on the city-level fee pressure variable are larger in magnitude than they are in the small office regressions. We find that the test statistic is negative but insignificant for the Traditional Operating Accruals Analysis, but we find that the Clogg et al. 1995 test statistic is negative and significant for all three of the remaining regression analyses: Percent Operating Accruals, Traditional Total Accruals, and restatements (Z=-4.806, Z=-

2.467, and Z=-17.843, respectively), indicating that city-level fee pressure has a greater impact on the large Big Four offices in these regressions. Overall, the results are consistent with the audit quality of both groups of Big Four offices being harmed by fee pressure, but the large offices being more significantly and adversely affected by city-level fee pressure compared to the small offices.

ROBUSTNESS

As a robustness test, we compute an alternative measure of city-level fee pressure and examine how the earnings management/restatement regression results are impacted. The alternative measure, *city_rel_free_pressure* is calculated as the mean value of the ratio of the natural logarithm of audit fees to the predicted value of the natural logarithm of audit fees obtained from the audit fee model for the audits performed by other Big Four auditors in the same city. This measure will be inversely related to city-level fee pressure, since the numerator is an actual fee-based measure and the measure is increasing as audit fees becomes larger than expected (consistent with less fee pressure). If city-level fee pressure is positively associated with earnings management and/or restatements, we should find a negative association between *city_rel_free_pressure* and those metrics. As expected, we do find a significant negative association between *city_rel_free_pressure* and each of the dependent measures examined (POA, TOA, TTA, and restatements) in the pooled regressions. In the small office regressions, we find a significant negative association between *city_rel_free_pressure* and the following measures: POA, TOA, and restatements. In the large office regressions, *city_rel_free_pressure* is significantly and negatively associated with POA and restatements. The only results documented earlier that are not robust to this alternative measure are the TTA results obtained separately for the small and large offices, which lose significance. We note that the TTA regressions consistently had fewer observations than any of the other regressions. The TTA results in the pooled regression remain robust.

CONCLUSION

This study develops a measure of city-level fee pressure and examines whether this fee pressure has spillover effects on audit quality after controlling for the immediate effects of engagement-

specific audit fee pressure and other audit attributes that affect audit quality. In addition, this paper investigates whether city-level fee pressure affects small and large Big Four offices differently. A large emphasis of earlier research has been to examine the impact of engagement-specific audit fees and/or fee pressure on audit quality, but previous research has not examined whether audit quality is affected by other sources of fee pressure that auditors encounter outside of an incumbent engagement. We provide an argument and evidence that city-level audit fee pressure has an incremental impact on audit quality after controlling for engagement-level fee pressure and other factors known to influence audit quality. As hypothesized, we find that city-level fee pressure has a harmful effect on Big Four offices' audit quality, as we find that higher levels of city-level fee pressure are significantly associated with greater levels of earnings management activity, as measured by a number of accruals-based metrics, and increased incidence of subsequent financial restatements. Interestingly, city-level fee pressure appears to impact similarly the audit quality of both large and small Big Four offices. When we analyze the large and small Big Four offices separately from one another, the results obtained are similar to each other. They are also similar to those obtained for the pooled sample, with the exception that two of the results for the pooled sample lack significance in the regressions for either of the two separate sub-samples. (We attribute this to decreased power due to fewer observations when analyzing the sub-samples.)

In summary, we find that city-level fee pressure has a harmful effect on the audit quality of Big Four offices, as it is associated with increased incidence of earnings management and restatements. Our study indicates that auditors are not only susceptible to fee pressure stemming from the specific engagements on which they are working, but that they are also susceptible more broadly to fee pressure influences stemming from their local environments. Our finding that city-level fee pressure impacts *Big Four* audit quality is of particular significance because Big Four firms would appear to have the greatest audit resources available at their disposal (e.g., training, industry specialization, support from national offices, etc.) to counter audit quality threats posed by fee pressure and the greatest economic advantage to overcome the financial aspect of fee pressure due to their ability to spread fixed costs over a large volume

of engagements. The fact that we find an effect for the Big Four firms at all suggests that city-level fee pressure effects could be even more harmful for non-Big Four offices.

While we offer a number of potential mechanisms for how the city-level fee pressure effect actualizes, overall, we attribute this finding to a contagion effect. In particular, local offices respond to the level of fee pressure that auditors encounter from a number of sources and auditors who have adapted to managing audit workloads in high-fee-pressure environments are unlikely to modify their audit behaviors and approaches when confronting less engagement fee pressure. The results should be of interest to regulators such as the PCAOB. An implication of our results is that it may be advantageous for the PCAOB to consider local economic conditions and local price pressure on audit fees when selecting audit engagements for inspection. The results also suggest that audit firms should be extra vigilant about their own quality control practices in markets that are plagued by high levels of fee pressure and may benefit from implementing additional training programs about audit quality in such markets. Our study indicates that the local environment in which an auditor is operating can significantly affect the quality of audit services and provides evidence about a setting in which audit quality may suffer.

