

Behind closed doors: unveiling earnings management in private subsidiaries of public firms

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Abstract

Purpose – This study examines the earnings quality of private-subsidiary firms using a large sample data from India.

Design/methodology/approach – The impact of parent–subsidiary relationship on earnings quality is examined using two common proxies. Findings are robust to alternative research designs, including different earnings quality proxies, endogeneity and matching techniques.

Findings – The study finds that private firms that are subsidiaries of listed firms tend to have lesser (greater) earnings quality (manipulation). Further, the study reports that this relationship is more pronounced when the parent firm is relatively larger than the subsidiaries. The study finds no evidence that Big 4 affiliation of the parent company improves earnings quality among private subsidiaries; instead, it exacerbates earnings manipulation in some cases. Finally, the authors document that subsidiary firms use tax management, as proxied by book tax differences, to engage in income-increasing earnings manipulation.

Research limitations/implications – This study examines how affiliation with a listed entity as a subsidiary impacts the earnings quality of private companies. Future research could investigate the financial reporting practices of both private subsidiary firms and standalone private firms, comparing them in similar or differing regulatory environments across various countries.

Practical implications – The findings of this study will help investors, bankers, creditors and regulators to understand the financial reporting of private firms. The study calls for enhanced audit quality at the subsidiary level by making the auditor of the parent firm responsible for auditing a subsidiary, a practice that is currently absent in India.

Originality/value – The results contribute to the existing debate on how firms manage earnings using data of private firms in a large emerging market setting. Previous research has not paid enough attention to the earnings quality of private subsidiaries. The study also emphasizes the necessity for a more robust system of governance and supervision for private firms, particularly in India and generally in other countries.

Keywords Audit quality, Earnings quality, Earnings management, Private-subsidiary firms

Paper type Research paper

1. Introduction

Despite the substantial impact of privately held firms on the economy, there exists a significant gap in the understanding of their reporting practices. The purpose of financial reporting in private companies remains less explored in the literature, especially in comparison to the more extensively researched public firms (Habib, Ranasinghe, & Huang,

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2018). Unlike publicly listed firms, private firms are not subjected to the same market pressures to meet earnings targets or investor expectations (Burgstahler, Hail, & Leuz, 2006; Gao, Harford, & Li, 2013). Moreover, the financial statements of private firms are not easily available to the public. Without public scrutiny, private companies might face less pressure to ensure their financial statements are accurate and transparent and this could often lead to increased risk of fraud and misrepresentation. These entities encounter distinctive challenges pertaining to issues such as taxation and dividend policies (Ball & Shivakumar, 2005). The situation in developing countries such as India differs significantly, as numerous publicly listed companies have private subsidiaries throughout the country under various names [1]. For example, Tata Power, being a large listed company under the Tata Group, has incorporated private subsidiaries with identical names in several states across India [2]. Private subsidiaries refer to companies whose shares are not traded on any recognized stock exchange. Past studies have compared and contrasted the earnings quality of private and public firms (e.g. Givoly, Hayn, & Katz, 2010; Hope, Thomas, & Vyas, 2013; Kim & Yi, 2006). The research available on the variations in earnings quality among private firms is limited, as prior studies have failed to acknowledge the differences in the nature of ownership in private entities. There is a paucity of evidence about the association between the parent-subsidiary relationship and earnings quality, especially in settings where public companies operate through various subsidiaries. We conjecture that the presence of private subsidiary firms provides a more conducive environment for listed firms to achieve their reporting objectives. Studying only the earnings quality of parent firms is not sufficient, as they are known for engaging in various inter-company transactions with subsidiaries where they exercise significant control. Our study aims to fill this gap by examining the earnings quality of private subsidiaries in comparison with that of standalone private firms.

This study extends the existing literature on how firms manage earnings by examining the context of India, where governance and regulatory oversight vary between public and private companies. We hypothesize and find that private firms operating as subsidiaries of listed parents are likely to be strongly incentivized to manage earnings. Further, the study reports that this relationship is more pronounced when the parent's size is relatively bigger than the subsidiaries. We do not find evidence that Big 4 affiliation of the parent company enhances earnings quality among private subsidiaries; rather, in some cases, it seems to worsen earnings quality. The paper also reports that subsidiary firms use tax management, as proxied by book tax differences, to engage in income increasing earnings manipulation. The findings are robust to alternative research designs, including other earnings quality proxies, matching techniques and endogeneity.

Our study holds practical implications for various stakeholders such as bankers, investors, creditors, regulators, and policymakers. The study also highlights the need for a more robust system of governance and supervision over private firms in India specifically, and in other countries more generally. The study calls for enhanced audit quality at the subsidiary level by making the auditor of the parent firm responsible for auditing a subsidiary, a practice that is currently absent in India.

2. Background and prior literature

Like in many other advanced emerging markets, business groups having a myriad of subsidiaries are a norm in India rather than exceptions (Chakrabarti, Megginson, & Yadav, 2008). As on 2023, the aggregate number of subsidiaries held by listed companies in India has increased to approximately 15,000, marking a staggering 170% increase over the past decade [3]. A subsidiary company is defined by the extent of control exercised by the

holding company, either through board composition or by owning more than half of the total outstanding shares, either independently or in conjunction with one or more subsidiaries [4]. Indian companies are required to disclose the details of their subsidiaries where the parent exerts significant control in their annual reports. Generally, subsidiaries serve as extra arms for the parent firm, enabling it to expand its reach across diverse regions, business sectors, and even countries. From a legal standpoint, a subsidiary company of a listed entity is treated as an Indian company and must comply with almost all Indian company regulations. However, private (or unlisted) subsidiary firms are not subject to the stringent listing rules, analyst forecasts, and governance regulations that govern public (or listed) companies. Prior research has shown that Indian public firms engage in substantial related party transactions through affiliated entities, fellow subsidiaries, and associated companies (Chakrabarti *et al.*, 2008; Li, 2021). Notably, a large proportion of listed entities are predominantly owned by a single individual, often referred to as the promoter, who exerts substantial control over the affiliated subsidiaries within the group (Bertrand, Mehta, & Mullainathan, 2002). Multi-level subsidiaries in the form of pyramids are also a feature of Indian companies. Regulating the subsidiary operations of Indian firms has been a serious challenge for Indian regulators. A recent example is the collapse of infrastructure giant IL&FS Ltd, which faced financial difficulties with around 300 subsidiaries. The company failed to meet its debt obligation to several lenders and is currently undergoing insolvency procedures in various courts [5]. Subsidiaries are also used as mechanisms to siphon off funds from listed entities to other small entities owned by the same promoter. The audit watchdog of India, the National Financial Reporting Authority (NFRA), recently fined a Big 4-affiliated audit firm for failing to flag the diversion of funds worth ₹353.5bn from seven subsidiary companies of a listed entity to another subsidiary [6].

