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Accounting Conservatism, Corporate Diversification and Firm Value

Chloe Yu-Hsuan Wu[1]; Shou-Min Tsao[2]; Che-Hung Lin[3]

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[1]Leeds University Business School, University of Leeds, Leeds, LS2 9JT, United Kingdom; Email address: y.h.wu@leeds.ac.uk; ORCiD: 0000-0003-2623-1766

[2]National Central University, No. 300, Zhongda Rd., Zhongli District, Taoyuan City 32001, Taiwan; Email address: tsao@mgt.ncu.edu.tw

[c]National Pingtung University, No. 4-18, Ming-Sheng Road., Pingtung City 90003, Taiwan; Email address: chehunglin@mail.nptu.edu.tw

Corresponding Author: Che-Hung Lin, National Pingtung University, No. 4-18, Ming-Sheng Road., Pingtung City 90003, Taiwan; Email address: chehunglin@mail.nptu.edu.tw

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Abstract

This study investigates the impact of conservative financial reporting on corporate diversification, in order to explore whether accounting policy plays a role in mitigating agency problems associated with corporate decisions. Based on a sample of U.S. publicly listed firms in the period 2000–2017, this study initially reveals that diversification has an adverse effect on firm value. Our findings indicate that the increase in accounting conservatism leads to a subsequent reduction in the degree of corporate diversification. Additionally, the increase in accounting conservatism helps enhance the excess value attributed to diversification, suggesting that conservatism can alleviate the detrimental influence of diversification on firm value. Our results further indicate that the effect of accounting conservatism is more pronounced for firms with higher information asymmetry or poor corporate governance structure. Overall, the findings suggest that conservative accounting plays an effective monitoring role in disciplining management's corporate strategies of diversification, and therefore, benefits shareholders and capital markets.

Keywords: accounting conservatism, corporate diversification, firm value, agency cost, information asymmetry

1. Introduction

Corporate diversification is one of key strategies used to maximize the value of a firm's controlled resources, in order to enhance shareholders' welfare (Matsusaka, 2001). However, previous empirical evidence has indicated that the costs of diversification outweigh the benefits, given that multi-segment firms, on average, trade at a discount compared to their single-segment peers (e.g., Berger & Ofek, 1995; Denis, Denis, & Sarin, 1997; Lamont & Polk, 2002; Lang & Stulz, 1994; Rajan, Servaes, & Zingales, 2000). Such value losses to shareholders are attributable to agency conflicts and information asymmetries between managers and shareholders (Demirkan, Radhakrishnan, & Urcan, 2012; Denis et al., 1997; Jensen & Meckling, 1976; Ozbas, 2005). Accounting conservatism is argued to play a monitoring role in managers' decision making (Ball & Shivakumar, 2005). This is because managers are less likely to make investments with expected poor performance if they know *ex ante* that losses will be recognized timely. This study therefore focuses on the influence of conservative financial reporting on the level of corporate diversification; a topic which has scarcely been researched (Ruch & Taylor, 2015). In addition, we specifically examine whether conservative accounting is positively associated with excess value attributed to diversification.

Managers may have incentives to diversify a firm in order to pursue their private interests, which may result in misalignment with shareholders' interests (Aggarwal & Samwick, 2003; Denis et al., 1997; Jensen, 1986; Stulz, 1990). In addition, the complex nature of such a diversified firm limits the transparency of operations and the provision information to investors, which constrains outside shareholders' ability to perform effective monitoring (Aggarwal & Samwick, 2003; Denis et al., 1997; Harris, Kriebel, & Raviv, 1982). Abundant accounting literature suggests that financial reporting plays a vital role in reducing information asymmetries, and therefore, managers' behaviors can be effectively monitored (e.g., Bushman & Smith, 2001). Accounting conservatism imposes more stringent verifiability requirements for the recognition of economic gains relative to losses, by generating earnings that reflect bad news in a timelier fashion than good news (Basu, 1997; Watts, 2003). Therefore, conservative accounting is more likely to alleviate the agency costs associated with information asymmetry by providing external stakeholders with early warning signals, allowing them to monitor managers' investment and operating decisions more promptly (Ball & Shivakumar, 2005; Hu & Jiang, 2019; Lobo, Robin, & Wu, 2020; Watts, 2003).

For instance, Microsoft also has a history of adopting a relatively conservative approach in its accounting practices[4] (Buckman, 2002; Fox, 1997; McCafferty, 1997; Pulliam & Buckman, 2002; Tamaddon, 2013). Moreover, to maintain sustained growth and competitiveness within the rapidly evolving information technology sector, Microsoft has strategically diversified its business beyond its traditional operating systems over the years[5] (Bank, 1997; LinkedUp; Technology deals, 2016; Special Report: Microsoft: Way beyond the PC, 2005). This accounting practice, which facilitates the timely recognition of bad news, motivates managers to evaluate their diversification performance and make swift adjustments to efficiently integrate resources, thereby achieving economies of scale (Ovide, 2015; Stadler, 2021; Uberti & Dulaney, 2023).

To illustrate, approximately one year following Microsoft's acquisition of Nokia's business, management realized that it was no longer yielding satisfactory profits. By

[4] For example, Microsoft tends to hold back a portion of its revenue as a reserve for future expenditures. While Microsoft's conservative accounting methods raised concerns with the SEC in the late 1990s, they did not significantly affect financial analysts' perception of its financial health (Buckman, 2002).
[5] These expansions encompass diverse areas such as computer networking (Azure), consumer and enterprise software, Internet search engines (Bing), digital services (MSN), entertainment (Xbox), and high-profile acquisitions, such as LinkedIn and Skype Technologies.

employing a conservative accounting method, approximately 96% of the investment was promptly written off. Subsequently, these resources were promptly reallocated to other profitable projects, such as later acquisitions of LinkedIn and GitHub, to ensure continued business growth (Microsoft Corporation, 2014, 2015, 2016; Tabrizi, 2023). This implies that this accounting practice effectively disciplined managerial investment decisions and, consequently, enhanced firm value.

The existing empirical evidence emphasizes the benefits of conservatism for debt holders; however, the monitoring benefits of accounting conservatism for shareholders' value should receive more attention (Francis, Hasan, & Wu, 2013; García Lara, Garcia Osma, & Penalva, 2014; Kim, Li, Pan, & Zuo, 2013). As mentioned above, opportunistic managers may have incentives to derive private benefits by diversifying the firm. Furthermore, the complex nature of diversified firms implies a greater degree of information asymmetry between managers and shareholders. Taken together, these two strands of the accounting and corporate finance literature lead us to ask the following questions: Does accounting conservatism impact corporate strategies of diversification? In addition, for the firm's remaining strategies of corporate diversification, is accounting conservatism more likely to be positively associated with excess value of diversification?

By examining non-financial US companies for the period between 2000 and 2017, we follow the methods of Givoly and Hayn (2000), Khan and Watts (2009), and Penman and Zhang (2002) to measure accounting conservatism, in order to test its effects on the level of corporate diversification and the excess value attributed to diversification. We find that accounting conservatism is more likely to decrease the level of corporate diversification. In addition, there is a significantly positive relationship between conservative accounting and the excess value attributed to diversification. In our further cross-sectional analysis, the findings also show that the impact of accounting conservatism is more pronounced in companies characterized by greater information asymmetry or weaker corporate governance structure. Collectively, the findings suggest that accounting conservatism can mitigate the agency costs associated with corporate diversification, and limit managers' incentives and ability to deprive private benefits at the cost of outside shareholders.

This study contributes to the existing literature in three ways. First, the conceptual framework for financial reporting has excluded conservatism as a desirable quality of financial reporting information in 2010; this has provoked debates between standard-setters, academics, and practitioners (Barker, 2015; Orthaus, Pelger, & Kuhner, 2023). Our research sheds light on the economic benefits of accounting conservatism for shareholder value associated with diversification; it also provides evidence to support the reintroduction of conservatism in the *2018 Conceptual Framework for Financial Reporting*. The findings inform investors, regulators, policymakers, and practitioners that accounting conservatism plays an important monitoring role in financial reporting.

Second, the previous literature suggests that accounting conservatism can alleviate agency costs and information asymmetries through timely loss recognition (Biddle, Ma, & Song, 2022; Glover & Xue, 2023; Laux & Laux, 2024; Watts, 2003). However, the extant research mainly focuses on the debt holders when examining the monitoring benefits of conservatism. Hence, the benefits of conservatism for shareholders need to be further explored (Francis et al., 2013; García Lara et al., 2014; Kim et al., 2013; Liu & Elayan, 2015). Our extended evidence suggests that conservatism has a significantly positive impact on shareholders' value in relation to corporate diversification.

Third, corporate diversification is a prevalent strategy in economic activity worldwide (Chen, Dyball, & Wright, 2009). We add to the literature by examining diversified firms, where information asymmetry between insiders and outside shareholders is relatively heightened (Bens & Monahan, 2004; Chen et al., 2009). Prior studies in the field of diversification have long been interested in understanding the influence of diversification on firm value (e.g., Berger & Ofek, 1995; Campa & Kedia, 2002; Comment & Jarrell, 1995; Denis et al., 1997; Lang & Stulz, 1994; Servaes, 1996; Villalonga, 2004; Whited, 2001). However, given that prior research provides mixed evidence on the relation between diversification and firm value, extant studies have shifted from simply investigating the value implications of diversification to identifying the potential factors on which this relationship may depend (e.g., Glaum & Oesterle, 2007; Hitt, Tihanyi, Miller, & Connelly, 2006; McDougall & Oviatt, 1996; Singh, Gaur, & Schmid, 2010; Zahra & Hayton, 2008). This study thus extends the line of research and furthers our understanding of how negative impacts arising from corporate diversification are mitigated by the reported accounting information.

The remainder of this study is organized as follows: Section 2 outlines the extant literature and develops our hypotheses. Section 3 provides the details of sample selection, research design, and descriptive statistics of the sample firms. Section 4 presents preliminary evidence for the effect of diversification on excess value. Section 5 offers empirical results for regression models, robustness checks, and cross-sectional analysis. Section 6 draws the conclusions.

2. Literature review and hypotheses

2.1. Corporate diversification

In an efficient capital market, diversifying a firm can maximize the value of the resources it controls, and thereby maximize the firm’s value (Matsusaka, 2001). However, the efficiency of the capital market may be impaired by agency costs and information asymmetries between insiders and outsiders. Hence, corporate diversification may either enhance or damage firm value. The benefits and costs associated with diversification have been extensively discussed in the literature.

On the one hand, Lewellen (1971) argues that more diversified firms can enjoy greater debt capacity and debt tax shields compared to their single-segment peers, which enhances the former firms' value. Chandler (1977) also suggests that operations in diversified firms are more efficient because such firms can benefit from greater economies of scale and better managerial cooperation. Moreover, corporate diversification may enhance investment and resources allocation efficiency through a firm's own internal capital market (Gertner, Scharfstein, & Stein, 1994; Stein, 1997; Wang, 2023). In addition, diversification allows firms to immediately offset net operating losses generated by a particular segment against the profits of the remaining segments; thus, lower taxes may be applied (Majd & Myers, 1987).

On the other hand, diversification may lead to value destruction, primarily due to agency conflicts between shareholders and management (Aggarwal & Samwick, 2003; Denis et al., 1997; Harris et al., 1982; Rajan et al., 2000). For example, managers may pursue inefficient diversification decisions to gain personal benefits, such as prestige, better career prospects, and higher compensation associated with managing a larger firm (Jensen, 1986; Shleifer & Vishny, 1989; Wright, Kroll, & Elenkov, 2002). In addition, as managers' personal income risk is closely linked to the overall risk of the firm they serve, they may be motivated to diversify the firm to mitigate their own 'undiversified' employment risk (Amihud & Lev, 1981). Specifically, the complex nature of diversified firms leads to a higher degree of information asymmetry, further hindering external investors' ability to scrutinize managerial investment decisions.

The agency costs of diversified firms are further exacerbated when these firms have a greater number of divisions. The divergence between divisional goals and those of the whole organization may adversely affect shareholders' wealth, as divisional managers may have incentives to fulfill their self-interests rather than maximizing the organization's goals (Jensen, 1986). Divisional managers with private information about poor prospects for their segment may attempt to influence top management to channel resources in their direction, potentially leading to inefficient resource allocation within the firm (Rajan et al., 2000). The investment inefficiency associated with resource misallocation thus destroys the firm's value. Furthermore, due to increased information asymmetry in firms with more divisions, divisional managers may exploit the less transparent information environment to manipulate reported earnings for higher compensation (Jiraporn, Kim & Mathur, 2008).

Overall, previous empirical evidence suggests that costs of diversification outweigh the benefits because diversified firms, on average, trade at a discount compared to their single-segment peers (e.g., Berger & Ofek, 1995; Denis et al., 1997; Lamont & Polk, 2002; Lang & Stulz, 1994; Rajan et al., 2000). Hence, the costs of agency conflicts and information asymmetry associated with corporate diversification appear to exceed the benefits in terms of tax and the internal capital market. To mitigate agency problems arising from corporate diversification, some studies have investigated the role of governance mechanisms in diversification strategies. For example, Denis et al. (1997) find that the level of diversification is negatively related to managerial ownership, as well as the presence of large block-holders. In addition, Jiraporn, Kim, and Davidson III (2008) document that a diversification discount is positively associated with directors holding multiple directorships. However, the study by Chen et al. (2009) does not find that board independence and institutional representatives on the board have significant impacts on the level of diversification. Accordingly, whether or not there is an effective monitoring mechanism that can mitigate agency problems associated with diversification is still an ongoing debate.

2.2. Accounting conservatism and diversification

2.2.1. Accounting conservatism and the extent of corporate diversification

Accounting conservatism has been an important accounting principle for centuries (see Basu, 1997). Accounting conservatism imposes more stringent verifiability requirements for the recognition of economic gains relative to losses, by generating earnings that reflect bad news in a timelier fashion than good news (Basu, 1997; Watts, 2003). Therefore, previous literature suggests that greater conservative financial reporting can enhance the reliability of reported earnings (Armstrong, Guay, & Weber, 2010; LaFond & Watts, 2008) and further, improve contracting efficiency and reduce information asymmetry (Ball & Shivakumar, 2005). As mentioned above, corporate diversification may intensify agency conflicts between managers and shareholders; however, accounting conservatism, which can reduce managers' abilities and incentives to overstate firm performance (Watts, 2003), may serve as an effective monitoring mechanism to mitigate agency problems arising from diversification strategies and investment decisions (García Lara et al., 2014).

Watts (2003) argues that conservatism reduces managers' ability to overstate earnings and net assets by accelerating the recognition of bad news and postponing the good news until uncertainty is resolved. In addition, the timely recognition of bad news also provides early warning signals to shareholders, which would trigger early investigation into the causes (Ball & Shivakumar, 2005; García Lara, García Osma, & Penalva, 2009). Thus, to avoid strict scrutiny and possible disciplinary action taken by external investors, managers are less likely to pursue their private benefits by manipulating accounting information (Shleifer & Vishny, 1997).