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Appendix: Variable Definitions

Variable	Definition
altz	Altman Z-score financial distress measure based on Altman (1968)
arinv	accounts receivable and inventory added together and then divided by total assets
auditor_change	Indicator variable equal to 1 if the company had a different auditor during the current fiscal year as compared to the prior one
btm	common/ordinary equity divided by market capitalization
bus_seg	natural logarithm of the number of business segments
busy	Indicator variable equal to 1 if the company has a 12/31 fiscal year end, 0 otherwise
ca_ta	the ratio of current assets to total assets
chgsale	change in sales from to the prior year scaled by lagged total assets
city_clients	square root of the number of SEC clients in the auditor's city
city_level_fee_pressure	percentage of audit engagements performed by other Big N auditors in the same city that have a negative residual in the audit fee model
city_SEC_client_growth	percentage change in the number of SEC clients in the auditor's city from the prior fiscal year
client_import_5perc	1 if a given client's audit fees constitute five percent or more of the total office audit fee revenue from public clients, 0 otherwise
city dummies	indicator variables for each city in the sample
client_restate_past3	1 if a client made a restatement announcement in any of the preceding three fiscal years, 0 otherwise
city_rel_free_pressure	the mean value of the ratio of the natural logarithm of audit fees to the predicted value of the natural logarithm of audit fees obtained from the audit fee model for the audits performed by other Big Four auditors in the same city (alternative measure of city-level fee pressure calculated for robustness)
cr	current ratio, defined as the ratio of total current assets to total current liabilities
demfin	1 if (1/[absolute value(net cash flow from operations – average capital expenditures)/lagged total current assets)]<2, 0 otherwise
dsox	1 if the audit took place during fiscal years 2004-2009, 0 otherwise
employ	square root of the number of total company employees
epr	ratio of income from continuing operations for the fiscal year divided by the stock price as of the end of the fiscal year
epsgrow	1 if the company experienced positive earnings growth for four consecutive quarters, 0 otherwise
exord	1 if the company reported a non-zero value for its extraordinary items and discontinued operations; 0 otherwise
fin	(sale of common and preferred stock + long-term debt issuance) / total assets
foreign	1 if the company had foreign income taxes for the year; 0 otherwise
freec	(net cash flow from operations - capital expenditures) / lagged total assets
going_concern	1 if the company had a going concern report from its auditor for the current fiscal year, 0 otherwise
herf_comp	measure of supplier concentration based on the Herfindahl Index that is used in prior research on auditor competition (see Eshleman and Lawson 2017; Newton et al. 2013; Kallapur et al. 2010; Boone et al. 2012)
ind_exp_cit_nat	1 if the auditor is both a national industry expert and a city industry expert, as measured by having the highest total fees for companies within a 2-digit SIC code, measured at the national level and city level, relative to the other Big Four firms; 0 otherwise
industry dummies	indicator variables for industry fixed effects; industry classification is based on SIC code, following Ashbaugh et al. (2003) with the following classifications: agriculture (0100–0999), mining and construction (1000– 1999, excluding 1300–1399), food (2000–2111), textiles and printing/publishing (2200– 2799), chemicals (2800–2824; 2840–2899), pharmaceuticals (2830–2836), extractive (1300–1399; 2900–2999), durable manufactures (3000–3999, excluding 3570–3579 and 3670– 3679), transportation (4000–4899), retail (5000–5999), services (7000–8999, excluding 7370–7379), computers (3570–3579; 3670–3679; 7370–7379), and utilities (4900–4999)
intang	total intangible assets divided by total assets
issue	1 if the sum of long-term debt and total stock issued during the current and prior year is greater than (.05 * total assets); 0 otherwise