The hierarchical relationship and the prevalent related party transactions among group companies create an environment where earnings manipulation and associated governance complexities become a potential concern, as highlighted in studies conducted in other countries (Jian & Wong, 2010; Kohlbeck & Mayhew, 2017). Jian and Wong (2010) present evidence that the arrangement between parent and subsidiary entities provides the parent firm with a means to influence the earnings of subsidiary firms, based on data from Chinese listed companies. In contrast, we take the next step further and propose that private subsidiaries of publicly listed parent companies present a more conducive environment for earnings manipulation due to comparatively low governance and regulatory oversight. Given this unique institutional setting in India, characterized by the presence of business groups and a pyramidal ownership structure, along with weak governance among private firms, we opine that the financial reporting practices of private subsidiary firms require special investigation. We assume that, private companies, which are linked to large parent companies, might be more likely to present earnings information in a way that meets the goals of their parent company.

In existing literature, the examination of the parent-subsidiary relationship primarily focuses on multinational corporations with subsidiaries situated in various countries. (Beuselinck, Cascino, Deloof, & Vanstraelen, 2018; Dyreng, Hanlon, & Maydew, 2012). Dyreng *et al.* (2012), for instance, investigated how multinational corporations (MNCs) manage earnings. They found that MNCs with extensive subsidiaries in tax haven countries and countries with weak legal frameworks tend to manipulate their foreign earnings to a greater extent. In a similar vein, Beuselinck *et al.* (2018) find that multinational corporations manage their consolidated earnings through a coordinated strategy within their subsidiaries where they exercise significant control. These studies argue that multinational corporations take advantage of regulatory arbitrage resulting from variations in institutional quality across different countries. However, we use a

setting in which the variations in governance and regulatory oversight differ between public and private companies within the same country. Moreover, most studies usually investigate how companies manage their earnings overall, focusing on the consolidated (combined) financial statements of parent companies and subsidiaries. Consolidated financial statements (CFS) are financial statements that combine the financial information of a parent company and its legally distinct subsidiaries, presenting them as a single economic entity. Using the entity concept approach, these statements reflect the interrelationships and dependencies between the parent company and its subsidiaries (Srinivasan & Narasimhan, 2012). Our argument relies on the notion that when subsidiary earnings (after eliminating intercompany transactions) increase, there is a direct impact on the overall profits reported by the parent company. Since the reporting practices of subsidiaries might be influenced by such factors, it is important to better understand the quality of their earnings. Hence, our focus of analysis here is on subsidiary earnings manipulation (earnings quality). We try to see how parent companies impact the accounting choices of their subsidiaries and, in turn, measure how much parents influence the way financial information is presented within the group. The existing studies also argue that, driven by the motivation to present high-quality earnings, public companies often prioritize this objective at the parent company level (Ball & Shivakumar, 2005; Hope *et al.*, 2013). In such instances, what happens to the reporting quality of unlisted or private subsidiaries requires empirical investigation.

We assume that listed firms have the incentive to meet or beat earnings targets through non-listed subsidiaries. Stated otherwise, unlisted subsidiaries may engage in earnings manipulation to meet the reporting objectives of listed parents. Moreover, we observe that the existing academic literature on variations in earnings quality within private firms is very scarce. For instance, Gassen and Fülbier (2015), utilizing data from European private firms, document that the country-level contracting environment influences the earnings quality of private firms. Additionally, they document that the country-level governance structure across Europe moderates this relationship. Bigus, Georgiou and Schorn (2016) find that the legal form of the private firms, for, e.g. whether they are one-person businesses, partnerships or corporations, affect their earnings properties such as income smoothing, conservatism and loss avoidance. Coppens and Peek (2005) reveal that private firms are less prone to avoiding losses in countries characterized by a high degree of alignment between financial and tax accounting, such as Belgium, France, Germany, and Italy. However, to our understanding, there is no study that examines the earnings quality within private firms in a non-European, non-U.S. setting. Therefore, we aim to bridge this gap by utilizing data from private companies in India, since publicly listed companies frequently operate with a large number of private subsidiaries. Hence, we postulate that the earnings quality of unlisted private subsidiaries would be lesser compared to that of standalone private firms.

H1. Private subsidiary firms exhibit lesser earnings quality as compared to standalone private firms.

Managers would have more discretion over the production of financial information in private firms compared to listed entities. They are generally small in size and have specialized business units or divisions within a larger organization that focus on specific functions, products, services, or markets. A large parent organization is likely to have significant influence on subsidiary units. This can lead to a more centralized and hierarchical relationship, with the subsidiary acting more like an extension of the parent's business. It is plausible that the relative size of a parent company compared to its subsidiary can have significant impacts on the subsidiary-parent relationship. Beuselinck *et al.* (2018) find that when parent companies have more control, there tends to be more

manipulation of earnings in their subsidiaries. We argue that when the parent is much larger than the subsidiary, they tend to exert stronger control over the subsidiary's operations and decision-making including the production of accounting information. Therefore, our next hypothesis is that when the parent is relatively bigger than the subsidiaries, the latter engages in more earnings manipulation.

H2. The size of the parent company influences the earnings quality at the subsidiary level.

A substantial body of accounting literature has investigated the variations in audit quality between firms affiliated with the Big 4 auditors and those without such affiliations. The studies document that Big 4 audit firms improve earnings quality (Jiang, Wang, & Wang, 2019; Khurana & Raman, 2004). Most of these studies have relied on the data of publicly listed firms. However, how audit quality impacts the earnings quality of private firms is underexplored. Furthermore, there is a lack of understanding regarding whether earnings quality, as proxied by Big 4 auditors, would trickle down to subsidiary firms. Listed firms consolidate their financial statements at the parent level and auditors can access the books, records and documents of the entities whose accounts are consolidated [7]. Therefore, it is likely that auditors of the parent entity will ensure high-quality reporting at the subsidiary level. We hypothesize that subsidiary firms will exhibit higher earnings quality if their parents engage Big 4 firms as auditors:

H3. Subsidiary firms will exhibit greater earnings quality if the parent is audited by the Big 4 auditing firms.