Moreover, accounting conservatism helps to limit the likelihood of investment inefficiencies. Ball (2001) argues that conservative accounting information discourages managers from making poor investment decisions if they know *ex ante* that economic losses would be recognized in a timely manner. For example, if the firm ties managerial compensation to earnings, early recognition of losses would counter the private benefits that managers extract from investing in negative net present value (NPV) diversification projects. Hence, our research hypothesizes that

H1: Accounting conservatism is negatively related to the extent of corporate diversification.

2.2.2. Accounting conservatism and the excess value attributed to diversification

Given that diversification is a prevalent corporate strategy and plays a vital role in economic activity worldwide (Chen et al., 2009), this study further investigates whether accounting conservatism is positively related to the excess value arising from diversification. As discussed above, recognizing losses in a timely manner can constrain managers' incentives to undertake negative NPV diversification projects; therefore, they are less likely to pursue such value-reducing strategies. In addition, when the investments perform poorly, mangers are more likely to respond quickly to limit losses (Ball & Shivakumar, 2005).

Accordingly, conditional on being diversified, the value losses arising from diversification will be lower for firms that adopt conservative accounting. In addition, we argue that conservatism reduces the extent of information asymmetry between the top management and divisional managers by accelerating the publication of negative information on divisional performance; which, in turn, limits the division's lobbying activities and earnings management ability. With the reduced degree of information asymmetry, managers' behavior and decisions are more likely to be overseen.

The prior literature also suggests that agency conflicts in diversified firms lead to a higher cost of capital, further contributing to their diversification discounts (Demirkan et al., 2012). To reduce the cost of capital, several studies find that attributes of accounting information play a vital role in mitigating information risk (Bhattacharya, Daouk, & Welker, 2003; Francis, LaFond, Olsson, & Schipper, 2005; Francis, LaFond, Olsson, & Schipper, 2004). Therefore, diversified firms using conservative accounting are more likely to reduce the cost of capital, which in turn increases the excess value attributed to diversification. Accordingly, our research hypothesizes that,

H2: Accounting conservatism is positively related to the excess value attributed to diversification.

3. Research methodology

3.1. Sample selection

Our initial sample consisted of all firms with financial data available in the COMPUSTAT database, and with business segment information available on the COMPUSTAT segment database, over the period 2000–2017. To obtain the final sample, we applied several selection criteria. First, we removed firm years reporting a segment in the financial service industry (*SIC 6000–6999*). In addition, we followed Berger and Ofek (1995) in that sample firm years were required to have consolidated sales of at least $20 million. Furthermore, we eliminated firms whose sales deviated from the sum of segment sales by more than 1%, and whose assets deviated from the sum of segment assets by more than 25% (Bens & Monahan, 2004; Cheng & Wu, 2018).[6] We also eliminated firm years with insufficient data to compute conservatism measures and diversification. Finally, we eliminated firm years with missing data. This

[6] If the sum of segment assets deviated from the firm's total asset by less than 25%, we allocated the difference to the segments based on their respective weights (Bens & Monahan, 2004; Berger & Ofek, 1995; Cheng & Wu, 2018; Kuppuswamy & Villalonga, 2016).

selection process resulted in a sample of 25,265 firm years for testing Hypothesis 1.

To test Hypothesis 2, we followed the approach of previous studies (e.g., Bens & Monahan, 2004; Berger & Ofek, 1995; Campa & Kedia, 2002; Villalonga, 2004) by removing observations with excess values greater than 1.386 or less than −1.386, as these are considered outliers. Subsequently, and upon further removal of firm-year data lacking adequate information for excess value computation, we were left with a sample of 24,052 firm years for testing Hypothesis 2.

3.2. Measurement of diversification

3.2.1. The extent of diversification

Following Jacquemin and Berry (1979), we use the entropy approach to measure product diversification strategy. This index has been commonly used in previous studies (e.g., Baysinger & Hoskisson, 1989; Hitt, Hoskisson, & Kim, 1997; Hoskisson, Johnson, & Moesel, 1994; Kim, Hwang, & Burgers, 1989; Kim, Hwang, & Burgers, 1993; Lien & Li, 2013). The entropy measure of product diversification is defined as follows:

$$\sum_{i=1}^{n} S_i \times ln(1/S_i) \qquad (1)$$

where S_i represents the proportion of a firm's sales attributed to industry segment i, and $ln(1/S_i)$ is the weight given to each segment, or the logarithm of the inverse of its sales. The summation is calculated across the n industry segments in which the firm operates. This continuous measure of diversification considers both the number of segments in which a firm operates and the relative significance of each segment's sales (Hitt et al., 1997; Palepu, 1985). Higher values for the entropy measure indicate a lower concentration of sales within segments and, hence, an increased degree of diversification. Single-segment firms all have entropy measures equal to zero.

3.2.2. The excess value of corporate diversification

We use the methodology originally developed by Berger and Ofek (1995), which has also been employed by many previous studies such as Denis et al. (1997), Denis, Denis, and Yost (2002), Graham, Lemmon, and Wolf (2002), Bens and Monahan (2004), Jiraporn et al. (2008), and Hoechle, Schmid, Walter, and Yermack (2012). This metric compares a firm's actual market value with an imputed hypothetical value as if its segments were operated as single-segment firms. The excess value[7] (*EV_SM or EV_AM*) attributable to diversification is computed as

$$EXVAL_{i,t} = ln(V_{i,t} / IV_{i,t}) \tag{2}$$

where $V_{i,t}$ is actual firm value for firm *i* in year *t*, calculated as the total capital, which comprises the sum of market value of equity and the book value of total debt. $IV_{i,t}$ denotes implied firm value and is calculated as

$$IV_{i,t} = SUM(SSales_{i,t} \text{ or } SAssets_{i,t} \times Mulitipler_{i,t}) \tag{3}$$

where imputed value ($IV_{i,t}$) is the sum of segment sales (*SSales*) or assets (*SAssets*) multiplied by the multiplier (*Multiplier*). The multiplier is measured as the median ratio of total capital to sales (or to assets), for the single-segment domestic firms in the same industry in the same year. A positive excess value means the company is worth more together than its segments alone, indicating a diversification premium. Conversely, a negative excess value means it is worth less together, indicating a diversification discount.

3.3. Measurement of conservatism

We used three firm-specific proxies for conservatism in these tests: an accrual-based proxy following Givoly and Hayn (2000); an extended Basu (1997) model proxy

[7] Following prior studies such as Bens and Monahan (2004), Berger and Ofek (1995), and Hoechle et al. (2012), this research employs both sales and assets in the computation of excess value, to enhance the robustness of our analysis.

following Khan and Watts (2009); and the conservatism score of Penman and Zhang (2002). The aggregate measure is the firm's average rank across the individual conservatism measures.

3.3.1. Givoly and Hayn (2000)

Our first measure, *Accruals*, was developed by Givoly and Hayn (2000). The accrual-based measure of conservatism is calculated as income before extraordinary items, less cash flows from operations, plus depreciation expense; all deflated by average total assets, and then averaged over a three-year period centered on year t, multiplied by –1. In other words, to measure the conservatism of a firm in year t, the estimation period ranges from $t-1$ to $t+1$. Positive values of *Accruals* indicate greater conservatism. The intuition underlying this measure is that conservative accounting results in persistently negative accruals (Givoly & Hayn, 2000). Thus, the more negative the average accruals over the respective periods, the more conservative the accounting. Averaging over a number of periods also ensures that the effects of any temporary large accruals are mitigated, because accruals tend to reverse within a one to two-year period (Richardson, Sloan, Soliman, & Tuna, 2005).

This measure is not affected by future economic rents or growth opportunities. However, it does not reflect total or cumulative conservatism because it ignores the effects of conservatism in prior periods.

3.3.2. Khan and Watts (2009)

Our second measure of conservatism, *C_Score_KW,* is developed based on Khan and Watts (2009), whom we follow by utilizing the Basu (1997) measure of asymmetric timeliness to estimate a firm-year measure of conservatism. The Basu (1997) cross-sectional regression is specified as

$$X_{i,t} = \beta_1 + \beta_2 D_{i,t} + \beta_3 R_{i,t} + \beta_4 D_{i,t} \times R_{i,t} + e_{i,t} \quad (4)$$

where i denotes the firm, X is earnings, R is returns (measuring news), D is a dummy variable equal to 1 when $R < 0$, and equal to 0 otherwise. The good news timeliness measure is β_3. The measure of incremental timeliness for bad news over good news, or conservatism, is β_4, and the total bad news timeliness is $\beta_3 + \beta_4$.

To estimate the timeliness with which accounting reflects both good news and conservatism at the firm-year level, Khan and Watts (2009) specify that both the timeliness of good news (*G_Score_KW*) and the incremental timeliness of bad news (*C_Score_KW*) each year are linear functions of firm-specific characteristics:

$$G\_Score\_KW_{i,t} = \beta_3 = \mu_1 + \mu_2 SIZE_{i,t} + \mu_3 MB_{i,t} + \mu_4 LEV_{i,t} \quad (5)$$

$$C\_Score\_KW_{i,t} = \beta_4 = \lambda_1 + \lambda_2 SIZE_{i,t} + \lambda_3 MB_{i,t} + \lambda_4 LEV_{i,t} \quad (6)$$

The empirical estimates of μ_i and λ_i, where i ranges from 1 to 4, remain consistent across firms, but vary over time, since they are estimated from annual cross-sectional regressions. Equations (5) and (6) are not regression models. We substitute them into regression Equation (4) to rewrite Basu's (1997) model as Equation (7). *C_Score_KW* is the firm-year measure of conservatism, or incremental bad news timeliness. The total bad news timeliness is the sum of *G_Score_KW* and *C_Score_KW*. *C_Score_KW* and *G_Score_KW* vary across firms through cross-sectional variation in the firm-year characteristics (*SIZE*, *MB*, and *LEV*), and over time through intertemporal variation in μ_i, λ_i, and the firm-year characteristics. Hence, conservatism is increasing in the *C_Score_KW*, as follows:

$$
\begin{aligned}
X_{i,t} = {} & \beta_1 + \beta_2 D_{i,t} + \beta_3 R_{i,t}(\mu_1 + \mu_2 SIZE_{i,t} + \mu_3 MB_{i,t} + \mu_4 LEV_{i,t}) \\
& + \beta_4 D_{i,t} \times R_{i,t}(\lambda_1 + \lambda_2 SIZE_{i,t} + \lambda_3 MB_{i,t} + \lambda_4 LEV_{i,t}) \\
& + (\delta_1 SIZE_{i,t} + \delta_2 MB_{i,t} + \delta_3 LEV_{i,t} + \delta_4 D_{i,t} SIZE_{i,t} + \delta_5 D_{i,t} MB_{i,t} + \delta_6 D_{i,t} LEV_{i,t}) \\
& + e_{i,t}
\end{aligned} \tag{7}
$$

The additional terms in the last parenthesis of Equation (7) are included to control for the firm characteristics separately, due to interaction terms between returns and firm characteristics present in the regression model (7).

3.3.3. Penman and Zhang (2002)

Our third conservatism measure, *C_Score_PZ*, was established by Penman and Zhang (2002); it employs inventory, research and development (R&D), and advertising reserves. The inventory reserve is the LIFO reserve, while the R&D reserve is the amortized R&D assets that would have been shown on the balance sheet by using the sum-of-the-year's digits method over five years. The advertising reserve is the capitalized advertising expenditures amortized using the sum-of-the-year's digits method over two years. Each of the reserves is measured over a separate estimation period. The minimum estimation period for calculating the *C_Score_PZ* of a firm in year *t* is one year (i.e., the inventory reserve), and the maximum estimation period is five years, which ranges from year *t–4* to year *t* (i.e., the R&D reserve). Finally, the sum of the reserves is then scaled by net operating assets.

3.3.4. Aggregate measure

In order to further mitigate measurement error or noise in each individual conservatism measure mentioned above, we follow Zhang (2008) in constructing our fourth conservatism measure, *Aggregate*, by averaging ranks of the aforementioned three measures. To develop this measure, we rank the conservatism measures into deciles for each year and then standardize the deciles so that they range between zero and one, as adopted by Kim et al. (2013) and Louis, Sun, and Urcan (2012). Values in the lowest decile are assigned zero, while those in the highest decile are assigned one. This procedure reduces the potential bias due to influential observations and the potential noise from extreme values. The use of ranks also converts each variable to a common unit of measure that simplifies the comparison of coefficients across the measures.

3.4. Research design

To test the monitoring effects of accounting conservatism, we follow prior studies by employing models that incorporate both changes and intertemporal differences between the independent and dependent variables (e.g., Bens & Monahan, 2004; García Lara et al., 2014; García Lara, García Osma, & Penalva, 2011; Li, 2015). The merits of the models allow us to effectively identify the subsequent impacts of changes in accounting conservatism on changes in managers' tendencies to diversify a firm, as well as the changes in the excess value attributed to diversification. In addition, the estimation in changes allows us to control for firm-specific factors that are unchanged over time, and mitigates the static omitted-variable bias (García Lara et al., 2014; García Lara et al., 2009, 2011).

To test Hypothesis 1, we employ the following model, which examines the association between current changes in accounting conservatism and subsequent changes in the extent of product diversification:

$$\Delta Diversification_{i,t+1} = \alpha + \beta \Delta Conservatism_{i,t} + \delta \Delta Controls_{i,t} + \varepsilon_{i,t+1} \quad (8)$$

where $\Delta Diversification_{i,t+1}$ is measured as changes in entropy metric of diversification from year *t* to *t+1*. $\Delta Conservatism_{i,t}$ and $\Delta Controls_{i,t}$ are measured as changes in conservatism and firm-specific characteristics from year *t–1* to *t,* respectively, where conservatism indicates the four conservatism measures illustrated in Section 3.3. Variables to measure diversification were defined in Section 3.2.

We control for six variables that can affect the level of product diversification: firm size, R&D intensity, managerial ownership, leverage, board independence, and institutional ownership. First, several prior studies show that firm size (*SIZE*) impacts on the extent of corporate diversification. For instance, Denis et al. (1997) and Anderson and Reeb (2003) provide evidence that the number of business segments in which a firm operates is positively related to firm size. As a result, we employ the logarithm of total assets to control for firm size.

Second, Denis et al. (1997) suggest that firms require intensive specific knowledge for operations are more likely to extend their business to other lines. Thus, we control for firm-specific knowledge by including a measure of R&D intensity (*R&D*). Third, firms with higher managerial ownership incur lower agency costs and, therefore, are associated with lower levels of diversification (Denis et al., 1997). Thus, we include managerial ownership (*MOWN*) as a control variable.