large_office	1 if a Big Four office has a number of audit clients that is above the median; 0 otherwise
leve	total liabilities divided by total assets
liquid	current assets divided by current liabilities
litigation	1 if the company's SIC code is between 2833–2836, 3570–3577, 7370–7374, 3600–3674, 5200–5961, 8731–8734 inclusive; 0 otherwise
ln_audit_fee	natural logarithm of total audit fees charged by the auditor
lnta	natural logarithm of total assets
ln_replag	natural logarithm of the number of days between the company's fiscal year end date and the audit report date
loss	1 if the company had a net loss, 0 otherwise
loss_lag1	1 if the company had a net loss during the prior fiscal year, 0 otherwise
ma_activity	1 if the company had acquisition costs during the fiscal year, 0 otherwise
material_weak	1 if the company had aa material weakness report from its auditor for the current fiscal year, 0 otherwise
merger	1 if the firm reported the impact of a merger or acquisition on net income (based on Compustat item aqpq), 0 otherwise
mtb	market-to-book ratio
nbs	natural logarithm of one plus the number of business segments
neg_ab_fee	equal to the level of abnormal engagement fees charged for an engagement if the abnormal fee is negative, 0 otherwise
ngs	natural logarithm of one plus the number of geographic segments
non_calendar	1 if the firm has a non-December fiscal year-end, 0 otherwise
office_clients	square root of the number of SEC clients audited by the auditor's office
office_growth	Average annual growth rate for the auditor's office over the past 3 years, based on the percentage change in the number of audit clients audited relative to the prior year number of clients audited
office_restate_rate	average annual office-wide restatement rate for audit clients in the auditor's office over the three preceding fiscal years, as measured by the number of SEC audit clients restating in a given year divided by the total number of SEC companies audited that year
past3_loss_prop	the proportion of the past three years in which a firm reported a loss
pension	1 if the company had non-zero pension and retirement expense; 0 otherwise
Percent Operating Accruals (POA)	See definition in Methodology section. Definition follows Hafzalla et al. 2011.
Percent Total Accruals (PTA)	See definition in Methodology section. Definition follows Hafzalla et al. 2011.
perc_sec_audited	market share of the company's auditor, as measured by the number of SEC companies audited by the company's auditor divided by the total number of audit reports that are signed by Big Four auditors in the auditor's city
pos_ab_fee	equal to the level of abnormal engagement fees charged for an engagement if the abnormal fee is positive, 0 otherwise
client_restate_past3	1 if the company had a restatement during any one of the past 3 years leading up to the current fiscal year
Restatement	1 if a company had to subsequently restate financial information that was reported sometime during the fiscal year, 0 otherwise
roa	earnings before interest and taxes divided by total assets
roabex_lag1	income before extraordinary items, scaled by average total assets for the year, lagged one year
rppall	Centered value of the overall regional price parity index for all goods and services combined in the metropolitan statistical area (MSA) in which the auditor's office is located, as reported by the Bureau of Economic Analysis. The data are available for 2008 onward. Therefore, we use the 2008 or earliest reported value of the index for cities prior to 2008.
sales_growth_lag1	percentage change in sales from the prior fiscal year, lagged one fiscal year
sales_vol3	standard deviation of sales scaled by lagged total assets from the current and prior two fiscal years
sc_oancf_vol3	the standard deviation of operating cash flow scaled by lagged total assets from the current and prior two fiscal years
seg	logarithm of the number of business segments
short_tenure	1 during the first and second year of an auditor-client relationship, 0 otherwise
Traditional Total Accruals (TTA)	See definition in Methodology section. Definition follows Hafzalla et al. 2011.

Table 1
Sample Selection Tables

Panel A: Sample Selection for the Audit Fee Model

1. Total firm-year observations that appear in both Compustat and Audit Analytics for fiscal years 2005-2018	99,116
Minus: Observations with missing auditor name, city, and/or state	2,911
2. Total firm-year observations that appear in both Compustat and Audit Analytics for fiscal years 2005-2018 with auditor name, city, and state all available	83,482
Minus: Observations not audited by Big N auditors	30,827
3. Observations with Big Four auditors	52,655
Minus: Observations with principal auditors not located in the U.S.	9,135
4. Data after deleting non-Big Four auditors and non-U.S. principal auditors	43,520
Minus: Financial and Utility companies	22,345
5. Data after deleting non-Big Four auditors, non-U.S. principal auditors, and financial and utility companies	21,175
Minus: Firms with insufficient data for audit fee model	11,829
6. Final Sample: firms for which all data is available	**10,833**

Panel B: Sample Selection for the Earnings Management and Restatement Models

	Traditional Total Accruals	Traditional Operating Accruals	Percent Operating Accruals	Restatement
	(1)	(2)	(3)	(4)
1. Firm-year observations for which abnormal audit fees can be computed, based on the audit fee model	10,833	10,833	10,833	10,833
Minus: Observations dropped due to having an auditor change during the fiscal year	399	399	399	399
2. Firm-year observations with abnormal audit fee data that did not experience auditor changes	10,434	10,434	10,434	10,434
Minus: Observations dropped due to the audit office performing fewer than three public company audits during the fiscal year	309	309	309	309
3. Firm-year observations with abnormal audit fee data that did not experience auditor changes with auditors that performed at least 3 public company audits during the year	10,125	10,125	10,125	10,125
Minus: Observations dropped in cities with fewer than 3 public audits taking place during the year	258	258	258	258
3. Firm-year observations with abnormal audit fee data that did not experience auditor changes with auditors that performed at least 3 public company audits during the year and had at least one Big Four competitor in the same city	9,867	9,867	9,867	9,867
Minus: Observations dropped due to audits occurring in cities without at least one other Big Four firm present	0	0	0	0
5. Firm-year observations with abnormal audit fee data that did not experience auditor changes with auditors that performed at least 3 public company audits during the year and had at least one Big Four competitor in the same city and that were located in cities where at least 3 public companies received Big Four audits during the year	9,867	9,867	9,867	9,867
Minus: Firm-year observations that belong to the extractive industry dropped from earnings management models	655	655	655	655
6. Firm-year observations for which all data are available after dropping firm-year observations that belong to the extractive industry, if applicable	9,212	9,212	9,212	9,212
Minus: Firm-years dropped for having insufficient data to run the model	2,598	2,077	2,077	1,827
8. Final sample, firm-years for which all data are available	**6,614**	**7,135**	**7,135**	**7,618**