3. Data and methodology

3.1 Sample selection

Our sample period covers the years from 2012 to 2023 and the sample firms required for the study come from the Prowess database of Center for Monitoring Indian Economy (CMIE). We chose 2012 as the starting period because Indian companies provide the current and non-current classification of balance sheet items from that year onward, which is required for calculating our earnings quality proxies. Prowess provides financial statement data of around 50,000 companies incorporated in India. The database, owing to its rich coverage of public and private firms, offers us the unique opportunity to study private firms. Prowess is used as a source for private company financials of Indian companies in previous research (Li, 2021). Prowess also provides the data on the subsidiaries of companies. They source these data from the annual reports of companies where they disclose the names of their subsidiaries under the "disclosure of related parties". We capture these names and use them to identify private-subsidiaries. We used the following procedure to identify private companies in Prowess. We selected all the companies in the Prowess database and saved them in the "output sheet". Next, we replaced the listed firms from the "output sheet". The remaining companies are our sample of private firms. Based on the data of subsidiaries, we classified private companies into subsidiaries (of listed firms) and standalone entities. We restrict the sample to non-utility and non-financial firms. Our sample selection procedure is explained in detail in Table 1. We have a total of 25,794 firms and 67,509 firm-year observations for the cross-sectional analysis.

3.2 Methodology: earnings quality proxies

Earnings quality is a multifaceted construct. It generally denotes the effectiveness of earnings measurement and the usefulness of earnings (Barker & Imam, 2008). Earnings are

considered to be of good quality if they provide “more information about the features of a firm’s financial performance” (Dechow, Ge, & Schrand, 2010). Since earnings quality of private firms is a relatively underexplored area, we use two measures of financial reporting quality. There is also a lack of a universally accepted measure for financial reporting or earnings quality (Dechow *et al.*, 2010). So, a single proxy is unlikely to capture all aspects of financial reporting quality, we use two measures of reporting quality as used in earlier studies (Bonacchi, Marra, & Zarowin, 2019; Hope *et al.*, 2013). We explain each measure in detail in the following section:

3.3 Abnormal working capital accruals

Our first earnings quality metric is abnormal working capital accruals suggested by DeFond and Park (2001). Following Carey and Simnett (2006), we measure abnormal working capital accrual from the following model:

$$AWCA_{i,t} = WC_{i,t} - WC_{i,t-1} * \left(\frac{Rev_{i,t}}{Rev_{i,t-1}} \right) \quad (1)$$

where:

$AWCA$ = Abnormal working capital accruals

WC = [(current assets – cash and short-term investments) – (current liabilities –short-term debt)].

Rev = Sales revenue, for firm i in year t , scaled by lagged total assets

We use the absolute value (ABSAWCA) of $AWCA$ to analyze discretionary accruals in line with studies that have no a priori expectations about the direction of discretionary accruals [8].

3.4 Performance adjusted discretionary accruals

Following Dechow, Sloan, and Sweeney (1995) and Kothari, Leone, and Wasley (2005), we use the performance adjusted modified-jones model as our second proxy for earnings quality. Performance-matched discretionary accrual measures improve the reliability of inferences drawn from earnings management research. This measure captures the direction exercised by managers while reporting income numbers. We run the following equation across each year and industry combination for all our sample firms. We take the first two digits of National Industry classification (NIC) code to identify the respective industries. We require each industry-year combination to have at least 10 observations. Specifically, we run the following equation:

Private firms in prowess database ¹	42,313
Financial firms	(4,095)
Govt owned, regulated industries and subsidiaries of foreign firms	(10,623)
Firms having missing annual report data during the entire sample period	(1,801)
Total number of unique firms	25,794
Private firm observations used in the regression analysis	55,123 to 66,823

Note(s): ¹We also removed unlisted gov-joint sector firms, cooperative firms, non-profit trusts from our sample. The sample period is 2012–2023

Source(s): Table created by authors’

Table 1.
Sample selection

$$\frac{ACC_t}{A_{t-1}} = a + b_1 \frac{1}{A_{t-1}} + b_2 \frac{\Delta Rev_t}{A_{t-1}} + b_3 \frac{PPE_t}{A_{t-1}} + b_4 ROA_t + e \tag{2}$$

where:

Acc = Total accruals measured as (ΔNon-cash current assets- ΔCurrent liabilities)- Depreciation, for firm *i* in year *t*, scaled by lagged total assets

Rev = Sales revenue, for firm *i* in year *t*, scaled by lagged total assets

PPE= Plant, property and equipment, for firm *i* in year *t*, scaled by lagged total assets

ROA = Return on assets is measured as net income divided by average total assets for firm *i* in year *t*.

The absolute value of residuals (ABSDTA) from Equation (2) is used as the proxy for discretionary total accruals.

4. Model specification
4.1 Descriptive statistics and correlations

Tables 2 and 3 show the descriptive statistics and correlation coefficients of the key variables used in this study. We observe that the mean and median values of our earnings quality proxies are higher for subsidiary firms as compared to standalone firms. ABSDTA and ABSWCA are inverse proxies for earnings quality. Higher the value of ABSDTA and ABSWCA, lesser the earnings quality. The mean (median) value of ABSDTA is 0.098 (0.061)

Variable	<i>n</i>	Mean	Median	SD	25%	75%
<i>Panel A: standalone firm sample</i>						
<i>ABSDTA</i>	60,776	0.085	0.054	0.095	0.024	0.108
<i>ABSWCA</i>	50,141	0.104	0.063	0.124	0.027	0.130
<i>Capneed</i>	61,812	12.798	0.000	226.163	−19.842	5.060
<i>Size</i>	61,973	6.691	6.709	1.646	5.629	7.804
<i>ROE</i>	61,973	7.441	8.170	28.558	1.370	17.970
<i>Loss</i>	61,973	9.891	6.667	13.883	0.000	13.333
<i>Std_ROA</i>	61,973	31.549	22.410	52.825	3.770	54.670
<i>Lev</i>	61,973	0.262	0.238	0.223	0.043	0.427
<i>Growth</i>	61,973	0.142	0.071	0.750	−0.022	0.200
<i>Inv</i>	61,973	0.178	0.144	0.171	0.026	0.269
<i>Panel B: subsidiary firm sample</i>						
<i>ABSDTA</i>	6,283	0.098	0.061	0.108	0.027	0.126
<i>ABSWCA</i>	5,198	0.120	0.070	0.147	0.028	0.149
<i>Capneed</i>	6,607	28.115	0.000	289.325	−9.461	2.538
<i>Size</i>	6,733	6.806	6.818	1.857	5.615	8.109
<i>ROE</i>	6,733	1.621	5.340	38.254	−4.700	17.710
<i>Loss</i>	6,733	18.836	13.333	17.853	0.000	33.333
<i>Std_ROA</i>	6,733	19.994	13.030	66.785	−11.810	49.800
<i>Lev</i>	6,733	0.226	0.156	0.239	0.000	0.386
<i>Growth</i>	6,733	0.201	0.054	1.762	−0.034	0.199
<i>Inv</i>	6,733	0.105	0.032	0.150	0.000	0.167