Fourth, this study also controls for a firm's leverage (*LEV*) by dividing total debt by total assets, as previous studies document that diversified firms are associated with higher debt (Chen et al., 2009; Kochhar & Hitt, 1998). Fifth, drawn from the agency perspective, prior studies suggest that board independence (*IND*) and institutional ownership (*INST*) are effective monitoring mechanisms to mitigate agency conflicts (Shleifer & Vishny, 1997). Hence, we include these two control variables in our models, as they can constrain managers' incentives to over-pursue diversification (Chen et al., 2009; Goranova, Alessandri, Brandes, & Dharwadkar, 2007).

To test Hypothesis 2, we employ the following model to examine the association between current changes in accounting conservatism and subsequent changes in excess value attributed to diversification:

$$\begin{aligned}\Delta Excess\_Value_{i,t+1} = \alpha + \beta\Delta Conservatism_{i,t} + \gamma\Delta Diversification_{i,t} \\ + \eta\Delta Conservatism_{i,t} \times \Delta Diversification_{i,t} \\ + \delta\Delta Controls_{i,t} + \varepsilon_{i,t+1}\end{aligned} \tag{9}$$

where $\triangle Excess\_Value_{i,t+1}$ is measured as changes in excess value attributed to diversification from year t to $t+1$. $\triangle Conservatism_{i,t}$ and $\triangle Diversification_{i,t}$ are measured as changes in conservatism and the entropy metric of diversification from year $t{-}1$ to t, respectively. $\triangle Controls_{i,t}$ is measured as changes in firm-specific characteristics from year $t{-}1$ to t. Variables to measure diversification and conservatism were defined in Sections 3.2 and 3.3.

For the models examining the excess value of diversification, we control for seven variables drawn from prior studies. These comprise: firm size (*SIZE*, measured as the logarithm of total assets); R&D intensity (*R&D*, the ratio of R&D expenditures to sales); advertising intensity (*ADVER*, the ratio of advertising expenditures to sales); capital expenditures (*CAPX*, the ratio of capital expenditures to sales); profitability (*PROF*, the ratio of earnings before interest and taxes divided by sales); leverage (*LEV*, the ratio of total debt to total assets) (Berger & Ofek, 1995; Campa & Kedia, 2002; Denis et al., 1997; Hoechle et al., 2012; Nam, Tang, Thornton Jr, & Wynne, 2006); board independence (*IND*, the proportion of independent directors on the board); and institutional ownership (*INST*, the proportion of ownership controlled by institutions) (Hoechle et al., 2012).

3.5. Descriptive statistics of sample firms

Table 1 presents the characteristics and the distribution of sample firms across the sample period and various industries. Table 2 then presents the descriptive statistics for all the sample firms. To limit the effect of abnormal extreme values, all continuous variables are winsorized at the top and bottom one-percentiles. Panel A of the Table 2 shows the process of sample selection, while Panel B of the Table 2 shows the statistics for single-segment firms compared to multi-segment firms, and provides results of the *t*-test and the *z*-test for each relevant variable.

The findings in Table 2 reveal that the mean excess value (*EV_SM; EV_AM*) of multi-segment firms is significantly less than that of single-segment firms, which is consistent with suggestions of prior studies (e.g., Bens & Monahan, 2004; Borah, Pan, Park, & Shao, 2018; Hoechle et al., 2012). The three measures of conservatism (*Accruals*, *C_Score_KW*, and *C_Score_PZ*), along with the aggregate measure (*Aggregate*), are significantly higher for single-segment firm years relative to multi-segment firm years.

The size (*SIZE*) of multi-segment firms is significantly larger than those of the single-segment firms. In addition, multi-segment firms tend to have higher leverage (*LEV*) and research and development (*R&D*), but lower capital expenditure (*CAPX*) and profitability (*PROF*) than single-segment firms. Compared to single-segment firms, multi-segment firms have significantly lower managerial ownership (*MOWN*), institutional ownership (*INST*), and a lower percentage of independent directors on the board (*IND*). Furthermore, compared to single-segment firms, multi-segment firms exhibit higher bid-ask spreads (*BAS*), stock return volatility (*SRV*), and dispersion in analyst forecasts (*DAF*), with fewer analysts following them (*NAF*), indicating greater information asymmetry. They also have weaker governance structures, with less independent boards (*IND*), more CEO duality (*DUAL*), lower institutional ownership (*INST*), and higher G-index scores (*GIND*).

[*Insert Table 1, 2 Here*]

Table 3 further displays the distribution of the excess value of multi-segment firms across the sample years. The results consistently demonstrate diversification discounts during this period, with multi-segment firms having significantly lower excess value than single-segment firms.[8] Furthermore, the results suggest that in the years 2008, 2011, and 2012, diversification discounts were relatively low. These findings align with those documented by Kuppuswamy and Villalonga (2016), which indicate that the excess value of multi-segment firms increased during the peak year of the 2007–2009 global financial crisis.

[*Insert Table 3 Here*]
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4. Preliminary evidence for the effect of diversification on excess value

The impact of corporate diversification on valuation is complex, and the available evidence on this matter is mixed in prior studies. Hence, before presenting regression results for the hypotheses, we start by examining whether diversification negatively affects value in our sample.

Lang and Stulz (1994) find that the diversification discount is more pronounced when transitioning from one segment to two segments, rather than moving from two segments to more than two; therefore, we first examine a single-segment firm's excess value when it changes its diversification status (i.e., from one to two segments), following the studies by Villalonga (2004) and Graham et al. (2002).

Panel A of Table 4 presents the mean and median excess values of diversifying firms, from five years before diversification through five years after diversification. The results indicate that the firms' value is significantly discounted up to four years after

[8] Theoretically, the median excess value for single-segment firms should be equal to zero. However, due to the removal of extreme outliers, the median excess value deviates slightly from zero. The slight deviations from zero in the median of excess values for single-segment firms are consistent with results reported in previous studies, such as those by Bens and Monahan (2004) and Borah et al. (2018).

diversification, for both measures of excess value, and these discounts are significantly different from zero. When the asset multiplier is used, a significant discount appears in the fifth year post-diversification, but the discount is not significant when the sales multiplier is used. Overall, the results imply that diversification causes a value loss relative to the median single-segment peers in their industries.

Panels B and C of Table 4 report the test statistics for the mean changes in excess value between the year before and the year after diversification for diversifying and single-segment firms, respectively. The increase in value loss is statistically significant different from zero at the 1% level for diversifying firms, using the asset multiplier; and at the 10% level for diversifying firms, using the sales multiplier. This finding aligns with the results of Graham et al. (2002) when they examined firms that increased their segments.

Additionally, we further investigate the differences in the change in excess values between diversifying firms and single-segment firms. The findings in Panel D of Table 4 reveal that diversifying firms experience more significant value loss compared to their single-segment counterparts. However, this difference is significant when using asset multipliers rather than sales multipliers, which is consistent with the findings in Villalonga (2004).

[*Insert Table 4 Here*]

Second, following Campa and Kedia (2002) and Villalonga (2004), we employ five methodologies:[9] the OLS model,[10] the extended OLS model, the instrumental variable (IV) model, the propensity score matching methods (PSM), and Heckman's

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[9] For brevity, we provide detailed methodologies in the online supplementary information.

[10] The OLS model adopted by Campa and Kedia (2002) was originally developed by Berger and Ofek (1995).

(1979) self-selection model, in order to examine the impact of diversification on excess value. We also employ the variables[11] adopted in Campa and Kedia (2002) in the models.

Table 5 presents results[12,13] regarding the effect of diversification on firm value. Models 1 to 5 report regressions based on the sales multiplier for excess value, while Models 6 to 10 use the assets multiplier. Overall, the coefficients for diversification are consistently negative and statistically significant across all models, indicating that diversified firms are valued at a discount compared to their single-segment counterparts, at least at the 5% significance level. In summary, regardless of whether or not endogeneity is controlled for in the models, the regression results consistently echo the findings presented in Tables 2, 3, and 4. These results indicate that diversification has a negative impact on firm value.

Our findings, based on the OLS and extended OLS models, align with the study of Campa and Kedia (2002). However, in contrast to Campa and Kedia (2002) and Villalonga (2004), who suggest that the diversification discount disappears after addressing the endogeneity issue, our results, derived from IV, PSM and Heckman's (1979) self-selection models, continue to demonstrate a diversification discount. These negative impacts of diversification on firm value, after controlling for endogeneity concerns, are consistent with other studies such as Borah et al. (2018), Chou and Cheng (2012), Hoechle et al. (2012) and Jiraporn et al. (2008).

[11] Our models closely replicate the variables used in Campa and Kedia (2002) model, with one exception. While Campa and Kedia (2002) define diversification using a dummy variable, assigned a value of 1 when a firm operates in multiple segments and 0 otherwise, we measure the degree of diversification in the models presented in Table 5 using the entropy approach. However, for the sake of robustness, we also follow Campa and Kedia (2002) by employing a dummy variable to measure diversification. The findings (untabulated) are largely consistent with the main results reported in Table 5.

[12] For brevity, we report the first-stage regression results used in the instrumental variable estimation and in Heckman's self-selection model in Table A1 in the online supplementary information.

[13] We also follow Campa and Kedia (2002) to control for firm and year fixed effects. The findings (untabulated) are largely consistent with the main results reported in Table 5.

The differences in findings between earlier studies and recent studies may be attributed to the following reasons. First, as noted by Hoechle et al. (2012), disparities exist in the coverage of the current release of the COMPUSTAT database in comparison to the database used in earlier studies. Second, to enhance the consistency of segment reporting with the organizational structure of a firm, Financial Accounting Standards (SFAS) No. 131, D*isclosure about Segments of an Enterprise and Related Information*, was implemented in the U.S. on December 15, 1997, serving as a new standard for reporting segment information. As a result, data on segments before and after 1998 may not be directly comparable (Berger & Hann, 2003; Hoechle et al., 2012).

[*Insert Table 5 Here*]
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5. Empirical results of research hypotheses

5.1. Regression results

Table 6 presents the correlation matrix of the main variables expressed in changes, as used in the regression models. The correlation coefficients amongst all the independent variables included in each regression analysis in this study are less than 0.2, which reduces the concerns about multicollinearity of regression models. All our regressions include year and industry fixed effects.

Several points warrant mentioning here. First, changes in the extent of diversification ($\triangle Diversification_t$) are significantly and negatively related to changes in excess value in the following year ($\triangle EV\_SM_{t+1}$ and $\triangle EV\_AM_{t+1}$), which aligns with prior studies suggesting that corporate diversification is more likely to decrease firm value. Second, there is a significantly negative correlation between changes in accounting conservatism measures ($\triangle Accruals_t$, $\triangle C\_Score\_KW_t$, $\triangle C\_Score\_PZ_t$, and $\triangle Aggregate_t$) and changes in the degree of diversification in the subsequent period

($\triangle Diversification_{t+1}$); this implies that accounting conservatism reduces a firm's inclination toward diversification. Third, a positive and significant correlation exists between changes in accounting conservatism measures ($\triangle Accruals_t$, $\triangle C\_Score\_KW_t$, $\triangle C\_Score\_PZ_t$, and $\triangle Aggregate_t$) and subsequent changes in the excess value of diversification ($\triangle EV\_SM_{t+1}$ and $\triangle EV\_AM_{t+1}$); this indicates that accounting conservatism strengthens a firm's governance mechanism, leading to an increase in firm value.

[*Insert Table 6 Here*]

Our regression results for examining Hypothesis 1 are shown in Table 7. They illustrate the relationship between changes in accounting conservatism[14] ($\triangle Accruals_t$, $\triangle C\_Score\_KW_t$, $\triangle C\_Score\_PZ_t$, and $\triangle Aggregate_t$) and future changes in corporate diversification[15] ($\triangle Diversification_{t+1}$), in the full sample and within the multi-segment sample. Overall, the findings support Hypothesis 1. The significantly negative coefficients (Model 1: $\beta = -0.285$, $p < 0.05$; Model 2: $\beta = -0.425$, $p < 0.01$; Model 3: $\beta = -0.378$, $p < 0.05$; Model 4: $\beta = -0.025$, $p < 0.01$; Model 5: $\beta = -1.397$, $p < 0.01$; Model 6: $\beta = -1.594$, $p < 0.05$; Model 7: $\beta = -0.928$, $p < 0.01$; Model 8: $\beta = -0.080$,

[14] We also conduct robustness tests by employing the traditional Basu (1997) model to measure conservatism. Overall, the findings are qualitatively unchanged. We report the findings in Table A2 Panel A in the online supplementary information.

[15] While previous research has shown that the entropy measure demonstrates strong construct validity when compared to other diversification measures (Chatterjee & Blocher, 1992; Hoskisson, Hitt, Johnson, & Moesel, 1993), this measure based on sales ratios might not effectively capture a firm's diversification strategy (Raghunathan, 1995). For example, consider a scenario where a firm's composition changes from having a sales ratio of 70% in one segment and 30% in another in one year, to 60% in one segment and 40% in the other the next year. Despite the shift, the entropy measure increases from 0.61 to 0.67, even though the firm's number of segments remains unchanged. Hence, entropy changes as the distribution of sales among segments shifts, even if the total number of segments is held constant.
To address this limitation, we conduct additional analysis by replacing the entropy measure with five alternative diversification proxies to capture the extent of diversification: (1) the dummy of firms with multiple segments, (2) the number of segments reported by management, (3) the number of four-digit SIC codes assigned to the firm by COMPUSTAT, (4) a revenue-based Herfindahl index, and (5) an asset-based Herfindahl index (Aggarwal & Samwick, 2003; Comment & Jarrell, 1995; Denis et al., 1997; Thomas, 2002). For brevity, we only use the aggregate measure of accounting conservatism in the analyses. Overall, results are largely consistent with our primary findings. We represent the findings in Table A3 Panel A in the online supplementary information.

$p < 0.01$) support that the increase in conservative financial reporting—which limits managers' ability to conceal their private benefits from diversification and facilitates the timely recognition of poor performance—makes managers less likely to diversify their firm[16].

With regard to control variables, we find that the changes in the degree of diversification is an increasing function of changes in firm size (*SIZE*, significant at the 5% level) and a firm's leverage (*LEV*, significant at the 10% level). The changes in research and development intensity (*R&D*) have a positive relationship with future changes in diversification, significant at the 5% level within multi-segment firms. In addition, changes in managerial ownership (*MOWN*), changes in institutional ownership (*INST*), and changes in board independence (*IND*), are negatively associated with future changes in diversification at the 1%, 10%, and 1% levels, respectively.

[*Insert Table 7 Here*]

Table 8 presents results of the moderating effects of changes in accounting conservatism[17] ($\triangle Accruals_t$, $\triangle C\_Score\_KW_t$, $\triangle C\_Score\_PZ_t$, and $\triangle Aggregate_t$) on the relationship between changes in corporate diversification[18] ($\triangle Diversification_t$) and its future changes in excess value[19] ($\triangle EV\_SM_{t+1}$ and $\triangle EV\_AM_{t+1}$). Models 1 to 4 test

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[16] To address the bias arising from the pooling of cross-sectional and time-series data, we follow Gow, Ormazabal, and Taylor (2010) to employ a two-dimensional cluster to control for potential cross-sectional and time-series correlation among the error terms in our regressions. Overall, the results are qualitatively unchanged. We report the findings in Table A5 Panel A in the online supplementary information.