Table 2
Descriptive Statistics for the Audit Fee Model

Descriptive Statistics for the Audit Fee Model, (n=10,833)

Variable	Mean	SD	1%	Median	99%
ln_audit_fee	7.389	1.029	5.185	7.330	10.133
lnta	6.878	1.828	2.614	6.848	11.179
cr	2.904	2.823	0.484	2.082	17.400
ca_ta	0.500	0.236	0.059	0.488	0.983
arinv	0.234	0.166	0	0.213	0.721
roa	0.012	0.240	-1.133	0.071	0.317
loss	0.315	0.465	0	0	1
foreign	0.696	0.460	0	1	1
merger	0.290	0.454	0	0	1
busy	0.764	0.425	0	1	1
leve	0.197	0.211	0	0.155	0.981
intang	0.210	0.206	0	0.149	0.766
bus_seg	0.667	0.689	0	0.693	1.946
going_concern	0.028	0.165	0	0	1
material_weak	0.083	0.276	0	0	1
ngs	1.193	0.658	0	1.386	2.639
employ	75.474	78.728	4.472	51.701	392.428
issue	0.739	0.439	0	1	1
exord	0.186	0.389	0	0	1
loss_lag1	0.306	0.461	0	0	1
liquid	2.928	3.003	0.484	2.082	17.400
short_tenure	0.072	0.258	0	0	1
btm	0.489	0.447	0	0.388	2.220
chgsale	0.076	0.247	-0.596	0.052	0.951
demfin	0.854	0.353	0	1	1
ln_replag	4.093	0.229	3.497	4.078	4.654
city_clients	11.233	5.680	2	10.630	23.601
office_clients	5.108	2.612	1	4.690	11.576
ind_exp_city_nat	0.252	0.434	0	0	1
city_SEC_client_growth	-0.018	0.097	-0.300	-0.020	0.284
client_restate_past3	0.065	0.247	0	0	1
demfin	0.991	0.097	1	1	1
altz	3.748	6.137	-18.774	3.188	27.462
auditor_change	0.037	0.188	0	0	1
perc_sec_audited	0.247	0.157	0.051	0.203	1
office_restate_rate	0.144	0.108	0	0.125	0.495
office_growth	-0.058	0.301	-0.625	-0.083	1
rppall	-0.093	6.968	-12.477	-0.517	15.479
dsox	0.380	0.485	0	0	1
ag	0.003	0.058	0	0	0
mining	0.022	0.148	0	0	1
food	0.003	0.058	0	0	0
textiles	0.042	0.201	0	0	1

chemical	0.047	0.212	0	0	1
pharma	0	0	0	0	0
extractive	0.065	0.247	0	0	1
durable	0.268	0.443	0	0	1
transport	0.018	0.134	0	0	1
retail	0.069	0.253	0	0	1
services	0.119	0.323	0	0	1
computer	0.212	0.409	0	0	1

All variables are defined at the beginning of the Appendix.

Table 3
Audit Fee Model

Dependent Variable = LN(Audit_Fee)

Variables	Coefficient	P-Value
lnta	0.431***	0.00
cr	-0.054***	0.00
ca_ta	0.506***	0.00
arinv	0.435***	0.00
roa	-0.372***	0.00
loss	0.056***	0.00
foreign	0.198***	0.00
merger	0.030***	0.00
busy	0.028***	0.00
leve	0.111***	0.00
intang	0.378***	0.00
bus_seg	0.093***	0.00
going_concern	0.106***	0.00
material_weak	0.183***	0.00
ngs	0.103***	0.00
employ	0.002***	0.00
issue	0.040***	0.00
exord	0.127***	0.00
loss_lag1	0.057***	0.00
liquid	0.025**	0.05
short_tenure	0.004	0.84
btm	-0.045***	0.00
chgsale	-0.038**	0.02
pension	0.021*	0.07
ln_replag	0.218***	0.00
city_clients	-0.002	0.73
office_clients	-0.028***	0.00
ind_exp_city_nat	0.093***	0.00
city_SEC_client_growth	-0.094**	0.02
client_restate_past3	0.117***	0.00
demfin	-0.017	0.66
altz	-0.002*	0.09
auditor_change	0.011	0.69
perc_sec_audited	0.134*	0.07
office_restate_rate	-0.054	0.17
office_growth	-0.041***	0.00
rppall	0.000	0.92
dsox	0.003	0.72
_Intercept	2.558***	0.00
Industry Dummies	Included	
City Dummies	Included	
N	10,833	
R^2- Adjusted	0.86	

* p<0.10, ** p<0.05, *** p<0.01

All variables are defined at the beginning of the Appendix.