Table 2. Descriptive statistics
Note(s): Please see Appendix 1 for variable definitions
Source(s): Table created by authors'

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) <i>ABSDTA</i>	1.000													
(2) <i>ABSWCA</i>	0.673* (0.000)	1.000												
(3) <i>Subs</i>	0.042* (0.000)	0.037* (0.000)	1.000											
(4) <i>Parent_Size</i>	0.048* (0.000)	0.043* (0.000)	0.504* (0.000)	1.000										
(5) <i>Big4</i>	0.033* (0.000)	0.027* (0.000)	0.624* (0.000)	0.455* (0.000)	1.000									
(6) <i>BTD</i>	0.089* (0.000)	0.062* (0.000)	-0.047* (0.000)	-0.032* (0.000)	-0.037* (0.000)	1.000								
(7) <i>Capneed</i>	0.044* (0.000)	0.022* (0.000)	0.017* (0.000)	0.010* (0.007)	0.015* (0.000)	0.037* (0.000)	1.000							
(8) <i>Size</i>	-0.081* (0.000)	-0.109* (0.000)	0.019* (0.000)	-0.080* (0.000)	0.053* (0.000)	0.082* (0.000)	0.026* (0.000)	1.000						
(9) <i>ROE</i>	-0.015* (0.000)	-0.023* (0.000)	-0.002 (0.547)	-0.001 (0.703)	-0.002 (0.582)	0.037* (0.000)	0.001 (0.844)	0.018* (0.000)	1.000					
(10) <i>Loss</i>	0.023* (0.000)	0.054* (0.000)	0.183* (0.000)	0.105* (0.000)	0.146* (0.000)	-0.444* (0.000)	-0.004 (0.315)	-0.003 (0.344)	-0.023* (0.000)	1.000				
(11) <i>Std_ROA</i>	0.025* (0.000)	-0.018* (0.000)	-0.062* (0.000)	-0.053* (0.000)	-0.048* (0.000)	0.700* (0.000)	0.027* (0.000)	0.138* (0.000)	0.030* (0.000)	-0.611* (0.000)	1.000			
(12) <i>Lev</i>	-0.085* (0.000)	-0.074* (0.000)	-0.049* (0.000)	-0.080* (0.000)	-0.064* (0.000)	-0.310* (0.000)	-0.053* (0.000)	0.045* (0.000)	-0.005 (0.218)	0.093* (0.000)	-0.290* (0.000)	1.000		
(13) <i>Growth</i>	0.071* (0.000)	0.173* (0.000)	0.011* (0.003)	0.001 (0.733)	0.004 (0.287)	0.054* (0.000)	0.011* (0.002)	0.017* (0.000)	0.003 (0.456)	-0.010* (0.006)	0.006 (0.119)	-0.007* (0.049)	1.000	
(14) <i>Inv</i>	-0.103* (0.000)	-0.053* (0.000)	-0.126* (0.000)	-0.087* (0.000)	-0.087* (0.000)	-0.077* (0.000)	-0.028* (0.000)	0.003 (0.367)	0.005 (0.212)	-0.099* (0.000)	-0.076* (0.000)	0.274* (0.000)	0.006 (0.128)	1.000

Note(s): *shows significance at $p < 0.05$

Source(s): Table created by authors'

for subsidiary firms and 0.085 (0.054) for standalone firms. Similarly, the mean (median) value of ABSWCA is 0.120 (0.070) for subsidiary firms 0.104 (0.063) for standalone firms. This suggests that earnings quality is lower for those private firms that are subsidiaries of listed entities relative to the standalone firms. Furthermore, the standalone firms are more leveraged and have higher returns on equity relative to subsidiary firms. The growth of subsidiary firms (mean of 0.201) is significantly higher in comparison with other standalone firms (mean of 0.142). [Table 3](#) shows a significant positive correlation between our earnings quality measures denoting that they measure the same construct. As expected, capital requirement, size, profitability, leverage, growth and inventory are significantly correlated with our earnings quality measures, suggesting that we need to control for these variables in our regression analysis.

5. Results and discussions

5.1 Main test

To estimate the differences in earnings quality of subsidiary firms relative to standalone private firms, we run [Equation \(3\)](#) across our sample of private firms.

$$\begin{aligned} (ABSDTA, ABSWCA)_{i,t} = & \alpha_0 + \beta_1 Subs_{i,t} + \beta_2 Capneed_{i,t} + \beta_3 Size_{i,t} + \beta_4 ROE_{i,t} \\ & + \beta_5 Loss_{i,t} + \beta_6 Std_ROA_{i,t} + \beta_7 Lev_{i,t} + \beta_8 Growth_{i,t} \\ & + \beta_9 Inv_{i,t} + u_i + d_t + \epsilon_{i,t} \end{aligned} \quad (3)$$

Subs is a dichotomous variable that takes the value 1 if the firm is a subsidiary of a listed firm and zero otherwise. We focus on β_1 which reparents the difference in earnings quality of subsidiary firms compared to standalone private firms.

5.2 Control variables

Based on prior studies, we use several control variables that have been found to affect the earnings quality of firms (See [Hope et al., 2013](#)). *Capneed* is measured as the percentage change in equity shares, preference shares and long-term debt in the following year. *Size* is the natural logarithm of total assets. *ROE* is the return on equity. *Loss* is the cumulative percentage of sample years with reported losses by the firm. *Std_ROA* is the standard deviation of return on assets calculated at the firm level over the sample period for firms with a minimum of three annual observations. *Lev* is total borrowings scaled by total assets; *Growth* is growth in total assets in the current year compared to the previous year. *Inv* is defined as the ratio of inventory to total assets. To account for the potential influence of specific industry characteristics and temporal variations, we control for industry and year effects in this equation.