[17] In line with the robustness analysis conducted for hypothesis 1, we employ the traditional Basu (1997) model as an alternative to measure conservatism. Overall, the findings are qualitatively unchanged. We report the findings in Table A2 Panel B in the online supplementary information.

[18] We conduct additional analysis by replacing the entropy measure with five alternative diversification proxies to capture the extent of diversification: (1) the dummy of firms with multiple segments, (2) the number of segments reported by management, (3) the number of four-digit SIC codes assigned to the firm by COMPUSTAT, (4) a revenue-based Herfindahl index, and (5) an asset-based Herfindahl index. Overall, the findings are qualitatively unchanged. We report the findings in Table A3 Panel B in the online supplementary information.

[19] We also use the ratio of operating income to total assets (ROA) as an alternative proxy for firm performance, Overall, the findings are qualitatively unchanged. We report the findings in Table A4 in the online supplementary information.

the hypothesis using the total sample, while Models 5 to 8 use diversified firms only. Panel A of Table 8 reports the results obtained using the sales multiplier to calculate excess value, while Panel B of Table 8 presents results using the asset multiplier[20].

First, regardless of whether the measures are based on sales or asset multipliers, a significantly negative relationship exists between changes in diversification ($\triangle Diversification_t$) and subsequent changes in excess value ($\triangle EV\_SM_{t+1}$ and $\triangle EV\_AM_{t+1}$), at least at the 5% level. The results mirror our findings presented in Tables 2, 3, 4, 5 and 6: that diversified firms have significantly lower excess value compared to single-segment firms, and the increase in the degree of diversification leads to a decrease in firm value. In general, the findings regarding value losses from diversification are consistent with prior studies such as Bens and Monahan (2004), Berger and Ofek (1995), and Hoechle et al. (2012).

Second, the findings in Panel A of Table 8 show that the three accounting conservatism measures, as well as the aggregate conservatism measure ($\triangle Accruals_t$, $\triangle C\_Score\_KW_t$, $\triangle C\_Score\_PZ_t$, and $\triangle Aggregate_t$), are significantly positively associated with the subsequent changes in excess value ($\triangle EV\_SM_{t+1}$), at least the at 5% level (Model 1: $\beta = 0.678$, $p < 0.01$; Model 2: $\beta = 2.586$, $p < 0.05$; Model 3: $\beta = 1.799$, $p < 0.05$; Model 4: $\beta = 0.061$, $p < 0.01$; Model 5: $\beta = 1.154$, $p < 0.01$; Model 6: $\beta = 1.368$, $p < 0.01$; Model 7: $\beta = 0.330$, $p < 0.05$; Model 8: $\beta = 0.101$, $p < 0.01$), which supports our Hypothesis 2. The results based on asset multipliers (displayed in Panel B of Table 8) are also consistent with those for sales multiplier measures (Panel A of Table 8). Overall, the findings are in line with suggestions in the existing literature that the increase in accounting conservatism is positively associated with a firm's value (see

[20] In line with the robustness analysis conducted for hypothesis 1, we employ a two-dimensional cluster to control for potential cross-sectional and time-series correlation among the error terms in our regressions for hypothesis 2. Overall, the results are qualitatively unchanged. We report the findings in Table A5 Panel B in the online supplementary information.

Ahmed & Duellman, 2011; Francis et al., 2013; Kim et al., 2013).

Third, the coefficients in Panel A of Table 8, on the interaction between changes in corporate diversification ($\triangle Diversification_t$) and the changes in accounting conservatism measures ($\triangle Accruals_t$, $\triangle C\_Score\_KW_t$, $\triangle C\_Score\_PZ_t$, and $\triangle Aggregate_t$), are positive and significant at least at the 5% level (Model 1: $\beta = 0.586$, $p < 0.05$; Model 2: $\beta = 2.373$, $p < 0.05$; Model 3: $\beta = 1.459$, $p < 0.01$; Model 4: $\beta = 0.050$, $p < 0.05$; Model 5: $\beta = 0.997$, $p < 0.01$; Model 6: $\beta = 1.004$, $p < 0.05$; Model 7: $\beta = 0.456$, $p < 0.05$; Model 8: $\beta = 0.083$, $p < 0.01$). This suggests that when a firm increases its level of diversification, the increase in accounting conservatism can mitigate the agency costs associated with diversification and, subsequently, enhance the firm's value. The significantly positive coefficients for the interaction term are also consistently shown in Panel B of Table 8, which are based on asset multiplier measures.

Fourth, the results for the control variables are also in line with prior studies. Specifically, when excess values are measured with sales multipliers, the coefficients for changes in firm size (*SIZE*), R&D intensity (*R&D*), leverage (*LEV*), capital expenditures (*CAPX*), and institutional ownership (*INST*) are positive, with significance levels of at least 5%. On the other hand, when the excess values are measured with asset multipliers, changes in firm size (*SIZE*), leverage (*LEV*), advertising intensity (*ADVER*), and profitability (*PROF*) are also significantly positively related to future changes in firm value, with a significance of at least 5%. Regarding changes in board independence (*IND*), the coefficients are positive and significant at least at the 10% level.

[*Insert Table 8 Here*]

5.2. Robustness tests addressing potential endogeneity issues

Potential endogeneity bias may exist between accounting conservatism and corporate diversification decisions (Lafond & Watts 2008). We therefore adopt a two-stage least squares model (2SLS) to address this potential issue. Specifically, we select two instrumental variables based on prior studies: operating cycle (*OperCycle*) and investment cycle (*InvestCycle*), to address this issue. In the first stage, we regress changes in accounting conservatism on the two selected instrumental variables. The second stage regresses changes in diversification and excess value on the predicted value of changes in accounting conservatism (*Pre_Aggregate*) obtained from the first stage, respectively.

Following Francis et al. (2004) and Gassen, Uwe Fülbier, and Sellhorn (2006), we adopt operating cycle (*OperCycle*) as the first instrument. Specifically, the length of the operating cycle is measured as the logarithm of the sum of the firm's days of receivables and days of inventory. These studies suggest that firms with longer operating cycles have higher operational uncertainties, which, in turn, would lead to increased accounting conservatism. Our second instrument, based on Khan and Watts (2009) and Goh and Li (2011), is the variable investment cycle (*InvestCycle*). It is calculated as the depreciation expense deflated by lagged assets, and serves as a decreasing proxy for a firm's investment cycle length. Longer investment cycles in firms generate higher demand for conservatism (Goh & Li, 2011; Khan & Watts, 2009).

Table 9 reports the 2SLS regression results. In the first stage, results indicate that operating cycle (*OperCycle*) has a significant and positive relationship with changes in accounting conservatism (*△Aggregate*). Additionally, the relationship between investment cycle (*InvestCycle*) and changes in accounting conservatism (*△Aggregate*) is significantly negative (as observed in Models 2 and 5). After we control for endogeneity, the second stage results reveal that the predicted changes in conservatism (*Pre_Aggregate*) are significantly negatively associated with future changes in corporate diversification ($\triangle Diversification_{t+1}$) (Model 1: $\beta = -0.067, p < 0.05$), whereas there is a significantly positive relationship between predicted changes in conservatism (*Pre_Aggregate*) and the future changes in excess value of diversification ($\triangle EV\_SM_{t+1}$ and $\triangle EV\_AM_{t+1}$) (Model 3: $\beta = 0.143$, $p < 0.05$; Model 4: $\beta = 0.264$, $p < 0.01$). In addition, the interaction terms between changes in diversification ($\triangle Diversification_t$) and predicted changes in conservatism (*Pre_Aggregate*) are significantly positively related to future changes in excess value ($\triangle EV\_SM_{t+1}$ and $\triangle EV\_AM_{t+1}$) (Model 3: $\beta = 0.100$, $p < 0.05$; Model 4: $\beta = 0.184$, $p < 0.01$). Overall, these findings align with the main test results.

Table 9 also reports the results for the *C* statistic, Hansen's *J* statistic, and the Anderson–Rubin *F* statistic. The *C* statistic is employed to test whether the specified endogenous variables can be treated as exogenous. The results reject the null hypothesis that changes in conservatism ($\triangle Aggregate$) may be treated as exogenous at the 1% significance level; this suggests that using 2SLS would be more appropriate in the presence of this endogeneity issue. Hansen's *J* statistic is adopted to test the over-identifying restrictions; the results cannot reject the null hypothesis that the instruments are not correlated with the structural errors term in the second-stage regressions. Finally, the Anderson–Rubin *F* statistic is employed as a test for the weak-instrument robust inference. The results reject the null hypothesis that the endogenous regressors are irrelevant at the 1% significance level, which suggests that the employed instruments are not weak. Overall, the results of these three tests support the validity and relevance of the employed instrumental variables and of the main findings.

[*Insert Table 9 Here*]

5.3. Cross-sectional variation in the relationship between accounting

conservatism, corporate diversification, and diversification value

To provide in-depth analyses of the relation between accounting conservatism, corporate diversification, and its related value, we further examine the heterogeneity in this relationship. To perform the analyses, we divide the sample into two subsets using various cross-sectional variables and then rerun regressions based on equations (8) and (9). When dealing with a continuous cross-sectional variable, we construct the "High" and "Low" subsamples by employing the median value of the variable. Specifically, the "High" subsample includes companies with cross-sectional variable values above the median.

As discussed above, agency problems stand as a primary factor contributing to inefficient corporate diversification (e.g., Bens & Monahan, 2004; Cheng & Wu, 2018; Denis et al., 1997; Hoechle et al., 2012). These problems are particularly prevalent in firms with greater information asymmetry, which hinder external oversight of managers' investment decisions. Previous literature suggests that financial statements play a crucial role in enhancing information transparency, thereby reducing information asymmetry (Bens & Monahan, 2004; Cheng & Wu, 2018; García Lara et al., 2014). Consequently, accounting conservatism, which facilitates the timely disclosure of bad news, can mitigate the degree of information asymmetry and act as a corporate control mechanism (Armstrong et al., 2010; Ball & Shivakumar, 2005; García Lara et al., 2014). Such enhancement of information disclosures, in turn, helps prevent opportunistic managers from pursuing their private benefits through inefficient investments that may compromise the interests of shareholders (Bens & Monahan, 2004; Chen, Ho, Li, & Yu, 2023; Cheng & Wu, 2018; Lara, Osma, & Penalva, 2016). We therefore predict that the negative (positive) effect of accounting conservatism on corporate diversification (excess value attributable to diversification) is more pronounced in firms with high information asymmetry.

We follow previous literature to adopt four proxies to measure information asymmetry: bid-ask spread (*BAS*), stock returns volatility (*SRV*), dispersion of analyst forecasts (*DAF*) and the number of analysts following the firm (*NAF*) (Cheng & Wu, 2018; García Lara et al., 2014; Khan & Watts, 2009; Lara et al., 2016). The degree of information asymmetry would be greater when firms exhibit higher bid-ask spreads, increased returns volatility, greater dispersion of analyst forecasts, or have fewer analysts following the firm.

Table 10 presents the results of the cross-sectional analysis concerning the degree of information asymmetry. Panel A of Table 10 shows the results for changes in diversification, while Panels B and C present the results for changes in excess value measured by the sales multiplier and assets multiplier, respectively.

We find that the coefficients for changes in accounting conservatism [21] ($\triangle Aggregate_t$) are negative and significant at least at the 5% level in association with future changes in the degree of diversification ($\triangle Diversification_{t+1}$) in all eight models for firms with high information asymmetry. For firms with low information asymmetry, only two of the eight models show significant negative coefficients at least at the 10% level. Regarding future changes in excess value ($\triangle EV\_SM_{t+1}$ and $\triangle EV\_AM_{t+1}$), the coefficients for changes in accounting conservatism ($\triangle Aggregate_t$) and the interaction between changes in corporate diversification and changes in accounting conservatism ($\triangle Diversification_t$ x $\triangle Aggregate_t$) are significantly positive in all sixteen models for firms with high information asymmetry, with the majority significant at least at the 5% level. For firms with low information asymmetry, only four out of sixteen models

[21] For brevity, we only use the aggregate measure of accounting conservatism in the analyses.

measured in the sales and assets multiplier exhibit significantly positive coefficients for accounting conservatism at least at the 10% level, while only two out of sixteen models show significantly positive coefficients for the interaction at the 10% level.

The magnitude of the coefficient for accounting conservatism and the interaction terms in all models is significantly larger among firms characterized by high information asymmetry compared to those with low information asymmetry. Consequently, the results suggest that the effect of accounting conservatism in mitigating agency problems related to diversification decisions is more pronounced in firms with greater information asymmetry.

[*Insert Table 10 Here*]

Similarly, agency problems are also prevalent in firms with weak corporate governance structure. Given that accounting conservatism can enhance information transparency between various parties, it is regarded as an efficient contracting mechanism in monitoring management (Watts, 2003). Therefore, we expect that the negative (positive) influence of accounting conservatism on corporate diversification (excess value associated with diversification) will be more pronounced in firms with weak corporate governance structure.

We follow previous literature to adopt four proxies to measure governance structure: board independence (*IND*), CEO duality (*DUAL*), institutional ownership (*INST*) and G-index (*GIND*) (e.g., Chen & Chen, 2012; Hoechle et al., 2012). When firms have a lower percentage of independent directors, CEO duality, or lower institutional ownership, they are regarded as having a weak governance structure. Firms with a higher G-index are perceived as having weaker shareholder rights and poorer external governance.

Table 11 presents the results of the cross-sectional analysis concerning corporate governance structure. Panel A of Table 11 shows the results for changes in diversification, while Panels B and C present the results for changes in excess value measured by the sales multiplier and assets multiplier, respectively.

We find that the coefficients for changes in accounting conservatism ($\triangle Aggregate_t$) are negative and significant, at least at the 5% level, in association with future changes in the degree of diversification ($\triangle Diversification_{t+1}$) in all eight models for firms with weak corporate governance. For firms with good governance structure, only one out of the eight models shows a significant negative coefficient at the 10% level. Regarding future changes in excess value ($\triangle EV\_SM_{t+1}$ and $\triangle EV\_AM_{t+1}$), the coefficients for changes in accounting conservatism ($\triangle Aggregate_t$) and the interaction between changes in corporate diversification and changes in accounting conservatism ($\triangle Diversification_t$ x $\triangle Aggregate_t$) are significantly positive at least at the 5% level in all sixteen models for firms with poor governance structure. For firms with strong governance mechanisms, only seven out of sixteen models measured in the sales and assets multiplier exhibit significantly positive coefficients for accounting conservatism, at least at the 10% level. Similarly, only seven out of sixteen models show significantly positive coefficients for the interaction, also at least at the 10% level.

The magnitude of the coefficient for accounting conservatism and the interaction terms in all models is significantly larger among firms characterized by weak governance structure compared to those with strong governance structure. Consequently, the findings suggest that the impact of accounting conservatism in addressing agency issues regarding diversification decisions is more pronounced in firms with weak governance structure.