Table 4
Descriptive Statistics for Annual Proportion of Engagements Subject to Fee Pressure, Tabulated by City

Auditor City	Number of Years of Available Fee Pressure Data	Mean	Median	Min	Max
Akron	14	0.500	0.500	0.000	1.000
Albany	14	0.505	0.500	0.000	0.800
Albuquerque	3	0.667	1.000	0.000	1.000
Atlanta	14	0.490	0.494	0.273	0.640
Austin	14	0.548	0.586	0.250	0.800
Baltimore	14	0.484	0.500	0.250	0.600
Baton Rouge	13	0.410	0.500	0.000	1.000
Billings	6	0.333	0.000	0.000	1.000
Birmingham	14	0.700	0.667	0.500	1.000
Boston	14	0.489	0.481	0.376	0.581
Boulder	3	0.667	0.500	0.500	1.000
Buffalo	14	0.565	0.586	0.167	1.000
Charlotte	14	0.572	0.545	0.267	0.900
Chattanooga	4	0.500	0.500	0.000	1.000
Chicago	14	0.493	0.506	0.393	0.621
Cincinnati	14	0.449	0.414	0.273	0.700
Cleveland	14	0.454	0.429	0.250	0.706
Columbus	14	0.479	0.400	0.167	0.750
Dallas	14	0.457	0.485	0.281	0.571
Dayton	6	0.400	0.400	0.000	1.000
Denver	14	0.508	0.515	0.313	0.769
Des Moines	14	0.625	0.600	0.250	0.800
Detroit	14	0.442	0.444	0.200	0.636
Fort Lauderdale	10	0.695	1.000	0.000	1.000
Fort Wayne	2	0.500	0.500	0.000	1.000
Fort Worth	14	0.343	0.422	0.000	1.000
Grand Rapids	14	0.429	0.500	0.000	0.667
Greensboro	12	0.347	0.417	0.000	0.667
Greenville	13	0.385	0.500	0.000	1.000
Harrisburg	5	0.700	1.000	0.000	1.000
Hartford	14	0.433	0.436	0.071	0.700
Houston	14	0.515	0.533	0.411	0.618
Indianapolis	14	0.491	0.528	0.100	0.800
Jackson	2	0.500	0.500	0.000	1.000
Jacksonville	14	0.493	0.500	0.000	0.667
Kansas City	14	0.513	0.528	0.286	0.778
Knoxville	2	0.500	0.500	0.000	1.000

Las Vegas	14	0.526	0.500	0.200	1.000
Lexington	8	0.750	1.000	0.000	1.000
Lincoln	14	0.500	0.500	0.000	1.000
Los Angeles	14	0.490	0.513	0.259	0.677
Memphis	14	0.464	0.500	0.000	0.750
Miami	14	0.529	0.536	0.111	0.857
Milwaukee	14	0.547	0.647	0.133	0.786
Nashville	14	0.519	0.528	0.143	0.800
New Orleans	14	0.492	0.571	0.200	0.800
New York	14	0.532	0.517	0.457	0.659
Norfolk	14	0.643	1.000	0.000	1.000
Oklahoma City	14	0.280	0.292	0.000	0.750
Omaha	14	0.516	0.500	0.200	0.750
Orlando	14	0.649	0.750	0.000	1.000
Peoria	8	0.625	1.000	0.000	1.000
Phoenix	14	0.495	0.519	0.222	0.800
Pittsburgh	14	0.477	0.500	0.143	0.647
Princeton	3	0.667	0.667	0.333	1.000
Raleigh	14	0.520	0.500	0.333	0.833
Reno	3	0.500	0.500	0.000	1.000
Richmond	14	0.547	0.578	0.000	0.750
Roanoke	11	0.652	1.000	0.000	1.000
Rochester	14	0.495	0.500	0.333	0.600
Rogers	12	0.625	0.750	0.000	1.000
Sacramento	11	0.530	0.667	0.000	1.000
Salt Lake City	14	0.562	0.573	0.250	1.000
San Antonio	14	0.477	0.500	0.143	0.750
San Diego	14	0.486	0.459	0.321	0.657
San Francisco	14	0.508	0.500	0.294	0.684
San Jose	14	0.528	0.530	0.311	0.685
Santa Clara	5	0.501	0.500	0.333	0.714
Seattle	14	0.489	0.500	0.200	0.600
Shreveport	14	0.464	0.250	0.000	1.000
Stamford	14	0.474	0.487	0.200	0.727
Syracuse	7	0.714	0.500	0.500	1.000
Tampa	14	0.497	0.500	0.333	0.778
Toledo	14	0.495	0.450	0.250	1.000
Tulsa	14	0.542	0.500	0.000	1.000
Wichita	2	0.500	0.500	0.000	1.000