Our main analysis is based on [Equation \(3\)](#). The results of this equation are reported in [Table 4](#). We focus on β_1 which captures the difference in earnings quality (earnings manipulation) of subsidiary firms compared to standalone private firms. We find significant and positive coefficients for β_1 in both models, as shown in columns (1) and (2). This suggests greater earnings manipulation and lower earnings quality for private subsidiary firms in comparison with other standalone private firms. Our results, when analyzed with standardized coefficients, demonstrate significant economic implications as well [\[9\]](#). The results in [Table 4](#) support our initial hypothesis that earnings quality will be lower for subsidiary firms. Stated otherwise, the affiliation with listed firms makes these private firms more prone to managing earnings. To corroborate the findings reported in [Table 4](#), which used an entire sample of private subsidiaries and standalone firms, we run a

Variables	(1) <i>ABSDTA</i>	(2) <i>ABSWCA</i>
<i>Subs</i>	0.006*** (0.002)	0.008*** (0.003)
<i>Capneed</i>	0.000*** (0.000)	0.000*** (0.000)
<i>Size</i>	−0.005*** (0.000)	−0.009*** (0.001)
<i>ROE</i>	−0.000* (0.000)	−0.000 (0.000)
<i>Loss</i>	0.000*** (0.000)	0.001*** (0.000)
<i>Std_ROA</i>	0.000*** (0.000)	0.000** (0.000)
<i>Lev</i>	−0.012*** (0.003)	−0.021*** (0.004)
<i>Growth</i>	0.020*** (0.005)	0.029*** (0.007)
<i>Inv</i>	−0.038*** (0.003)	−0.014* (0.007)
Constant	0.154*** (0.004)	0.155*** (0.005)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	66,823	55,129
<i>R</i> -squared	0.079	0.083

Note(s): Subs is an indicator variable for private subsidiary firms. Please see [Appendix 1](#) for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles. The symbol ***, ** and * denote significance at 1, 5 and 10% levels, respectively. Robust standard errors (clustered at the firm level) are reported in the parentheses

Source(s): Table created by authors'

Table 4.
Earnings quality for
private subsidiary
firms versus
standalone firms (full
sample)

matched sample regression analysis in the next section. Specifically, we match each subsidiary firm with a standalone firm having the closest total assets and the same industry and year. Following [Pittman and Fortin \(2004\)](#), we ensure that the absolute difference in total assets between matched pairs of subsidiary and standalone firms is within 10% so as to avoid poor matches. The results of this analysis are reported in [Table 5](#). Consistent with the results in [Table 4](#), we show that subsidiary firms have lesser earnings quality compared to standalone firms. The coefficients of the indicator variable *Subs* are positive and significant in both the models. This indicates that being an affiliate to a listed parent negatively impacts the earnings quality of private subsidiary firms. To summarize, compared to other standalone private firms, private subsidiaries of listed entities engage in greater earnings manipulation in the context of India. The findings indicate that parent firms exert influence over the accounting decisions of private firms, given the comparatively relaxed regulations governing private firms in contrast to publicly listed ones. Indian company regulations impose various norms on public companies, including the appointment of independent boards, the inclusion of at least a woman director, and the formation of an independent audit committee. In contrast, these regulations do not apply to unlisted private firms [\[10\]](#). Our results align with the argument that listed firms leverage this disparity in regulatory standards between public and unlisted private firms to achieve their reporting objectives.

Table 5.
Earnings quality for
private subsidiary
firms versus
standalone firms
(matched sample based
on size, industry
and year)

Variables	(1) <i>ABSDTA</i>	(2) <i>ABSWCA</i>
<i>Subs</i>	0.008*** (0.002)	0.011*** (0.004)
<i>Capneed</i>	0.000** (0.000)	0.000*** (0.000)
<i>Size</i>	−0.004*** (0.001)	−0.008*** (0.001)
<i>ROE</i>	−0.000** (0.000)	−0.000* (0.000)
<i>Loss</i>	−0.000 (0.000)	0.001*** (0.000)
<i>Std_ROA</i>	0.000 (0.000)	0.000 (0.000)
<i>Lev</i>	−0.018*** (0.006)	−0.043*** (0.009)
<i>Growth</i>	0.018** (0.008)	0.027** (0.011)
<i>Inv</i>	−0.056*** (0.008)	0.014 (0.022)
Constant	0.169*** (0.009)	0.157*** (0.013)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	10,464	8,611
R-squared	0.083	0.097
Note(s): Subs is an indicator variable for private subsidiary firms. Please see Appendix 1 for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles. The symbol ***, ** and * denote significance at 1, 5 and 10% levels, respectively. Robust standard errors (clustered at the firm level) are reported in the parentheses		
Source(s): Table created by authors'		

5.3 Cross-sectional variation in the earnings quality of subsidiary companies

To further investigate how the status of being an affiliate impacts earnings quality of private firms, we examine our [Hypothesis 2](#) and [3](#). We conjecture that the results obtained in the previous analysis might be influenced by other parameters. Our theoretical framework posits that a considerable number of private subsidiaries function essentially as additional divisions of listed companies. In this context, the extent of control exercised by the listed parent firm over its subsidiaries is expected to have a substantial influence on the earnings quality of these subsidiary firms. To operationalize the concept of “control” in our empirical analysis, we employ the size of the parent firm relative to that of the subsidiary firm as a proxy ([Bonacchi, Cipollini, & Zarowin, 2018](#)). Specifically, a large size of the parent firm implies a greater capacity to dictate and oversee the operations of its affiliated subsidiaries. This will eventually enable the public firms to use maximum discretion in financial reporting available to private subsidiaries. We run the following equation to empirically examine this relation:

$$\begin{aligned}(ABSDTA, ABSWCA)_{i,t} = & \alpha_0 + \beta_1 Subs_{i,t} + \beta_2 Subs*Parent_Size_{i,t} + \beta_3 Capneed_{i,t} \\ & + \beta_4 Size_{i,t} + \beta_5 ROE_{i,t} + \beta_6 Loss_{i,t} + \beta_7 Std_ROA_{i,t} \\ & + \beta_8 Lev_{i,t} + \beta_9 Growth_{i,t} + \beta_{10} Inv_{i,t} + u_i + d_t + \epsilon_{i,t}\end{aligned}\quad (4)$$

Our variable of interest is *Subs*Parent_Size*, which explains the change in earnings quality if the parent firm is relatively bigger than the subsidiaries. This interaction variable is an

indicator variable that takes 1 for observations of total assets of the parent company relative to the subsidiary is in the upper quartile and zero otherwise. The results of this analysis are reported in Table 6. As predicted, we find the coefficient of our interaction variable positive and significant, suggesting that the earnings manipulation is higher if the parent has significant control over the subsidiary as proxied by the relative size of the parent firm. These findings show that the impact of affiliation to listed firms further reduces the earnings quality of subsidiaries as the size of the parent increases. Stated otherwise, a larger parent is likely to have a bigger effect on distorting earnings at the smaller subsidiary firms. Our findings are also consistent with anecdotal evidence that a listed parent firm uses its smaller subsidiary units to manage earnings and siphon off funds. The results contribute to our understanding of the complicated structure within the corporate structures of private subsidiaries and their listed parent companies. The positive relationship between control and earnings manipulation emphasizes the importance of considering the governance structures and control mechanisms when evaluating the financial reporting practices of private firms.