[*Insert Table 11 Here*]
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6. Conclusion

The research investigates how accounting conservatism impacts corporate diversification and its related value. Since accounting conservatism can reduce information asymmetries and agency costs between insiders and outsiders (Ball, 2001; Ball & Shivakumar, 2005; Basu, 1997; Kothari, Ramanna, & Skinner, 2010; LaFond & Watts, 2008; Watts, 2003), examining its monitoring role is important for understanding how it shapes corporate diversification strategies and their impact on shareholders' value. Furthermore, this issue is particularly relevant to standard setters such as the FASB and IASB, as well as to academics, practitioners, and investors, who are placing increasing emphasis on the significance of accounting conservatism.

Based on a sample of U.S. publicly listed firms in the period 2000–2017, our findings suggest that an increase in conservative financial reporting leads to a reduction in the level of corporate diversification. Additionally, when companies adopt a more conservative approach to financial reporting, it enhances the excess value attributed to diversification, suggesting that conservatism can mitigate the negative impact of diversification on firm value. To provide in-depth analyses of the relation between accounting conservatism, corporate diversification, and its related value, we further examine the heterogeneity in this relationship. Our cross-sectional analysis reveals that the impact of accounting conservatism is more pronounced in firms with greater information asymmetry or weaker corporate governance structure. Through the employment of 2SLS to mitigate potential endogeneity bias, our findings remain consistent with the primary results. Collectively, our study demonstrates that accounting conservatism is an effective mechanism to mitigate agency conflicts and the information asymmetries arising from product diversification.

Our findings will interest standard setters, academics, practitioners, and investors.

In response to the debate about whether the conceptual framework for financial reporting should include conservatism, our results suggest that financial statement users may become more informed about possible risks and uncertainties when firms adopt a conservative reporting approach. This provides valuable insights and evidence for standard setters, as it underscores the importance of conservatism in financial reporting for improving transparency, accountability, and the usefulness of accounting information in decision-making.

From an academic perspective, our findings contribute to diversification research by enhancing the understanding of how reported accounting information mitigates the adverse effects of corporate diversification. Additionally, our empirical results highlight the benefits of conservatism, suggesting that practitioners and investors should consider the timely recognition of bad news as an effective governance mechanism to monitor managerial decisions and to enhance investment efficiency.

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Table 1 Characteristics of the sample firms

Panel A: Distribution across years

Year	All (*n*)	Single-segment (*n*)	Multiple-segment (*n*)	Multiple-segment (%)
2000	980	587	393	40.10%
2001	1,032	627	405	39.24%
2002	1,081	650	431	39.87%
2003	1,124	660	464	41.28%
2004	1,153	693	460	39.90%
2005	1,215	738	477	39.26%
2006	1,264	770	494	39.08%
2007	1,313	802	511	38.92%
2008	1,374	863	511	37.19%
2009	1,429	892	537	37.58%
2010	1,484	912	572	38.54%
2011	1,542	952	590	38.26%
2012	1,588	984	604	38.04%
2013	1,640	1,018	622	37.93%
2014	1,684	1,044	640	38.00%
2015	1,746	1,098	648	37.11%
2016	1,793	1,133	660	36.81%
2017	1,823	1,154	669	36.70%
Total	25,265	15,577	9,688	38.35%

Panel B: Distribution across industries

SIC code	Industry description	All (*n*)	Single-segment (*n*)	Multiple-segment (*n*)	Multiple-segment (%)
01	Agricultural Production	127	87	40	31.50%
07	Agricultural Services	27	17	10	37.04%
10	Metal Mining	56	34	22	39.29%
13	Field Crops	577	361	216	37.44%
15	General Building Contractors	396	311	85	21.46%
16	Heavy Construction	127	87	40	31.50%
17	Special Trade Contractors	26	16	10	38.46%
20	Food and Kindred Products	1,550	1,024	526	33.94%
21	Tobacco Products	73	48	25	34.25%
22	Textile Mill Products	233	152	81	34.76%
23	Apparel and Other Textile Products	252	188	64	25.40%
24	Lumber and Wood Products	189	107	82	43.39%
25	Furniture and Fixtures	328	181	147	44.82%
26	Paper and Allied Products	749	457	292	38.99%
27	Printing and Publishing	802	715	87	10.85%
28	Chemicals and Allied Products	1,877	741	1,136	60.52%
29	Petroleum and Coal Products	882	503	379	42.97%
30	Rubber and Misc. Plastics Products	479	316	163	34.03%
32	Stone, Clay, and Glass Products	164	132	32	19.51%
33	Primary Metal Industries	793	448	345	43.51%
34	Fabricated Metal Products	487	249	238	48.87%
35	Industrial Machinery and Equipment	2,086	1,212	874	41.90%
36	Electronic & Other Electric Equipment	1,357	861	496	36.55%
37	Transportation Equipment	1,557	849	708	45.47%
38	Instruments and Related Products	925	529	396	42.81%
39	Miscellaneous Manufacturing Industries	127	87	40	31.50%
40	Railroad Transportation	289	180	109	37.72%
42	Trucking and Warehousing	184	119	65	35.33%
44	Water Transportation	82	65	17	20.73%
45	Transportation by Air	455	299	156	34.29%
46	Pipelines	37	29	8	21.62%
47	Transportation Service	64	41	23	35.94%
48	Communication	1,154	818	336	29.12%
50	Wholesale Trade: Durable Goods	663	453	210	31.67%
51	Wholesale Trade: Non-durable Goods	775	454	321	41.42%
52	Building Materials & Garden Supplies	271	200	71	26.20%
53	General Merchandise Stores	943	583	360	38.18%
54	Food Stores	594	368	226	38.05%
55	Automotive Dealers & Service Stations	198	160	38	19.19%
56	Apparel and Accessory Stores	214	162	52	24.30%
57	Furniture and Home-furnishings Stores	245	169	76	31.02%
58	Eating and Drinking Places	100	70	30	30.00%
59	Miscellaneous Retail	648	505	143	22.07%
70	Hotels and Other Lodging Places	154	108	46	29.87%
72	Personal Services	190	98	92	48.42%
73	Business Services	1,070	580	490	45.79%
75	Auto Repair, Services, and Parking	135	71	64	47.41%
78	Motion Pictures	106	75	31	29.25%
79	Amusement & Recreation Services	112	30	82	73.21%
80	Health Services	226	161	65	28.76%
87	Engineering & Management Services	64	42	22	34.38%
99	Non-classifiable Establishments	46	25	21	45.65%
	Total	25,265	15,577	9,688	38.35%

Table 2 Descriptive statistics

Panel A: Sample composition	
Firm-years available in *COMPUSTAT* for the fiscal years 2000–2017	59,243
Delete banks and financial institutions data	(12,177)
Delete firm-years with insufficient data to compute conservatism	(10,722)
Delete firm-years with insufficient data to compute diversification	(2,329)
Delete firm-years lacking at least one segment's data	(4,127)
Delete firm-years lacking consolidated sales of at least $20 million	(2,089)
Delete observations with missing data	(2,534)
Sample to test Hypotheses 1	25,265
Delete firm-years with insufficient data to compute excess value	(1,213)
Sample to test Hypotheses 2	24,052

Panel B: **Comparison of firm types between single-segment and multiple-segment**

Variables	Single-segment (N =14,710)		Multiple-segment (N =9,342)		Differences	
	Mean	Median	Mean	Median	Means (*t-stat*)	Medians (*z-stat*)
Main variables at levels						
Diversification$_t$	n/a	n/a	0.293	0.076	n/a	n/a
EV_SM$_t$	0.009	0.002	-0.106	-0.128	0.115*** (2.883)	0.130*** (3.165)
EV_AM$_t$	0.015	0.001	-0.141	-0.187	0.156*** (3.020)	0.188*** (3.181)
Accruals$_t$	0.043	0.021	0.012	-0.011	0.030* (1.809)	0.032** (2.145)
C_Score_KW$_t$	0.138	0.125	0.079	0.055	0.059** (2.321)	0.070** (2.252)
C_Score_PZ$_t$	0.159	0.137	0.086	0.043	0.073*** (3.559)	0.094*** (3.378)
Aggregate$_t$	0.609	0.532	0.328	0.273	0.281*** (3.261)	0.259*** (3.622)
Control variables						
SIZE$_t$	5.292	4.344	6.465	4.942	-1.173*** (-3.171)	-0.598*** (-2.631)
R&D$_t$	0.074	0.048	0.165	0.101	-0.091*** (-3.515)	-0.053** (-2.340)
LEV$_t$	0.364	0.269	0.442	0.341	-0.078* (-1.815)	-0.072* (-1.673)
ADVER$_t$	0.008	0.004	0.015	0.009	-0.007 (-1.461)	-0.005 (-1.579)
CAPX$_t$	0.130	0.059	0.075	0.038	0.055** (2.269)	0.021* (1.823)
PROF$_t$	0.393	0.284	0.247	0.195	0.146*** (3.343)	0.089*** (3.273)
MOWN$_t$	0.130	0.113	0.104	0.082	0.026** (2.124)	0.031** (2.058)
Information environment measures						
BAS$_t$	3.088	2.625	3.464	2.945	-0.376*** (-3.053)	-0.320*** (-3.328)
SRV$_t$	2.551	2.254	2.891	2.531	-0.340*** (-3.700)	-0.277*** (-3.463)
DAF$_t$	0.064	0.037	0.084	0.042	-0.020* (-1.717)	-0.005 (-1.182)
NAF$_t$	11.664	10.000	9.649	8.000	2.015*** (3.588)	2.000*** (2.914)
Corporate governance measures						
IND$_t$	0.618	0.636	0.500	0.514	0.118*** (3.291)	0.122*** (3.146)
DUAL$_t$	0.541	1.000	0.671	1.000	-0.130** (-2.115)	0.000** (-2.299)
INST$_t$	0.557	0.478	0.483	0.441	0.074*** (3.415)	0.037** (2.326)
GIND$_t$	7.741	7.000	8.992	8.000	-1.251*** (-3.549)	-1.000** (-2.222)

A *t*-test and Mann-Whitney U test are adopted to examine differences in the mean and median, respectively (two-tailed test). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions.

Table 3 The distribution of excess value over time

Time	Sales Multiplier (EV_SM_t)						Asset Multiplier (EV_AM_t)					
	Single-segment (N=14,710)		Multiple-segment (N=9,342)		Differences		Single-segment (N=14,710)		Multiple-segment (N=9,342)		Differences	
	Mean	Median	Mean	Median	Means (*t-stat*)	Medians (*z-stat*)	Mean	Median	Mean	Median	Means (*t-stat*)	Medians (*z-stat*)
2000	0.011	0.004	-0.157	-0.170	-0.168*** (-2.603)	-0.174** (-2.438)	0.020	0.002	-0.204	-0.254	-0.224*** (-2.926)	-0.256*** (-3.126)
2001	0.003	0.000	-0.085	-0.092	-0.088*** (-2.994)	-0.092*** (-2.808)	0.011	0.001	-0.111	-0.138	-0.122** (-2.224)	-0.139** (-2.013)
2002	0.004	0.000	-0.070	-0.075	-0.074*** (-2.657)	-0.075** (-2.234)	0.012	0.001	-0.090	-0.113	-0.102** (-2.168)	-0.114** (-2.006)
2003	0.010	0.002	-0.168	-0.181	-0.178*** (-3.007)	-0.183*** (-3.157)	0.022	0.003	-0.218	-0.269	-0.240*** (-3.019)	-0.272*** (-3.362)
2004	0.011	0.003	-0.206	-0.264	-0.217** (-2.317)	-0.267*** (-2.825)	0.025	0.003	-0.290	-0.361	-0.315*** (-3.328)	-0.364*** (-3.226)
2005	0.010	0.002	-0.163	-0.176	-0.173** (-2.454)	-0.178*** (-3.321)	0.017	0.002	-0.210	-0.261	-0.227** (-2.029)	-0.263*** (-3.148)
2006	0.010	0.002	-0.173	-0.186	-0.183** (-2.301)	-0.188*** (-3.363)	0.018	0.002	-0.224	-0.276	-0.242** (-1.971)	-0.278*** (-3.060)
2007	0.005	0.001	-0.117	-0.127	-0.122** (-2.171)	-0.128** (-2.400)	0.015	0.002	-0.152	-0.189	-0.167 (-1.584)	-0.191* (-1.744)
2008	0.002	0.000	-0.023	-0.024	-0.025 (-1.367)	-0.024 (-1.489)	0.006	0.000	-0.030	-0.038	-0.036 (-1.345)	-0.038 (-1.249)
2009	0.009	0.002	-0.148	-0.159	-0.157*** (-3.732)	-0.161*** (-3.504)	0.014	0.002	-0.191	-0.238	-0.205*** (-3.068)	-0.240*** (-3.701)
2010	0.011	0.003	-0.136	-0.147	-0.147* (-1.895)	-0.150** (-2.263)	0.016	0.002	-0.175	-0.219	-0.191** (-2.315)	-0.221** (-2.476)
2011	0.002	0.000	-0.011	-0.012	-0.013* (-1.754)	-0.012 (-1.456)	0.004	0.000	-0.013	-0.018	-0.017 (-1.373)	-0.018 (-1.219)
2012	0.004	0.000	-0.019	-0.021	-0.023 (-1.324)	-0.021* (-1.919)	0.005	0.000	-0.022	-0.030	-0.029 (-1.186)	-0.030 (-1.413)
2013	0.010	0.003	-0.105	-0.113	-0.115*** (-2.804)	-0.116** (-2.279)	0.015	0.002	-0.135	-0.169	-0.150** (-2.091)	-0.171*** (-3.281)
2014	0.008	0.002	-0.080	-0.088	-0.088** (-2.019)	-0.090** (-2.258)	0.016	0.002	-0.104	-0.129	-0.120** (-2.306)	-0.131** (-2.234)
2015	0.015	0.003	-0.078	-0.148	-0.093* (-1.750)	-0.151** (-2.008)	0.018	0.002	-0.119	-0.223	-0.137** (-2.071)	-0.225*** (-3.303)
2016	0.016	0.004	-0.084	-0.160	-0.100** (-2.489)	-0.164*** (-3.324)	0.017	0.002	-0.117	-0.219	-0.134** (-2.352)	-0.221** (-2.241)
2017	0.017	0.004	-0.089	-0.169	-0.106*** (-3.221)	-0.173*** (-2.982)	0.020	0.003	-0.122	-0.229	-0.142* (-1.808)	-0.232*** (-2.780)

A *t*-test and Mann–Whitney U test are adopted to examine differences in the mean and median, respectively (two-tailed test). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions.