Table 5
Descriptive Statistics for the Restatement Models

	Small Offices (n=3,094)					Large Offices (n=4,512)				
Variable	**Mean**	**SD**	**1%**	**Median**	**99%**	**Mean**	**SD**	**1%**	**Median**	**99%**
restate	0.159	0.366	0	0	1	0.130	0.336	0	0	1
epr	0.029	0.261	-1.191	0.069	0.594	-0.007	0.290	-1.657	0.051	0.399
short_tenure	0.048	0.214	0	0	1	0.024	0.154	0	0	1
epsgrow	0.027	0.161	0	0	1	0.029	0.167	0	0	1
sales_vol3	0.168	0.204	0	0.100	1.177	0.158	0.188	0	0.096	1.066
nbs	1.145	0.458	0.693	1.099	2.197	1.091	0.470	0.693	0.693	2.079
ngs	1.188	0.641	0	1.386	2.565	1.219	0.656	0	1.386	2.639
past3_loss_prop	0.295	0.382	0	0	1	0.365	0.412	0	0.333	1
herf_comp	0.320	0.090	0.194	0.318	0.543	0.266	0.046	0.199	0.253	0.389
perc_sec_audited	0.208	0.112	0.045	0.176	0.542	0.245	0.123	0.092	0.210	0.519
ma_activity	0.489	0.500	0	0	1	0.445	0.497	0	0	1
roabex_lag1	-0.011	0.200	-0.925	0.042	0.275	-0.039	0.231	-1.030	0.034	0.304
sc_oancf_vol3	0.062	0.093	0.003	0.035	0.627	0.076	0.107	0.003	0.041	0.627
dsox	0.408	0.492	0	0	1	0.369	0.482	0	0	1
lnta	6.838	1.756	2.569	6.877	11.028	6.816	1.909	2.470	6.701	11.127
leve	0.547	0.335	0.064	0.526	1.593	0.526	0.437	0.063	0.485	1.784
mtb	3.059	6.038	-22.158	2.342	33.217	3.728	7.049	-22.158	2.392	39.597
fin	0.162	0.261	0	0.048	1.378	0.162	0.272	0	0.041	1.528
freec	0.008	0.188	-0.897	0.049	0.310	-0.011	0.215	-0.955	0.043	0.375
neg_ab_fee	0.156	0.233	0	0	0.950	0.138	0.208	0	0.001	0.815
pos_ab_fee	0.158	0.238	0	0.001	0.990	0.135	0.212	0	0	0.897
city_level_fee_pressure	0.500	0.200	0	0.5	1	0.488	0.104	0.133	0.487	0.692
client_import_5perc	0.558	0.497	0	1	1	0.145	0.352	0	0	1
ind_exp_city_nat	0.213	0.409	0	0	1	0.271	0.445	0	0	1
city_SEC_client_growth	-0.017	0.091	-0.242	-0.025	0.242	-0.011	0.062	-0.142	-0.018	0.188
demfin	0.992	0.091	1	1	1	0.989	0.103	0	1	1
altz_ab_r~99	3.567	5.691	-19.011	3.156	23.078	3.840	6.856	-19.011	3.181	32.782
auditor_change	0	0	0	0	0	0	0	0	0	0
non_calendar	0.245	0.430	0	0	1	0.211	0.408	0	0	1
office_growth_past3	-0.078	0.305	-0.625	-0.103	1	-0.046	0.201	-0.521	-0.065	0.563

All variables are defined at the beginning of the Appendix.

Table 6
Earnings Management and Restatement Regression Analyses - Pooled Sample

	Pooled Sample			
	Percent Operating Accruals	Traditional Operating Accruals	Traditional Total Accruals	Restatement
Variables	Coefficient (P-Value)	Coefficient (P-Value)	Coefficient (P-Value)	Coefficient (P-Value)
city_level_fee_pressure	0.824**	0.012*	0.032***	0.900***
	(0.04)	(0.10)	(0.01)	(0.00)
neg_ab_fee	0.594*	0.014**	0.012	0.438*
	(0.07)	(0.04)	(0.24)	(0.06)
pos_ab_fee	0.568*	0.015**	0.024**	0.423*
	(0.07)	(0.03)	(0.03)	(0.05)
herf_comp	-0.676	0.018	0.029	0.368
	(0.58)	(0.29)	(0.31)	(0.66)
perc_sec_audited	-0.681	-0.011	-0.028	0.156
	(0.31)	(0.37)	(0.14)	(0.75)
client_import_5perc	0.176	0.003	0.007	0.015
	(0.35)	(0.36)	(0.17)	(0.91)
ind_exp_city_nat	0.023	-0.007**	-0.006	0.098
	(0.90)	(0.03)	(0.17)	(0.37)
office_growth_past3	-0.528*	-0.002	0.006	-0.13
	(0.07)	(0.70)	(0.35)	(0.46)
city_SEC_client_growth	-0.696	0.031**	0.025	0.649
	(0.52)	(0.04)	(0.29)	(0.14)
short_tenure	0.121	-0.005	-0.018	0.068
	(0.72)	(0.47)	(0.10)	(0.71)
non_calendar	0.114	0.002	-0.001	0.212*
	(0.55)	(0.56)	(0.85)	(0.09)
sales_vol3	-0.179	-0.006	0.02	0.502**
	(0.61)	(0.46)	(0.11)	(0.02)
nbs	0.167	0.008***	0.010**	0.052
	(0.41)	(0.01)	(0.01)	(0.69)
ngs	0.191	0.004*	0.004	0.199**
	(0.21)	(0.08)	(0.27)	(0.04)
past3_loss_prop	-1.015***	-0.014**	-0.012	0.204
	(0.00)	(0.01)	(0.15)	(0.19)
ma_activity	-0.046	-0.004	0.026***	0.093
	(0.77)	(0.17)	(0.00)	(0.32)
roabex_lag1	1.560***	0.205***	0.136***	0.504
	(0.00)	(0.00)	(0.00)	(0.10)
sc_oancf_vol3	2.002***	-0.008	0.102**	-0.459
	(0.00)	(0.73)	(0.04)	(0.45)
lnta	-0.111**	0.006***	0.009***	-0.038
	(0.05)	(0.00)	(0.00)	(0.34)