Turning into our third hypothesis, we expected that if the parents are audited by Big 4 audit firms (our proxy for audit quality), the subsidiary firms report more meaningful earnings information thereby having improved earnings quality. The results reported in

Variables	(1) <i>ABSDTA</i>	(2) <i>ABSWCA</i>
<i>Subs</i>	0.003 (0.002)	0.002 (0.003)
<i>Subs*Parent_Size</i>	0.013*** (0.004)	0.019*** (0.006)
<i>Capneed</i>	0.000** (0.000)	0.000*** (0.000)
<i>Size</i>	-0.005*** (0.000)	-0.004*** (0.000)
<i>ROE</i>	-0.000 (0.000)	-0.000 (0.000)
<i>Loss</i>	0.000*** (0.000)	0.001*** (0.000)
<i>Std_ROA</i>	0.000* (0.000)	0.000 (0.000)
<i>Lev</i>	-0.011*** (0.003)	-0.018*** (0.004)
<i>Growth</i>	0.020 (0.002)	0.007*** (0.007)
<i>Inv</i>	-0.038*** (0.003)	-0.01 (0.007)
Constant	0.127*** (0.003)	0.099*** (0.004)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	66,823	55,339
R-squared	0.080	0.110

Note(s): Subs is an indicator variable for private subsidiary firms. Parent_Size is a binary indicator, 1 for parent companies with total assets in the upper quartile relative to subsidiaries, 0 otherwise. Please see Appendix 1 for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles. The symbol ***, ** and * denote significance at 1, 5 and 10% levels, respectively. Robust standard errors (clustered at the firm level) are reported in the parentheses

Source(s): Table created by authors'

Table 6.
Earnings quality for
private subsidiary
firms versus
standalone firms
(impact of
parent's size)

Table 7 do not support our argument. While our model in column (1) reveals a significant positive association between Big 4 affiliation and earnings management (inverse proxy for earnings quality) through the interaction term, the lack of significance in column (2) cautions against stating a robust relationship. But this suggests that having a high-quality auditor at the parent level can negatively impact the earnings quality of subsidiaries. This result can be attributed to several reasons. Firstly, unlike many other developed countries where large companies use a single audit firm for consolidated financial statements, in India, parent companies usually depend on small audit firms to conduct audits of their subsidiaries. The existing Standard on Auditing (SA) 600 in India permits the principal auditor of a listed firm, usually a larger and more established audit firm, to rely on the work of a subsidiary's auditor, which is often a smaller audit firm [11]. Therefore, the auditors of parent firms often lack awareness of the audit processes in their subsidiaries, and this arrangement can have implications for audit quality and accountability. Secondly, prior research also highlighted that Big 4 auditors are more lenient towards downward earnings manipulation in the private client market. The private client firms of Big 4 auditors engage in downward earnings management and achieve their tax minimization objective (Chen, Elmes, & Lobo, 2023). Furthermore, the audit market in India is generally dominated by local chartered

Variables	(1) <i>ABSDTA</i>	(2) <i>ABSWCA</i>
<i>Subs</i>	0.005** (0.002)	0.005 (0.004)
<i>Subs*Big4</i>	0.006* (0.003)	0.006 (0.006)
<i>Capneed</i>	0.000*** (0.000)	0.000*** (0.000)
<i>Size</i>	-0.005*** (0.000)	-0.009*** (0.001)
<i>ROE</i>	0.000 (0.000)	-0.000 (0.000)
<i>Loss</i>	0.000*** (0.000)	0.001*** (0.000)
<i>Std_ROA</i>	0.000** (0.000)	0.000** (0.000)
<i>Lev</i>	-0.012*** (0.003)	-0.021*** (0.004)
<i>Growth</i>	0.000* (0.000)	0.000*** (0.000)
<i>Inv</i>	-0.042*** (0.003)	-0.014* (0.007)
Constant	0.224*** (0.004)	0.155*** (0.005)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	66,823	55,129
<i>R-squared</i>	0.074	0.083

Table 7.
Earnings quality for
private subsidiary
firms versus
standalone firms (Big 4
versus non-Big 4)

Note(s): Subs is an indicator variable for private subsidiary firms. Big 4 is a dummy variable that equals one when the parent firm of the subsidiary is audited by Big 4 affiliates. Please see Appendix 1 for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles. The symbol ***, ** and * denote significance at 1, 5 and 10% levels, respectively. Robust standard errors (clustered at the firm level) are reported in the parentheses

Source(s): Table created by authors'

accountancy firms (Houge, Ahmed, & van Zijl, 2017), which is a particular concern for private enterprises. The Big 4 global audit firms are prohibited from directly conducting audits under their own name in India. Consequently, they establish affiliations with domestic Indian chartered accountant (audit) firms and engage the services of Indian chartered accountants affiliated with the Institute of Chartered Accountants of India (ICAI). Hence, our findings indicate that Big 4 affiliation of parent firms does not improve the earnings quality of private subsidiaries, though this observation is not consistently robust.

As reported earlier, our evidence supports that affiliation to a listed entity negatively impacts the earnings quality of private firms. In our next section, we investigate how such private subsidiaries engage in earnings manipulation by specifically looking through the channel of earnings manipulation. As mentioned in prior studies, tax is an important consideration for private firms while presenting financial statements and they have the incentive to manage earnings downwards (Bar-Yosef, D'Augusta, & Prencipe, 2019; Goncharov & Zimmermann, 2006). Studies document that private firms' incentive to engage in earnings manipulation or tendency to avoid losses depends on the book-tax conformity of a particular country (Bonacchi *et al.*, 2019; Coppens & Peek, 2005; Burgstahler *et al.*, 2006). These studies thus relied on cross-country samples to investigate the relationship. We use within country variations in tax alignment (book tax differences) to identify the nature of earnings manipulation among private firms. Tax minimization is considered as an objective at the cost of reduced earnings quality for private firms (Chen *et al.*, 2023). Prior research shows that private firms achieve their tax avoidance strategies at the cost of earnings quality (Hanlon & Heitzman, 2010; Shackelford & Shevlin, 2001). Compared to listed firms, private firms enjoy more discretion on tax requirements [12]. Hence, we check whether private subsidiary firms exploit tax management strategies to engage in earnings manipulation by running the following model:

$$(DTA, WCA)_{i,t} = \alpha_0 + \beta_1 Subs_{i,t} + \beta_2 Subs*BT D_{i,t} + \beta_3 Capneed_{i,t} + \beta_4 Size_{i,t} \\ + \beta_5 ROE_{i,t} + \beta_6 Loss_{i,t} + \beta_7 Std_ROA_{i,t} + \beta_8 Lev_{i,t} + \beta_9 Growth_{i,t} \\ + \beta_{10} Inv_{i,t} + u_i + d_t + \epsilon_{i,t} \quad (5)$$