Table 4 Longitudinal effect of diversification on excess value

Panel A: Excess values for diversifying firms pre and post diversification decision (N=158)

	No. of diversified obs.	Sales Multiplier (EV_SM_t)		Asset Multiplier (EV_AM_t)	
		Mean	Median	Mean	Median
EV_{-5}	80	0.015	0.001	0.021	0.003
EV_{-4}	88	0.009	0.000	0.018	0.003
EV_{-3}	110	0.011	-0.002	0.010	0.001
EV_{-2}	119	-0.010	-0.014	0.017	0.002
EV_{-1}	141	-0.007	-0.010	0.013	0.002
EV_{0}	158	-0.027*	-0.038*	-0.099*	-0.131**
EV_{1}	144	-0.049*	-0.066**	-0.123**	-0.146***
EV_{2}	130	-0.073**	-0.087**	-0.096***	-0.103***
EV_{3}	116	-0.058**	-0.067**	-0.121*	-0.142**
EV_{4}	96	-0.094***	-0.105***	-0.135***	-0.149***
EV_{5}	87	-0.078	-0.086	-0.150**	-0.167**

Panel B: Mean change in excess values for diversifying firms (N=141)

	Sales Multiplier (EV_SM_t)		Asset Multiplier (EV_AM_t)	
EV^d_{-1}	-0.007	(-1.459)	0.013	(1.543)
EV^d_{1}	-0.049	(-1.939)*	-0.123	(-2.396)**
$EV^d_{1}- EV^d_{-1}$	-0.042	(-1.678)*	-0.136	(-3.338)***

Panel C: Mean change in excess values for single-segment firms (N=14,710)

	Sales Multiplier (EV_SM_t)		Asset Multiplier (EV_AM_t)	
EV^{ss}_{-1}	0.010	(1.813)*	0.022	(2.072)**
EV^{ss}_{1}	-0.028	(-2.264)**	-0.051	(-3.003)***
$EV^{ss}_{1}- EV^{ss}_{-1}$	-0.038	(-2.052)**	-0.073	(-3.115)***

Panel D: Mean difference in the change in excess values between diversifying and single-segment firms

	Sales Multiplier (EV_SM_t)		Asset Multiplier (EV_AM_t)	
$(EV^d_{1}- EV^d_{-1})-(EV^{ss}_{1}- EV^{ss}_{-1})$	-0.004	(-1.046)	-0.063	(-2.986)***

A *t*-test and Wilcoxon signed-rank test are adopted to examine differences in the mean and median, respectively (two-tailed test). t-statistics for means are presented in parentheses in Panel B, C and D. ***, **, and * indicate statistical significance different from zero at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions.

Table 5 Results for the regression of excess value on diversification

Variables	Sales Multiplier (EV_SM_t)					Asset Multiplier (EV_AM_t)				
	OLS	Extended OLS	IV	PSM	Heckman	OLS	Extended OLS	IV	PSM	Heckman
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Intercept	-0.326***	-0.758***	-0.665***	-0.535**	-0.651**	-0.173***	-0.483***	-0.371**	-0.280**	-0.314**
	(-3.543)	(-3.199)	(-3.168)	(-2.069)	(-2.215)	(-3.217)	(-2.629)	(-2.455)	(-2.352)	(-2.381)
Diversification$_t$	-0.029***	-0.254***	-0.225**	-0.449**	-0.261***	-0.041**	-0.423***	-0.318***	-0.228**	-0.442**
	(-3.288)	(-3.526)	(-2.137)	(-2.073)	(-3.419)	(-2.245)	(-2.725)	(-3.520)	(-2.397)	(-2.403)
$SIZE_t$	0.113**	0.531***	0.444***	0.046***	0.453***	0.145***	0.419***	0.314**	0.234**	0.367**
	(2.221)	(3.025)	(3.161)	(3.064)	(2.765)	(3.201)	(2.588)	(2.405)	(2.225)	(2.351)
$PROF_t$	0.071***	0.317***	0.313***	0.036**	0.294***	0.112***	0.330***	0.332**	0.181***	0.346**
	(3.230)	(3.119)	(3.165)	(2.065)	(2.873)	(3.210)	(2.607)	(2.430)	(3.340)	(2.357)
$CAPX_t$	0.029**	0.138*	0.156*	0.023***	0.139	0.074*	0.219	0.261	0.120**	0.230*
	(2.228)	(1.724)	(1.761)	(3.065)	(1.482)	(1.801)	(1.589)	(1.518)	(2.325)	(1.757)
$SIZE_{t-1}$		-0.280***	-0.278***	-0.047***	-0.257***		-0.205***	-0.199**	-0.141**	-0.224**
		(-3.649)	(-3.402)	(-3.081)	(-3.316)		(-2.743)	(-2.522)	(-2.413)	(-2.446)
$PROF_{t-1}$		0.138*	0.132**	0.040*	0.116**		0.120	0.113**	0.207**	0.139**
		(1.897)	(2.067)	(1.701)	(2.018)		(1.625)	(2.435)	(2.352)	(2.386)
$CAPX_{t-1}$		0.089*	0.094	0.026	0.105*		-0.123	-0.149	-0.134	-0.118*
		(1.803)	(1.564)	(1.567)	(1.835)		(-1.613)	(-1.521)	(-1.553)	(-1.689)
$SIZE_{t-2}$		-0.123***	-0.128***	-0.031***	-0.105***		-0.138***	-0.115**	-0.078***	-0.161***
		(-3.161)	(-3.169)	(-2.954)	(-3.142)		(-3.479)	(-2.331)	(-3.358)	(-3.378)
$PROF_{t-2}$		0.107**	0.136**	0.020	0.100**		-0.089	-0.064	0.234*	-0.052
		(2.310)	(2.178)	(1.551)	(2.006)		(-1.470)	(-1.321)	(1.808)	(-1.460)
$CAPX_{t-2}$		0.077***	0.060***	0.027**	0.077***		0.025**	0.029**	0.233**	0.037**
		(3.074)	(3.052)	(2.050)	(2.825)		(2.458)	(2.296)	(2.319)	(2.354)
LEV_t		-0.039	-0.017*	-0.021	-0.025*		-0.158	-0.135	-0.017**	-0.128
		(-1.573)	(-1.673)	(-1.542)	(-1.806)		(-1.377)	(-1.280)	(-2.329)	(-1.356)
$SSIZE_t$		-0.049***	-0.047***	-0.031**	-0.069**		-0.012***	-0.014***	-0.023**	-0.020**
		(-3.362)	(-3.180)	(-2.045)	(-2.075)		(-3.403)	(-3.316)	(-2.407)	(-2.452)
SNP_t			0.051*	0.256**	0.048			0.281**	0.187*	0.276**
			(1.762)	(2.043)	(1.581)			(2.275)	(1.833)	(2.369)
Lambda					-0.037					-0.012
					(-1.409)					(-1.349)
Hausman test			37.571***					28.250***		
C-statistic			6.527***					7.228***		
Hansen *J*-statistic			1.482					1.594		
Anderson-Rubin *F* test			18.164***					19.880***		
Year & Industry Indicators	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.575	0.592	0.611	0.613	0.601	0.577	0.604	0.613	0.615	0.610
F-statistic	5.609***	5.706***	5.731***	5.773***	5.722***	5.618***	5.750***	5.849***	5.759***	5.707***
No. of obs.	24,052	24,052	20,444	18,080	20,444	24,052	24,052	20,444	18,080	20,444

SSIZE is the square of the logarithm of total assets. *SNP* is a dummy that takes the value of 1 when the firm is part of the S&P index and 0 otherwise. *Lambda* is the inverse Mills ratio (Heckman's Lambda). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions.

Table 6 Correlation matrix

Variables	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*	*12.*	*13.*	*14.*	*15.*	*16.*	*17.*
1. $\Delta Diversification_t$	**1**	**0.134**	**-0.073**	**-0.110**	**-0.035**	**-0.175**	**-0.067**	**-0.072**	0.023	**0.149**	**0.025**	**0.152**	0.059	**0.038**	**-0.061**	**-0.033**	**-0.055**
2. $\Delta Diversification_{(t+1)}$	**0.153**	**1**	**-0.109**	**-0.073**	**-0.052**	**-0.070**	**-0.101**	**-0.108**	0.035	**0.099**	**0.038**	**0.101**	0.112	**0.072**	**-0.115**	-0.062	**-0.104**
3. $\Delta EV\_SM_{(t+1)}$	**-0.047**	**-0.085**	**1**	**0.047**	**0.051**	**0.079**	**0.090**	**0.066**	**0.083**	**0.054**	**0.041**	0.081	**0.081**	**0.052**	**0.077**	**0.038**	0.066
4. $\Delta EV\_AM_{(t+1)}$	**-0.033**	**-0.059**	**0.051**	**1**	**0.085**	**0.091**	**0.104**	**0.115**	**0.098**	0.033	**0.026**	**0.065**	**0.072**	**0.072**	**0.062**	0.030	**0.065**
5. $\Delta Accruals_t$	**-0.036**	**-0.065**	**0.052**	**0.036**	**1**	0.082	0.085	**0.084**	**0.084**	**0.092**	**-0.029**	**0.057**	**0.060**	**0.021**	**0.035**	**0.047**	**0.089**
6. $\Delta C\_Score\_KW_t$	**-0.048**	**-0.087**	**0.085**	**0.090**	0.066	**1**	**0.109**	**0.122**	**0.088**	0.028	-0.039	**0.078**	**0.082**	**0.048**	**0.065**	**0.029**	**0.086**
7. $\Delta C\_Score\_PZ_t$	**-0.069**	**-0.124**	**0.101**	**0.119**	**0.116**	**0.121**	**1**	0.110	**0.089**	**0.095**	**-0.065**	**0.097**	0.099	**0.065**	**0.095**	**0.060**	0.105
8. $\Delta Aggregate_t$	**-0.034**	**-0.062**	**0.076**	**0.047**	**0.045**	**0.086**	**0.069**	**1**	**0.094**	0.116	-0.064	**0.092**	**0.113**	**0.063**	**0.077**	**0.040**	**0.106**
9. $\Delta SIZE_t$	**0.022**	**0.040**	**0.069**	**0.025**	**0.042**	**0.046**	**0.018**	**0.060**	**1**	**0.040**	**0.025**	**0.085**	**0.085**	**0.049**	0.087	**0.025**	**0.069**
10. $\Delta R\&D_t$	0.033	0.059	**0.088**	0.088	0.035	**0.051**	**0.038**	0.043	**0.056**	**1**	**0.029**	**0.093**	**0.094**	**0.070**	**0.079**	0.045	0.101
11. ΔLEV_t	**0.007**	**0.013**	**0.069**	**0.023**	**-0.040**	**-0.028**	**-0.043**	**-0.018**	**0.026**	**0.057**	**1**	**-0.024**	**-0.029**	**-0.063**	**-0.018**	**-0.027**	**-0.011**
12. $\Delta ADVER_t$	0.052	0.093	0.076	**0.066**	0.055	**0.097**	**0.092**	**0.101**	**0.015**	**0.033**	**-0.046**	**1**	0.064	**0.052**	**0.084**	**0.043**	0.093
13. $\Delta CAPX_t$	**0.108**	0.098	**0.087**	**0.068**	**0.046**	0.086	**0.096**	**0.119**	**0.039**	**0.043**	**-0.058**	0.056	**1**	**0.074**	0.090	**0.050**	0.097
14. $\Delta PROF_t$	**0.066**	**0.060**	**0.054**	**0.073**	**0.015**	**0.055**	**0.057**	**0.042**	**0.046**	**0.062**	**-0.054**	**0.052**	**0.070**	**1**	**0.060**	**0.071**	**0.035**
15. $\Delta MOWN_t$	**-0.094**	**-0.085**	**0.044**	**0.052**	**0.084**	**0.084**	0.046	**0.129**	**0.043**	0.085	**-0.045**	0.049	0.051	**0.063**	**1**	**0.027**	**0.041**
16. $\Delta INST_t$	-0.042	-0.038	**0.035**	0.020	**0.059**	**0.030**	**0.029**	**0.078**	**0.043**	0.043	**-0.037**	0.043	**0.037**	**0.074**	**0.045**	**1**	**0.037**
17. ΔIND_t	**-0.048**	**-0.044**	0.063	**0.038**	**0.045**	**0.046**	**0.031**	**0.049**	**0.046**	**0.041**	-0.052	0.039	0.032	**0.036**	**0.025**	**0.041**	**1**

Pearson (Spearman) correlations are in the lower (upper) diagonal. Coefficients in bold indicate that the correlations are significant at the 5% level or better, respectively (two-tailed test). See Appendix 1 for detailed variable definitions.

Table 7 Results for the regression of diversification on conservatism

Variables	Expected sign	$\Delta Diversification_{(t+1)}$							
		Total sample				Within sample			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	?	1.119***	1.107***	1.133***	1.111***	1.563***	1.576***	1.582***	1.622***
		(2.859)	(2.785)	(2.818)	(2.713)	(3.995)	(3.892)	(3.938)	(3.842)
$\Delta Accruals_t$	-	-0.285**				-1.397***			
		(-2.117)				(-2.958)			
$\Delta C\_Score\_KW_t$	-		-0.425***				-1.594**		
			(-2.682)				(-2.350)		
$\Delta C\_Score\_PZ_t$	-			-0.378**				-0.928***	
				(-2.149)				(-3.003)	
$\Delta Aggregate_t$	-				-0.025***				-0.080***
					(-3.370)				(-3.032)
$\Delta SIZE_t$	+	0.625**	0.608**	0.648**	0.623**	0.873***	0.850***	0.869***	0.871***
		(2.116)	(2.228)	(2.144)	(2.202)	(2.957)	(3.114)	(2.995)	(3.083)
$\Delta R\&D_t$	+	1.617	1.621	1.630	1.660	2.259**	2.264**	2.234**	2.290**
		(1.541)	(1.557)	(1.484)	(1.596)	(2.153)	(2.261)	(2.455)	(2.231)
ΔLEV_t	+	0.373*	0.382*	0.366*	0.408*	0.522**	0.545**	0.539**	0.568**
		(1.697)	(1.749)	(1.804)	(1.766)	(2.291)	(2.304)	(2.350)	(2.262)
$\Delta MOWN_t$	-	-0.784***	-0.833***	-0.796***	-0.842***	-1.095***	-1.103***	-1.082***	-1.137***
		(-2.685)	(-2.780)	(-2.660)	(-2.804)	(-2.754)	(-2.789)	(-2.829)	(-2.920)
$\Delta INST_t$	-	-0.761*	-0.848*	-0.783*	-0.867*	-1.064**	-1.088**	-1.094**	-1.097**
		(-1.653)	(-1.661)	(-1.788)	(-1.897)	(-2.369)	(-2.270)	(-2.497)	(-2.296)
ΔIND_t	-	-1.299***	-1.345***	-1.310***	-1.373***	-1.797***	-1.820***	-1.813***	-1.828***
		(-3.004)	(-2.964)	(-3.019)	(-3.047)	(-2.680)	(-2.693)	(-2.700)	(-2.723)
Year & Industry Indicators		Included	Included	Included	Included	Included	Included	Included	Included
Adjusted R^2		0.590	0.587	0.598	0.610	0.598	0.595	0.607	0.615
F-statistic		5.609***	5.650***	5.618***	5.773***	5.693***	5.735***	5.702***	5.862***
No. of obs.		25,265	25,265	25,265	25,265	9,688	9,688	9,688	9,688

The total sample comprises both multi-segment and single firms, while the within sample exclusively consists of multi-segment firms. Numbers in parentheses are t-statistics based on robust standard errors. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions.