leve	-0.253*	-0.040***	-0.070***	-0.241
	(0.08)	(0.00)	(0.00)	(0.14)
mtb	0.002	0.000	-0.001**	-0.007
	(0.80)	(0.50)	(0.02)	(0.25)
fin	-0.891***	-0.015**	0.060***	0.084
	(0.00)	(0.03)	(0.00)	(0.68)
freec	-5.347***	-0.211***	-0.043	-0.309
	(0.00)	(0.00)	(0.20)	(0.35)
demfin	0.942	-0.041***	-0.046*	-0.126
	(0.27)	(0.00)	(0.09)	(0.70)
altz	0.026***	0.001	0.005***	-0.024***
	(0.01)	(0.12)	(0.00)	(0.01)
dsox	-0.276*	-0.003	-0.009**	0.06
	(0.08)	(0.21)	(0.04)	(0.56)
epsgrow				-0.197
				(0.39)
epr				0.433**
				(0.02)
_Intercept	-1.644	-0.054***	-0.095***	-2.605***
	(0.10)	(0.00)	(0.01)	(0.00)
Industry Dummies	Included	Included	Included	Included
N	7,135	7,135	6,614	7,618
R^2- Adjusted	0.04	0.18	0.18	
Pseudo-R^2				0.02

* p<0.10, ** p<0.05, *** p<0.01

All variables are defined at the beginning of the Appendix.

Table 7
Earnings Management and Restatement Regression Analyses – Small vs. Large Offices