We use book tax differences (BTD) as a proxy for tax management and see if this impacts the earnings quality of subsidiary firms differently (Sundvik, 2017; Tang & Firth, 2011) [13]. BTD is defined as Pre-tax income – (Current tax expense/Statutory tax rate), scaled by lagged total assets. BTD is commonly employed as a tax avoidance measure in the literature (e.g. Wen, Cui, & Ke, 2020; Wilson, 2009). As our independent variable is a proxy of tax management, we take the signed value of discretionary accrual as a dependent variable. Our coefficient of interest is *Subs*BT D* (the interaction variable). The results are reported in Table 8. The significant positive coefficients of *Subs*BT D* in models (1) and (2) indicate that subsidiary firms engage in income increasing earnings management as the book tax differences increase. This result shows that private firms exploit book tax differences at the subsidiary level to engage in income increasing earnings management. Perhaps, the subsidiary's higher earnings might help the parent company in its overall consolidated financial performance in this case. The quality of earnings at the subsidiary level is poor despite the fact that all private companies are mandated by the Companies Act of 2013 and the Income Tax Act of 1961 to undergo audits and submit annual reports to the tax authorities akin to listed firms in India. Our evidence is consistent with the argument that private firms, particularly subsidiary firms in our case, resort to reporting higher book income and lower taxable income.

Variables	(1) <i>DTA</i>	(2) <i>DWCA</i>
<i>Subs</i>	−0.006*** (0.002)	−0.000 (0.003)
<i>BTD</i>	0.099*** (0.012)	0.074*** (0.016)
<i>Subs*BTD</i>	0.037* (0.021)	0.062** (0.028)
<i>Capneed</i>	−0.000*** (0.000)	−0.000*** (0.000)
<i>Size</i>	−0.002*** (0.000)	−0.002*** (0.000)
<i>ROE</i>	0.000 (0.000)	0.000*** (0.000)
<i>Loss</i>	0.000*** (0.000)	0.000*** (0.000)
<i>Std_ROA</i>	−0.000*** (0.000)	0.000 (0.000)
<i>Lev</i>	0.008** (0.003)	0.010** (0.004)
<i>Growth</i>	0.000 (0.002)	−0.008 (0.005)
<i>Inv</i>	0.065*** (0.004)	0.031*** (0.006)
Constant	−0.001 (0.004)	0.005 (0.005)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	54,860	54,508
<i>R</i> -squared	0.014	0.018

Table 8.
Earnings quality for
private subsidiary
firms versus
standalone firms (tax
management and
earnings
manipulation)

Note(s): Subs is an indicator variable for private subsidiary firms. BTD is book tax difference measured as Pre-tax income – (Current tax expense/STR), scaled by lagged total assets. Please see [Appendix 1](#) for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles. The symbol ***, ** and * denote significance at 1, 5 and 10% levels, respectively. Robust standard errors (clustered at the firm level) are reported in the parentheses

Source(s): Table created by authors’

Other channels might also explain the relationship reported in our findings. Private subsidiaries may engage in more complex intercompany transactions and transfer pricing strategies with their listed parent companies, potentially impacting earnings quality. Additionally, weaker information disclosure requirements for private subsidiaries could obscure their earnings. Our findings support the notion that the strategic objectives of a parent company can significantly influence the financial reporting practices of its subsidiaries.

6. Endogeneity concerns

We acknowledge that our analysis may be subject to endogeneity issues since firms’ decisions to operate as private subsidiaries or standalone entities are endogenously determined. However, the existing literature has not extensively examined the factors influencing these choices. Therefore, we conduct an exploratory analysis based on [Bonacchi et al. \(2019\)](#). Initially, we model the likelihood of a firm choosing to be a subsidiary or a private standalone entity using the following model:

$$(Subs)_{i,t} = \alpha_0 + \beta_1 Age_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Inv_{i,t} + \beta_4 Size_{i,t} + \beta_5 Growth_sales_{i,t} + \beta_6 ROA_{i,t} + u_i + d_t + \epsilon_{i,t} \quad (6)$$

where *Subs* takes 1 for subsidiary firms and zero for standalone private firms. *u* and *d* are industry and year dummies, respectively. Other variable definitions are provided in [Appendix](#). We employ a two-stage Heckman procedure ([Heckman, Ichimura, & Todd, 1997](#)) to address endogeneity concerns in our research. In the first stage, we estimate [Equation \(6\)](#) using all firms in our sample and compute the Inverse Mills ratio (IMR). We use the Age of the firm as an instrument variable, as it is correlated with the choice between private subsidiary and standalone firms but not with our earnings quality proxies. In the second stage, we include IMR as a control variable in [Equation \(3\)](#). We find qualitatively similar results (not tabulated) when accounting for endogeneity concerns [[14](#)].

7. Conclusion

Private- subsidiary firms are very common in countries like India. Despite their significance in the country and elsewhere, there is a very limited understanding of their financial reporting practices in the accounting literature. The current body of literature examining earnings quality and the parent-subsidiary relationship has primarily focused on multinational corporations, considering variations that arise across different countries. We examine the financial reporting quality of private firms in India, where regulations and governance structures differ between public and private subsidiary firms. Our study concludes that firms that are subsidiaries of listed entities exhibit poor earnings quality as compared to other standalone firms. Our results provide empirical support for the proposition that public firms employ private subsidiaries to manipulate earnings or accomplish their earnings targets ([Bonacchi et al., 2018](#)). This is facilitated by the relatively lenient regulatory environment and reduced public scrutiny experienced by private subsidiaries. Further, we document that the earnings quality deteriorates with the size of the parent company relative to the subsidiary. We do not find evidence that Big 4 affiliation of the parent company improves earnings quality among private subsidiaries; rather, it exacerbates earnings manipulation in some cases. Finally, we examine and find that private subsidiary firms engage in tax management to report income increasing earnings management. Our findings suggest the need for heightened regulatory oversight over the activities of private firms, especially when these private entities function as subsidiaries of publicly listed firms.