Table 8 Results for the regression of excess value on diversification and conservatism

Panel A: The excess value based on sales multipliers

Variables	Expected sign	$\Delta EV\_SM_{(t+1)}$							
		Total sample				**Within sample**			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	?	3.115***	3.102***	3.008***	3.135***	5.243***	5.274***	5.218***	5.278***
		(3.303)	(3.334)	(3.139)	(3.250)	(5.615)	(5.667)	(5.337)	(5.525)
$\Delta Accruals_t$	+	0.678***				1.154***			
		(2.762)				(4.696)			
$\Delta Diversification_t \times \Delta Accruals_t$	+	0.586**				0.997***			
		(2.167)				(3.684)			
$\Delta C\_Score\_KW_t$	+		2.586**				1.368***		
			(2.342)				(2.981)		
$\Delta Diversification_t \times \Delta C\_Score\_KW_t$	+		2.373**				1.004**		
			(2.354)				(2.002)		
$\Delta C\_Score\_PZ_t$	+			1.799**				0.330**	
				(2.387)				(2.058)	
$\Delta Diversification_t \times \Delta C\_Score\_PZ_t$	+			1.459***				0.456**	
				(2.883)				(2.182)	
$\Delta Aggregate_t$	+				0.061***				0.101***
					(3.351)				(3.665)
$\Delta Diversification_t \times \Delta Aggregate_t$	+				0.050**				0.083***
					(2.387)				(2.505)
$\Delta Diversification_t$	-	-1.432**	-1.531**	-1.421**	-1.534**	-2.435***	-2.542***	-2.415***	-2.557***
		(-2.363)	(-2.098)	(-2.182)	(-2.520)	(-3.217)	(-3.097)	(-3.350)	(-2.986)
$\Delta SIZE_t$	+	0.996***	1.008***	1.177***	1.075***	1.693***	1.714***	1.832***	1.827***
		(2.638)	(3.051)	(3.163)	(3.261)	(3.485)	(3.287)	(3.377)	(3.209)
$\Delta R\&D_t$	+	1.035**	1.063**	1.057**	1.063**	1.759***	1.807***	1.798***	1.807***
		(2.020)	(2.049)	(2.085)	(2.002)	(3.434)	(3.483)	(3.545)	(3.402)
ΔLEV_t	+	0.834***	0.765***	0.866***	0.767***	0.381***	0.427***	0.395***	0.412***
		(3.270)	(3.238)	(3.251)	(3.341)	(2.600)	(2.732)	(3.136)	(3.171)
$\Delta ADVER_t$	+	0.647*	0.635*	0.656*	0.684*	1.100	1.079	1.114	1.163
		(1.706)	(1.837)	(1.922)	(1.841)	(1.581)	(1.304)	(1.467)	(1.630)
$\Delta CAPX_t$	+	0.264**	0.277**	0.302**	0.289**	0.484***	0.470***	0.491***	0.510***
		(2.083)	(2.148)	(2.090)	(2.250)	(3.541)	(3.481)	(3.554)	(3.618)
$\Delta PROF_t$	+	1.099***	1.121***	1.012***	1.096***	1.869*	1.907*	1.720*	1.863*
		(3.223)	(3.297)	(3.328)	(3.254)	(1.779)	(1.695)	(1.857)	(1.776)
$\Delta INST_t$	+	0.785**	0.830**	0.779**	0.854**	1.335***	1.411***	1.325***	1.450***
		(2.451)	(2.394)	(2.354)	(2.304)	(3.168)	(3.070)	(3.002)	(2.902)
ΔIND_t	+	0.339**	0.345**	0.364**	0.356**	0.576*	0.587*	0.619*	0.612*
		(2.220)	(2.406)	(2.264)	(2.160)	(1.775)	(1.809)	(1.849)	(1.706)
Year & Industry Indicators		Included	Included	Included	Included	Included	Included	Included	Included
Adjusted R^2		0.591	0.599	0.612	0.610	0.600	0.608	0.621	0.619
F-statistic		5.196***	5.211***	5.194***	5.218***	5.274***	5.289***	5.272***	5.290***
No. of obs.		24,052	24,052	24,052	24,052	9,342	9,342	9,342	9,342

The total sample comprises both multi-segment and single firms, while the within sample exclusively consists of multi-segment firms. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions.

Table 8 Results for the regression of excess value on diversification and conservatism (continued)

Panel B: The excess value based on asset multipliers

Variables	Expected sign	$\Delta EV\_AM_{(t+1)}$							
		Total sample				**Within sample**			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	?	1.341**	1.349**	1.335**	1.391**	2.016**	2.021**	2.006**	2.054**
		(2.436)	(2.449)	(2.365)	(2.428)	(2.159)	(2.180)	(2.053)	(2.327)
$\Delta Accruals_t$	+	0.294***				0.444*			
		(3.201)				(1.806)			
$\Delta Diversification_t \times \Delta Accruals_t$	+	0.256***				0.384**			
		(2.942)				(2.417)			
$\Delta C\_Score\_KW_t$	+		1.125**				1.691***		
			(2.018)				(3.531)		
$\Delta Diversification_t \times \Delta C\_Score\_KW_t$	+		1.032***				1.552***		
			(3.125)				(2.944)		
$\Delta C\_Score\_PZ_t$	+			0.781**				1.175**	
				(2.038)				(2.156)	
$\Delta Diversification_t \times \Delta C\_Score\_PZ_t$	+			0.634**				0.954*	
				(2.254)				(1.885)	
$\Delta Aggregate_t$	+				0.025**				0.037**
					(2.472)				(2.190)
$\Delta Diversification_t \times \Delta Aggregate_t$	+				0.021*				0.032***
					(1.943)				(3.852)
$\Delta Diversification_t$	-	-0.623***	-0.645***	-0.618***	-0.648***	-0.936***	-0.947***	-0.929***	-0.958***
		(-3.027)	(-3.143)	(-2.936)	(-2.842)	(-3.545)	(-3.468)	(-3.558)	(-3.677)
$\Delta SIZE_t$	+	0.433**	0.438**	0.468**	0.455**	0.651***	0.659***	0.705***	0.687***
		(2.147)	(2.327)	(2.375)	(2.319)	(2.725)	(2.995)	(3.268)	(3.148)
$\Delta R\&D_t$	+	0.450*	0.462*	0.460*	0.471*	0.677	0.695	0.691	0.704
		(1.878)	(1.891)	(1.907)	(1.885)	(1.321)	(1.340)	(1.464)	(1.308)
ΔLEV_t	+	0.207**	0.219**	0.212**	0.223**	0.089***	0.097***	0.100***	0.095***
		(2.156)	(2.284)	(2.095)	(2.141)	(3.200)	(3.503)	(2.856)	(3.425)
$\Delta ADVER_t$	+	0.281**	0.276**	0.285**	0.297**	0.423**	0.415**	0.429**	0.437**
		(2.091)	(2.173)	(2.366)	(2.321)	(2.377)	(2.463)	(2.253)	(2.484)
$\Delta CAPX_t$	+	0.115*	0.120*	0.125*	0.117*	0.173**	0.181**	0.189**	0.176**
		(1.906)	(1.890)	(1.928)	(1.818)	(2.362)	(2.389)	(2.367)	(2.407)
$\Delta PROF_t$	+	0.478***	0.488***	0.440***	0.476***	0.719**	0.733**	0.725**	0.717**
		(3.401)	(3.434)	(3.447)	(3.365)	(2.107)	(2.156)	(2.177)	(2.127)
$\Delta INST_t$	+	0.341**	0.361**	0.339**	0.357**	0.531	0.543	0.539	0.547
		(2.066)	(2.104)	(2.035)	(2.129)	(1.603)	(1.565)	(1.539)	(1.506)
ΔIND_t	+	0.147*	0.150*	0.158*	0.160*	0.221**	0.226**	0.238**	0.235**
		(1.865)	(1.846)	(1.948)	(1.954)	(2.452)	(2.573)	(2.480)	(2.319)
Year & Industry Indicators		Included	Included	Included	Included	Included	Included	Included	Included
Adjusted R^2		0.585	0.593	0.606	0.604	0.594	0.602	0.615	0.612
F-statistic		5.146***	5.160***	5.144***	5.167***	5.223***	5.238***	5.221***	5.241***
No. of obs.		24,052	24,052	24,052	24,052	9,342	9,342	9,342	9,342

The total sample comprises both multi-segment and single firms, while the within sample exclusively consists of multi-segment firms. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions

Table 9 Results controlling for endogeneity

Variables	Hypothesis 1		Hypothesis 2		
	2nd Stage Regression	1nd Stage Regression	2nd Stage Regression		1nd Stage Regression
	△Diversification $_{(t+1)}$	***△Aggregate*** $_{t}$	***△EV_SM*** $_{(t+1)}$	***△EV_AM*** $_{(t+1)}$	***△Aggregate*** $_{t}$
	(1)	(2)	(3)	(4)	(5)
Intercept	1.384**	-0.266**	0.534***	1.932*	-0.286**
	(2.162)	(-2.272)	(2.610)	(1.937)	(-2.395)
Pre_Aggregate $_{t}$	-0.067**		0.143**	0.264***	
	(-2.357)		(2.344)	(2.875)	
△Diversification $_{t}$ ×*Pre_Aggregate* $_{t}$			0.100**	0.184***	
			(2.138)	(3.652)	
△Diversification $_{t}$			-0.554**	-0.915**	
			(-2.033)	(-2.494)	
△SIZE $_{t}$	1.196***	0.264***	0.301**	0.612***	0.287***
	(2.954)	(3.397)	(2.313)	(2.837)	(3.489)
△R&D $_{t}$	0.932*	0.084*	0.073*	0.165	0.093*
	(1.915)	(1.859)	(1.812)	(1.574)	(1.927)
△LEV $_{t}$	0.177**	0.005	0.825***	0.229**	0.081**
	(2.157)	(1.529)	(3.181)	(2.036)	(2.122)
△INST $_{t}$	-0.253**	0.038**	1.071	1.312**	0.051**
	(-2.012)	(2.459)	(1.531)	(2.355)	(2.401)
△IND $_{t}$	-1.431**	0.321***	0.669*	0.825**	0.352***
	(-2.190)	(3.392)	(1.868)	(2.292)	(3.477)
△MOWN $_{t}$	-0.391***	0.049			
	(-3.107)	(1.598)			
△ADVER $_{t}$			1.354**	1.660***	0.081**
			(2.310)	(2.834)	(2.543)
△CAPX $_{t}$			0.155*	0.544**	0.125**
			(1.945)	(2.384)	(2.054)
△PROF $_{t}$			0.078*	0.303**	0.247**
			(1.883)	(2.308)	(2.212)
Instrument Variables					
OperCycle $_{t}$		0.424***			0.452***
		(3.189)			(2.845)
InvestCycle $_{t}$		-0.822***			-0.916***
		(-2.963)			(-3.034)
C-statistic	6.026***		7.991***	7.886***	
Hansen *J*-statistic	6.929		7.486	7.533	
Anderson-Rubin *F* test	62.351***		78.106***	77.833***	
Adjusted R^2	0.547	0.521	0.600	0.594	0.528
F-statistic	5.593***	5.552***	5.872***	5.814***	5.499***
No. of obs.	25,265	25,265	24,052	24,052	24,052

Pre_Aggregate is the predictive value of aggregate from first-stage regression. *OperCycle* is the logarithm of the sum of the firm's days of receivables and days of inventory at the beginning of the year. *InvestCycle* is a decreasing proxy of a firm's investment-cycle length, calculated as depreciation divided by lagged total assets. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions.

Table 10 Cross-sectional variation with different degrees of information asymmetry

Panel A: Dependent variable-$\Delta Diversification_{(t+1)}$

Variables	*Information asymmetry measure*: Bid-Ask spread (*BAS*)				Stock return volatility (*SRV*)				Dispersion of analyst forecasts (*DAF*)				Number of analysts following (*NAF*)			
	Total sample		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**	
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
$\Delta Aggregate_t$	-0.038***	-0.017	-0.120**	-0.053	-0.045***	-0.014	-0.144***	-0.044*	-0.058**	-0.011**	-0.184***	-0.035	-0.013	-0.050**	-0.040	-0.160**
	(-3.338)	(-1.333)	(-2.316)	(-1.440)	(-3.150)	(-1.375)	(-2.736)	(-1.733)	(-2.358)	(-2.163)	(-2.944)	(-1.287)	(-1.125)	(-2.425)	(-1.480)	(-2.304)
Intercept & ΔControls	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
	Difference [(1)- (2)]		Difference [(3)- (4)]		Difference [(5)- (6)]		Difference [(7)- (8)]		Difference [(9)- (10)]		Difference [(11)- (12)]		Difference [(13)- (14)]		Difference [(15)- (16)]	
Coefficient test	-0.021**		-0.067**		-0.031**		-0.100***		-0.047**		-0.149***		0.037**		0.120***	
	(-2.102)		(-2.497)		(-2.221)		(-3.397)		(-2.443)		(-2.806)		(2.351)		(3.562)	
F-statistic	5.553***	5.594***	5.562***	5.716***	5.637***	5.678***	5.646***	5.804***	5.499***	5.539***	5.508***	5.660***	5.581***	5.623***	5.590***	5.747***
No. of obs.	12,633	12,632	4,845	4,843	12,633	12,632	4,845	4,843	12,633	12,632	4,845	4,843	12,633	12,632	4,845	4,843