	Small Offices				Large Offices			
	Percent Operating Accruals	Traditional Operating Accruals	Traditional Total Accruals	Restatements	Percent Operating Accruals	Traditional Operating Accruals	Traditional Total Accruals	Restatements
Variables	Coefficient (P-Value)	Coefficient (P-Value)	Coefficient (P-Value)	Coefficient (P-Value)	Coefficient (P-Value)	Coefficient (P-Value)	Coefficient (P-Value)	Coefficient (P-Value)
city_level_fee_pressure	0.582	0.012	0.023*	0.606*	1.476	0.017	0.057**	1.855***
	(0.15)	(0.11)	(0.09)	(0.07)	(0.11)	(0.33)	(0.03)	(0.00)
neg_ab_fee	0.354	0.014	0.001	0.312	0.760	0.015	0.021	0.371
	(0.43)	(0.17)	(0.93)	(0.36)	(0.11)	(0.11)	(0.15)	(0.25)
pos_ab_fee	0.702*	0.012	-0.013	0.449	0.475	0.017	0.053***	0.494
	(0.08)	(0.18)	(0.35)	(0.13)	(0.33)	(0.11)	(0.00)	(0.11)
herf_comp	-1.689	-0.003	0.012	0.447	-1.043	0.012	-0.043	-1.124
	(0.23)	(0.87)	(0.72)	(0.64)	(0.76)	(0.82)	(0.62)	(0.52)
perc_sec_audited	0.621	0.025	0.009	-1.245	-0.976	-0.017	-0.019	1.510**
	(0.52)	(0.17)	(0.74)	(0.12)	(0.30)	(0.36)	(0.53)	(0.03)
client_import_5perc	0.038	0.004	0.016**	0.003	0.131	0.000	-0.006	-0.398*
	(0.88)	(0.39)	(0.02)	(0.99)	(0.73)	(0.93)	(0.47)	(0.09)
ind_exp_city_nat	0.181	0.000	0.001	0.064	-0.029	-0.012***	-0.010	0.146
	(0.46)	(0.92)	(0.80)	(0.70)	(0.91)	(0.00)	(0.11)	(0.34)
office_growth_past3	-0.117	-0.012	-0.030*	0.172	0.294	0.003	-0.003	-0.185
	(0.79)	(0.18)	(0.05)	(0.46)	(0.56)	(0.67)	(0.83)	(0.57)
city_SEC_client_growth	-0.949	-0.002	-0.001	0.125	-0.045	0.099***	0.083*	1.539*
	(0.52)	(0.92)	(0.97)	(0.81)	(0.98)	(0.00)	(0.09)	(0.06)
short_tenure	-0.117	-0.012	-0.030*	0.172	0.294	0.003	-0.003	-0.185
	(0.79)	(0.18)	(0.05)	(0.46)	(0.56)	(0.67)	(0.83)	(0.57)
non_calendar	0.251	0.001	-0.002	0.227	0.095	0.004	0.003	0.196
	(0.32)	(0.89)	(0.76)	(0.21)	(0.74)	(0.30)	(0.67)	(0.23)
sales_vol3	-0.217	0.008	0.029*	0.467	-0.116	-0.018	0.014	0.587*
	(0.68)	(0.50)	(0.08)	(0.14)	(0.81)	(0.16)	(0.47)	(0.05)
nbs	0.106	0.007	0.012**	-0.073	0.135	0.008**	0.010*	0.242
	(0.72)	(0.12)	(0.03)	(0.69)	(0.63)	(0.04)	(0.09)	(0.18)
ngs	0.046	0.006	0.008	0.354**	0.359	0.003	0.003	0.079
	(0.81)	(0.10)	(0.15)	(0.01)	(0.13)	(0.33)	(0.55)	(0.54)
past3_loss_prop	-0.926*	-0.003	-0.001	0.24	-0.971**	-0.018***	-0.016	0.158
	(0.06)	(0.73)	(0.94)	(0.35)	(0.01)	(0.01)	(0.15)	(0.44)
ma_activity	-0.028	-0.001	0.019***	0.17	-0.016	-0.005	0.030***	-0.02
	(0.91)	(0.78)	(0.00)	(0.23)	(0.94)	(0.13)	(0.00)	(0.87)
roabex_lag1	2.098**	0.212***	0.129**	0.171	1.275**	0.197***	0.132***	0.700*
	(0.05)	0.00	(0.04)	(0.73)	(0.02)	(0.00)	(0.00)	(0.08)
sc_oancf_vol3	2.686***	-0.032	0.083	-0.729	1.568*	0.006	0.115*	-0.373
	(0.00)	(0.46)	(0.28)	(0.56)	(0.08)	(0.82)	(0.06)	(0.59)
lnta	-0.106	0.007***	0.011***	-0.033	-0.109	0.007***	0.010***	0.017
	(0.25)	0.00	(0.00)	(0.57)	(0.16)	(0.00)	(0.00)	(0.77)
leve	-0.338	-0.050***	-0.106***	0.097	-0.157	-0.036***	-0.059***	-0.529*
	(0.26)	(0.00)	(0.00)	(0.64)	(0.29)	(0.00)	(0.00)	(0.05)
mtb	0.015	0.000	-0.001	-0.006	-0.004	0.000	-0.001**	-0.008
	(0.26)	(0.55)	(0.34)	(0.43)	(0.71)	(0.26)	(0.04)	(0.43)
fin	-0.519	-0.014	0.054***	-0.148	-1.211***	-0.017*	0.065***	0.286
	(0.21)	(0.16)	(0.01)	(0.60)	(0.00)	(0.09)	(0.00)	(0.30)
freec	-4.692***	-0.232***	-0.066	-0.611	-5.768***	-0.201***	-0.03	-0.052
	(0.00)	(0.00)	(0.23)	(0.24)	(0.00)	(0.00)	(0.49)	(0.90)
demfin	-0.633	-0.064***	-0.105***	0.089	1.856	-0.027*	-0.010	-0.310

	(0.22)	(0.01)	(0.00)	(0.88)	(0.15)	(0.08)	(0.78)	(0.45)
altz	0.015	0.000	0.005***	-0.011	0.035***	0.001	0.006***	-0.034**
	(0.50)	(0.44)	(0.00)	(0.40)	(0.00)	(0.15)	(0.00)	(0.01)
dsox	-0.317	-0.007*	-0.008	0.057	-0.234	0.001	-0.006	0.134
	(0.14)	(0.08)	(0.15)	(0.69)	(0.31)	(0.69)	(0.36)	(0.37)
epsgrow				-0.31				-0.13
				(0.34)				(0.68)
epr				0.604**				0.222
				(0.03)				(0.38)
_Intercept	0.226	-0.041	-0.035	-2.560***	-2.870*	-0.065***	-0.138***	-3.076***
	(0.80)	(0.15)	(0.39)	(0.00)	(0.08)	(0.01)	(0.00)	(0.00)
Industry Dummies	Included	Included	Included	Included	Included	Included	Included	Included
N	3,003	3,003	2,808	3,094	4,132	4,132	3,806	4,512
R^2- Adjusted	0.02	0.18	0.20		0.05	0.18	0.18	
Pseudo-R^2				0.03				0.04

* p<0.10, ** p<0.05, *** p<0.01

All variables are defined at the beginning of the Appendix.

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