8. Implications

Our research highlights the need for more empirical studies focusing on the different organizational structures of private firms. By examining the earnings quality of private-subsidiary firms, our findings provide valuable insights for investors, bankers, creditors, and regulators regarding the financial reporting practices of private firms. The study also emphasizes the necessity for a more robust system of governance and supervision for private firms, particularly in India and generally in other countries. Our study recommends improving audit quality and earnings quality at the subsidiary level by requiring the auditor of the parent firm to also audit its subsidiaries, a practice not currently implemented in India. Auditing regulators could enhance the scope of auditing standards, especially SA 600, by making the principal auditor accountable for the audit of subsidiaries. We believe that future research on earnings quality of public firms will consider how accounting choices and governance structure at the subsidiary level influence the overall earnings quality at the parent level.

9. Limitations and scope for future research

This study examines how affiliation with a listed entity as a subsidiary impacts the earnings quality of private companies. Future research could investigate the financial reporting practices of both private subsidiary firms and standalone private firms, comparing them in similar or differing regulatory environments across various countries. Due to data unavailability, we could not ascertain the extent of control that public firms exert over their subsidiaries. Future studies can address this limitation by utilizing hand-collected data.

Notes

1. The majority of the subsidiaries are domestic, unlisted entities, although a few companies have subsidiaries in other countries.
2. Few of the subsidiary names of Tata Power are: Walwhan Solar K A Ltd, Walwhan Solar M H Ltd, Walwhan Solar M P Ltd, Walwhan Solar P B Ltd, Walwhan Solar R J Ltd, Walwhan Solar T N Ltd, Walwhan Urja Anjar Ltd, Walwhan Urja India Ltd, Walwhan Wind R J Ltd where the last word before “Ltd” denotes the states in which the subsidiaries are incorporated. This pattern can be observed in many Indian subsidiary companies.
3. Authors’ calculation based on CMIE data.
4. Sec 2 (46) of the Companies Act, 2013
5. In 2018, the government of India intervened and constituted a new board for IL&FS as the old one was failed to discharge its duties. See https://www.business-standard.com/article/finance/il-fs-case-complexities-reveal-what-india-s-resolution-mechanism-is-lacking-121042001548_1.html, <https://www.business-standard.com/about/what-is-il-fs-crisis>
6. Mint. (2024, September 4). NFRA imposes ₹10 crore penalty on BSR & Associates, debars two partners. Livemint. <https://www.livemint.com/industry/nfra-imposes-10-crore-penalty-on-bsr-associates-debars-two-partners-11724080801238.html>
7. Ministry of Corporate Affairs (MCA), Report of Expert Committee. <https://www.mca.gov.in/Ministry/reportonexpertcommitte/chapter9.html>
8. As a robustness test we also use discretionary revenue and discretionary working capital accrual models. Our inferences remain unchanged when we use these proxies (untabulated).
9. For example, a standardized coefficient of 0.0186 (untabulated) for subsidiary indicator variable shows that affiliation to listed firms is associated with a 0.0186 standard deviation increase (decrease) in the earnings management (earnings quality).
10. The revised Clause 49 of the listing agreement provides guidelines to regulate subsidiary firms by appointing “one” independent director and enabling the parent’s audit committee to review the financial statements of the subsidiary. However, the regulations are still less stringent compared to those for listed firms.
11. Indian standards on auditing can be accessed from <https://kb.icai.org/pdfs/PDFFile5b3b50c46fd232.45953455.pdf>
12. A listed company with a paid-up share capital of ₹10 crore or more or turnover of ₹50 crore or more, the annual return must be certified by a Company Secretary in practice in Form No. MGT 8.
13. We are aware that not all book-tax differences necessarily indicate tax avoidance, as some differences can arise from legitimate accounting and tax policy differences.
14. We thank the anonymous reviewer for suggesting endogeneity correction.

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Variable name	Source	How we measure
<i>Dependent variables</i>		
ABSAWCA	Derived value	Absolute value of abnormal working capital accruals (AWCA)
ABSDTA	Derived value	The absolute value of residuals from Equation (2)
<i>Independent variables</i>		
Subs	CMIE Prowess	Indicator variable for subsidiary firms
<i>Moderating variables</i>		
Big 4	CMIE Prowess	Indicator variable if the parent firm is audited by any subsidiaries of big 4/5 audit firms. Some of the Indian subsidiaries of Big 4/5 include C. C. Chokshi & Co. (Deloitte), BSR & Co. (KPMG), S.R. Batliboi & Co (E&Y), S.R. Batliboi & Co (Grant Thornton) etc.
BTD	CMIE Prowess	Book tax difference defined as Pre-tax income – (Current tax expense/ Statutory tax rate), scaled by lagged total assets
Parent_Size	CMIE Prowess	The indicator variable for total assets of the parent company relative to the subsidiary is in the upper quartile and zero otherwise
<i>Control variables</i>		
Capneed	CMIE Prowess	Percentage change in equity shares, preference shares and long-term debt in the following year
Growth	CMIE Prowess	Growth in total assets
Growth_sales	CMIE Prowess	Growth in total revenue
Inv	CMIE Prowess	Ratio of inventory to total assets
Lev	CMIE Prowess	Total borrowings scaled by total assets
Loss	CMIE Prowess	Cumulative percentage of sample years with reported losses by the firm
ROE	CMIE Prowess	Return on equity
Size	CMIE Prowess	Natural log of total assets
Std_ROA	CMIE Prowess	Standard deviation of return on assets calculated at the firm level over the sample period for firms with a minimum of three annual observations
<i>Other variables used in the study</i>		
Acc	Derived value	Total accruals measured as (Δ Non-cash current assets- Δ Current liabilities)-Depreciation scaled by lagged total assets
Age	CMIE Prowess	Years since incorporation (Natural log)
AWCA	Derived value	Abnormal working capital accruals from Equation (1)
PPE	CMIE Prowess	Plant, property and equipment scaled by lagged total assets
ROA	CMIE Prowess	Return on assets is measured as net income divided by average total assets
REV	CMIE Prowess	Sales Revenue
WC	CMIE Prowess	[(current assets – cash and short-term investments) – (current liabilities –short-term debt)]

Source(s): Table created by authors'

Table A1.
Variable definitions

Supplementary materials

The supplementary material for this article can be found online.

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