Panel B: Dependent variable-$\Delta EV\_SM_{(t+1)}$

Variables	*Information asymmetry measure*: Bid-Ask spread (*BAS*)				Stock return volatility (*SRV*)				Dispersion of analyst forecasts (*DAF*)				Number of analysts following (*NAF*)			
	Total sample		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**	
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
$\Delta Aggregate_t$	0.192***	0.041**	0.182***	0.056*	0.061***	0.027	0.101***	0.031	0.041**	0.018	0.056**	0.017	0.012*	0.027**	0.010	0.031***
	(3.027)	(2.234)	(3.597)	(1.741)	(3.351)	(1.489)	(3.665)	(1.131)	(2.234)	(1.499)	(2.036)	(1.517)	(1.662)	(2.489)	(1.349)	(3.041)
$\Delta Diversification_t$	-1.301***	-1.223*	-2.603***	-2.121*	-1.534**	-0.982	-2.557***	-1.789	-1.023*	-0.755	-2.421**	-1.438	-1.003	-1.682**	-1.544	-2.289**
	(-3.780)	(-1.680)	(-3.375)	(-1.659)	(-2.520)	(-1.120)	(-2.986)	(-1.229)	(-1.680)	(-1.477)	(-2.059)	(-1.512)	(-1.498)	(-2.120)	(-1.284)	(-2.492)
$\Delta Diversification_t$	0.175***	0.033	0.149***	0.046	0.101**	0.022	0.083**	0.026	0.063*	0.015	0.046*	0.014	0.010	0.022**	0.008	0.026**
$\times\Delta Aggregate_t$	(3.581)	(1.591)	(3.409)	(1.392)	(2.387)	(1.061)	(2.505)	(1.477)	(1.951)	(1.606)	(1.832)	(1.431)	(1.472)	(2.061)	(1.239)	(2.377)
Intercept & ΔControls	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
	Difference [(1)- (2)]		Difference [(3)- (4)]		Difference [(5)- (6)]		Difference [(7)- (8)]		Difference [(9)- (10)]		Difference [(11)- (12)]		Difference [(13)- (14)]		Difference [(15)- (16)]	
Coefficient test	0.142***		0.103***		0.079***		0.057**		0.048**		0.032**		-0.012*		-0.018*	
	(3.500)		(3.409)		(2.945)		(2.078)		(2.111)		(2.335)		(-1.931)		(-1.741)	
F-statistic	5.248***	5.263***	5.246****	5.270***	5.327***	5.342***	5.325***	5.343***	5.258***	5.274***	5.256***	5.281***	5.337***	5.352***	5.335***	5.353***
No. of obs.	12,027	12,025	4,672	4,670	12,027	12,025	4,672	4,670	12,027	12,025	4,672	4,670	12,027	12,025	4,672	4,670

Panel C: Dependent variable-$\Delta EV\_AM_{(t+1)}$

Variables	*Information asymmetry measure*: Bid-Ask spread (*BAS*)				Stock return volatility (*SRV*)				Dispersion of analyst forecasts (*DAF*)				Number of analysts following (*NAF*)			
	Total sample		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**	
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
$\Delta Aggregate_t$	0.109***	0.011	0.085***	0.016	0.055**	0.005	0.037**	0.007	0.031**	0.002	0.026*	0.003	0.013	0.075***	0.012*	0.093***
	(3.686)	(1.075)	(3.037)	(1.259)	(2.472)	(1.467)	(2.190)	(1.305)	(2.075)	(1.203)	(1.952)	(1.180)	(1.236)	(2.944)	(1.730)	(3.475)
$\Delta Diversification_t$	-1.490**	-0.282	-2.203**	-0.417	-1.068***	-0.122	-1.958***	-0.881*	-1.282**	-0.553	-1.417**	-0.679*	-0.324	-1.296***	-0.429	-2.395***
	(-2.537)	(-1.236)	(-2.457)	(-1.599)	(-2.842)	(-1.537)	(-3.677)	(-1.695)	(-2.236)	(-1.234)	(-1.999)	(-1.732)	(-1.421)	(-3.684)	(-1.226)	(-3.193)
$\Delta Diversification_t$	0.098***	0.009*	0.074***	0.014*	0.021*	0.004	0.032*	0.006	0.029***	0.002	0.044***	0.003	0.011	0.112***	0.016	0.080***
$\times\Delta Aggregate_t$	(3.469)	(1.845)	(2.860)	(1.675)	(1.943)	(1.367)	(1.852)	(1.278)	(2.845)	(1.160)	(2.675)	(1.317)	(1.279)	(2.886)	(1.482)	(2.630)
Intercept & ΔControls	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
	Difference [(1)- (2)]		Difference [(3)- (4)]		Difference [(5)- (6)]		Difference [(7)- (8)]		Difference [(9)- (10)]		Difference [(11)- (12)]		Difference [(13)- (14)]		Difference [(15)- (16)]	
Coefficient test	0.089***		0.060**		0.017*		0.026**		0.027**		0.041**		-0.101***		-0.064**	
	(2.590)		(2.071)		(1.832)		(2.453)		(2.059)		(2.182)		(-3.258)		(-2.052)	
F-statistic	5.197***	5.212***	5.195***	5.219***	5.275***	5.290***	5.273***	5.293***	5.208***	5.222***	5.206***	5.229***	5.286***	5.301***	5.284***	5.304***
No. of obs.	12,027	12,025	4,672	4,670	12,027	12,025	4,672	4,670	12,027	12,025	4,672	4,670	12,027	12,025	4,672	4,670

BAS is defined as the natural log of one plus the average daily bid-ask spread over the fiscal year, scaled by the midpoint of the spread, and expressed as a percentage. *SRV* is the natural log of one plus the standard deviation of one year of daily stock returns, expressed as a percentage. *DAF* is calculated as the standard deviation of the earnings forecasts deflated by the stock price. *NAF* is defined as the number of analysts providing one-year-ahead earnings forecasts. The total sample comprises both multi-segment and single firms, while the within sample exclusively consists of multi-segment firms. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions.

Table 11 Cross-sectional variation with different corporate governance structure

Panel A: Dependent variable-$\Delta Diversification_{(t+1)}$

Variables	*Corporate governance structure measure*: **Board independence (*IND*)**				***CEO duality (DUAL)***				***Institutional ownership (INST)***				***G-index (GIND)***			
	Total sample		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**	
	High	Low	High	Low	No	Yes	No	Yes	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
$\Delta Aggregate_t$	-0.013	-0.048***	-0.042	-0.152***	-0.016	-0.040***	-0.050	-0.128**	-0.008	-0.078***	-0.026	-0.248***	-0.068**	-0.009*	-0.216***	-0.030
	(-1.053)	(-3.228)	(-1.137)	(-2.934)	(-1.547)	(-2.800)	(-1.950)	(-2.432)	(-1.605)	(-3.178)	(-1.559)	(-2.968)	(-2.274)	(-1.833)	(-3.110)	(-1.096)
Intercept & ΔControls	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Coefficient test	Difference [(1)- (2)]		Difference [(3)- (4)]		Difference [(5)- (6)]		Difference [(7)- (8)]		Difference [(9)- (10)]		Difference [(11)- (12)]		Difference [(13)- (14)]		Difference [(15)- (16)]	
	0.035**		0.110***		0.024**		0.078***		0.070***		0.222***		-0.059**		-0.186***	
	(2.539)		(3.267)		(2.147)		(2.646)		(2.885)		(3.179)		(-2.356)		(-3.466)	
F-statistic	5.570***	5.611***	5.579***	5.733***	5.654***	5.695***	5.662***	5.821***	5.516***	5.556***	5.524***	5.677***	5.598***	5.639***	5.607***	5.764***
No. of obs.	12,633	12,632	4,845	4,843	10,712	14,553	4,108	5,580	12,633	12,632	4,845	4,843	12,633	12,632	4,845	4,843

Panel B: Dependent variable-$\Delta EV\_SM_{(t+1)}$

Variables	*Corporate governance structure measure*: **Board independence (*IND*)**				***CEO duality (DUAL)***				***Institutional ownership (INST)***				***G-index (GIND)***			
	Total sample		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**	
	High	Low	High	Low	No	Yes	No	Yes	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
$\Delta Aggregate_t$	0.032*	0.216***	0.053*	0.192***	0.061	0.220***	0.101*	0.265***	0.077	0.185***	0.092	0.169**	0.095**	0.022	0.103***	0.035
	(1.764)	(3.367)	(1.929)	(2.964)	(1.351)	(3.097)	(1.665)	(3.231)	(1.367)	(2.985)	(1.469)	(2.138)	(2.436)	(1.097)	(2.629)	(1.264)
$\Delta Diversification_t$	-0.807	-1.715***	-1.346	-2.858***	-1.034**	-1.538**	-1.557**	-2.931**	-0.915*	-1.622***	-1.458*	-2.538***	-1.538***	-0.991	-2.882***	-1.315
	(-1.326)	(-2.788)	(-1.572)	(-3.673)	(-2.520)	(-2.097)	(-2.198)	(-2.077)	(-1.788)	(-3.285)	(-1.673)	(-3.481)	(-3.841)	(-1.097)	(-2.958)	(-1.030)
$\Delta Diversification_t$	0.014	0.048***	0.015	0.039***	0.025**	0.090***	0.036**	0.100***	0.048	0.121***	0.059	0.134***	0.176**	0.071	0.152**	0.064*
$\times \Delta Aggregate_t$	(1.256)	(3.535)	(1.318)	(2.760)	(2.387)	(2.617)	(2.505)	(3.043)	(1.535)	(2.637)	(1.476)	(3.171)	(2.108)	(1.617)	(2.265)	(1.864)
Intercept & ΔControls	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Coefficient test	Difference [(1)- (2)]		Difference [(3)- (4)]		Difference [(5)- (6)]		Difference [(7)- (8)]		Difference [(9)- (10)]		Difference [(11)- (12)]		Difference [(13)- (14)]		Difference [(15)- (16)]	
	-0.034**		-0.024**		-0.065**		-0.064**		-0.073***		-0.075***		0.105***		0.088***	
	(-1.979)		(-2.039)		(-2.112)		(-2.409)		(-2.714)		(-2.855)		(-3.594)		(-3.076)	
F-statistic	5.264***	5.279***	5.262***	5.286***	5.343***	5.358***	5.341***	5.359***	5.274***	5.289***	5.272***	5.296***	5.353***	5.369***	5.351***	5.370***
No. of obs.	12,027	12,025	4,672	4,670	10,199	13,853	3,961	5,381	12,027	12,025	4,672	4,670	12,027	12,025	4,672	4,670

Panel C: Dependent variable-$\Delta EV\_AM_{(t+1)}$

Variables	*Corporate governance structure measure*: **Board independence (*IND*)**				***CEO duality (DUAL)***				***Institutional ownership (INST)***				***G-index (GIND)***			
	Total sample		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**		**Total sample**		**Within sample**	
	High	Low	High	Low	No	Yes	No	Yes	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
$\Delta Aggregate_t$	0.009	0.088**	0.014	0.100**	0.025**	0.182***	0.037**	0.160***	0.098*	0.192**	0.100*	0.228***	0.118***	0.008	0.107**	0.013
	(1.091)	(2.467)	(1.118)	(2.319)	(2.472)	(3.021)	(2.190)	(3.159)	(1.674)	(2.486)	(1.913)	(3.106)	(3.116)	(1.248)	(2.351)	(1.557)
$\Delta Diversification_t$	-0.240	-0.750**	-0.553	-1.258***	-0.348**	-0.724**	-0.658*	-1.198***	-0.550*	-0.855***	-0.587*	-1.385**	-0.746***	-0.216*	-1.277***	-0.630
	(-1.053)	(-2.358)	(-1.362)	(-2.928)	(-2.284)	(-2.071)	(-1.677)	(-2.681)	(-1.767)	(-2.939)	(-1.928)	(-2.374)	(-3.357)	(-1.947)	(-2.663)	(-1.268)
$\Delta Diversification_t$	0.008*	0.057***	0.012	0.086**	0.021*	0.103***	0.032*	0.124**	0.057	0.213***	0.086	0.186***	0.099*	0.007*	0.082**	0.011
$\times \Delta Aggregate_t$	(1.720)	(3.246)	(1.427)	(2.400)	(1.943)	(3.164)	(1.852)	(2.081)	(1.246)	(3.244)	(1.400)	(2.581)	(1.913)	(1.648)	(2.171)	(1.328)
Intercept & ΔControls	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Coefficient test	Difference [(1)- (2)]		Difference [(3)- (4)]		Difference [(5)- (6)]		Difference [(7)- (8)]		Difference [(9)- (10)]		Difference [(11)- (12)]		Difference [(13)- (14)]		Difference [(15)- (16)]	
	-0.049**		-0.074***		-0.082***		-0.092***		-0.156***		-0.100***		0.092***		0.071***	
	(-2.431)		(-3.342)		(-2.887)		(-2.907)		(-2.617)		(-3.341)		(-2.606)		(-2.759)	
F-statistic	5.213***	5.227***	5.211***	5.234***	5.291***	5.306***	5.289***	5.309***	5.223***	5.238***	5.221***	5.245***	5.302***	5.317***	5.300***	5.320***
No. of obs.	12,027	12,025	4,672	4,670	10,199	13,853	3,961	5,381	12,027	12,025	4,672	4,670	12,027	12,025	4,672	4,670

IND is measured as the percentage of independent directors on the board. *DUAL* is defined as a dummy variable that equals one when the chairman of the board also serves as CEO, and zero otherwise. *INST* is measured as the proportion of ownership controlled by institutions. *GIND* is a measure developed by Gompers et al. (2003) to assess external governance. The total sample comprises both multi-segment and single firms, while the within sample exclusively consists of multi-segment firms. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix 1 for detailed variable definitions.

Appendix 1 Variable definitions

Diversification	= the entropy index that measures the level of diversification
△Diversification	= the change in diversification measured by the entropy index
EV_SM	= the excess value, calculated by the industry sales multiplier valuation approach
△EV_SM	= the change in *EV_SM*
EV_AM	= the excess value, calculated by the industry asset multiplier valuation approach
△EV_AM	= the change in *EV_AM*
Accruals	= the ratio of income before extraordinary items, less cash flows from operations, plus depreciation expense, deflated by average total assets and averaged over a three-year period centered on year *t*, multiplied by –1
△Accruals	= the change in *Accruals*
C_Score_KW	= the conservatism score, estimated following Khan and Watts (2009)
△C_Score_KW	= the change in *C_Score_KW*
C_Score_PZ	= the conservatism score, estimated following Penman and Zhang (2002)
△C_Score_PZ	= the change in *C_Score_PZ*
Aggregate	= an aggregate measure of conservatism, which equals the average rank of *Accruals*, *C_Score_KW*, and *C_Score_PZ*, standardized between zero and one
△Aggregate	= the change in *Aggregate*
SIZE	= the logarithm of total assets
△SIZE	= the change in *SIZE*
R&D	= the ratio of R&D expenditures to sales
△R&D	= the change in *R&D*
LEV	= the ratio of total debt to total assets
△LEV	= the change in *LEV*
ADVER	= the ratio of advertising expenditures to sales
△ADVER	= the change in *ADVER*
CAPX	= the ratio of capital expenditures to sales
△CAPX	= the change in *CAPX*
PROF	= the ratio of earnings before interest and taxes divided by sales
△PROF	= the change in *PROF*
MOWN	= the proportion of ownership controlled by executive directors
△MOWN	= the change in *MOWN*
INST	= the proportion of ownership controlled by institutions
△INST	= the change in *INST*
IND	= the proportion of independent directors on the board
△IND	= the change in *IND*
BAS	= the natural log of one plus the average daily bid-ask spread over the fiscal year, scaled by the midpoint of the spread, and expressed as a percentage
SRV	= the natural log of one plus the standard deviation of one year of daily stock returns, expressed as a percentage
DAF	= the standard deviation of the earnings forecasts deflated by the stock price
NAF	= the number of analysts providing one-year-ahead earnings forecasts
DUAL	= a dummy variable that equals one when the chairman of the board also serves as CEO, and zero otherwise
GIND	= a measure developed by Gompers et al. (2003) to assess external governance