Value relevance of peer-based benchmarking of discretionary expenses and business strategy

Value Relevance of Peer-based Benchmarking of Discretionary Expenses and Business Strategy

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ABSTRACT

Research on value relevance of reported selling, general and administrative expenses (SG&A) generally employs historical SG&A as reference point for assessment. This practice tends to ignore the interpretational ambiguity that surrounds the economics of SG&A expenditure and what it means for future profitability and firm value. Organizational theories stress the importance of peer-based benchmarking as an aid for assessment, especially when assessment uncertainty is high, and argue that similarity to peers holds information by lending sensibility, appropriateness and technical value to observed behaviour, thereby reducing assessment uncertainty. Using a sample of listed US firms, we investigate whether SG&A similarity to an industry-specific peer-based benchmark conveys value-relevant information, reducing information asymmetry between firms and investors. We find that *only* for firms with SG&A exceeding the peer-based benchmark in the previous period, SG&A similarity is associated with higher future financial performance and reduces information asymmetry between firms and investors. We also find that both contemporaneous stock returns and future firm value impound this uncertainty-reducing information conveyed by SG&A similarity. Results further show that the value-relevance of SG&A similarity *mainly* holds for firms with a Defender-type business strategy and firms from peer groups where business strategies are more similar.

Keywords: Value relevance, SG&A, peer-based benchmarking, behavioural theory of the firm, business strategy

JEL Classification: M41, M21

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1. INTRODUCTION

Prediction of future financial performance is at the core of financial analysis and corporate valuation (Bergh & Gibbons, 2011; Dechow et al., 2010). In predicting future performance, analysis of cost behaviour is essential. Selling, general and administrative expenses (SG&A) account for a substantial portion of a firm's total expenses and include expenditure on items such as brands, know-how, customer loyalty and human capital that contribute to future profitability and firm value. Investors tend to view SG&A relative to sales (henceforth referred to as SG&A ratio[1]) as an important analytic figure when analysing a firm's cost behaviour and resource allocation (Anderson et al., 2007; Banker et al., 2011; Healy & Palepu, 2001; Messier, 2000). As US GAAP do not allow capitalising SG&A expenditure, SG&A negatively affects net profit in the short-run, while its potential longer-term benefits remain somewhat obfuscated. The assessment of the relationship between SG&A and future financial performance and firm value is, thus, not unequivocal, creating interpretational ambiguity for the external observer.

Prior studies tend to compare the SG&A ratio with its historical value (historical comparison) and investigate whether increases/decreases in the SG&A ratio are value relevant. However, findings of these studies are heterogeneous. Some studies provide evidence of value-destructiveness of SG&A (e.g., Abarbanell & Bushee, 1997; Lev & Thiagarajan, 1993) while other research documents that, although SG&A is an expense item and reduces net income in the short-run, current SG&A creates future value (Banker et al., 2011; Banker et al., 2019; Eisfeldt & Papanikolaou, 2013; Johnson, 2016; Lev et al., 2009; Li et al., 2018).

Given the complexity and contextual diversity of SG&A decision, historical comparison may not suffice for investors to meaningfully interpret SG&A trends. Organizational theories, such as the behavioural theory of the firm (BTOF), suggest that peer-based benchmarking may help to tackle equivocality in assessment work, particularly when informational uncertainty is high. When the value and consequences of decisions or observed behaviour (e.g., reported SG&A and its underlying decisions) are uncertain and normative guidelines are absent, both organizations and outside observers are likely to rely on a socially-constructed norm of appropriate behaviour to reduce uncertainty and assess legitimacy (see e.g., Dacin, 1997; Deephouse, 1996; DiMaggio & Powell, 1983; Kondra & Hinings, 1998). Peer-based

[1] Also referred to as relative SG&A or SG&A intensity.

benchmarking of reported SG&A would be a more obvious way to assess the appropriateness, riskiness and, thus, the information content of the reported metric, without requiring investors to obtain information about firms' internal processes and decisions.

According to BTOF, a peer-based benchmark provides a normative threshold for performance assessment by delineating a borderline between perceived favourable and unfavourable outcomes (Moliterno et al., 2014; Philippe & Durand, 2011). Knowing the industry-specificity of SG&A expenditure and given that SG&A negatively affects a firm's earnings in the short-run, investors may view an SG&A ratio that *exceeds* that of its peers' as *higher than necessary* and therefore *unfavourable*. An SG&A ratio exceeding (falling below) that of their peers would, consequently, be perceived as negative (positive) feedback about the effectiveness of controlling SG&A expenses (consistent with Baumgarten et al., 2010). As such, capital market participants, such as analysts and investors, are likely to expect firms with SG&A levels exceeding the peer-based benchmark to take remedial actions, which will result in SG&A ratios becoming more similar to the benchmark, while such an expectation may not be grounded for firms with SG&A levels falling below the benchmark (Madadian et al., 2018).

In a recent study, Madadian et al. (2018) document that SG&A similarity to an industry-specific peer-based benchmark reduces financial analysts' information uncertainty. However, they do not address the key issue whether this uncertainty-reducing effect merely results from managing analysts' perception of SG&A appropriateness or from providing incremental information about the value of the firm's resource allocation. Within this context, we address the question whether and how similarity of a firm's SG&A to a peer-based benchmark is value relevant.

In line with our expectations, we document positive economic consequences for higher SG&A similarity to the industry-specific peer-based benchmark, but *solely* for firms with a previous SG&A ratio exceeding this benchmark. Specifically, we observe that, for these firms, higher SG&A similarity positively affects their future financial performance, and is associated with lower information asymmetry between firms and investors. Moreover, we find that both firms' market value and stock returns capture the positive implications of SG&A similarity. Our results further show that this value relevance of SG&A similarity *mainly* exists for firms with a cost leadership business strategy and firms from peer groups where business strategies are more similar.

Our paper contributes to the literature in two ways. First, prior studies usually employ historical comparison to investigate value relevance of SG&A, despite interpretational ambiguity of SG&A. Although the uncertainty-reducing effect of peer-based benchmarking for security analysts' forecasts is documented (see Madadian et al. (2018)), its value relevance is yet to investigate, as reduction in uncertainty does not necessarily result in better performance or lower information asymmetry. To the best of our knowledge, this is the first study that employs peer-based benchmarking in the SG&A value-relevance literature. It should be noted that our results demonstrate an effect of SG&A peer-based comparison, after controlling for historical comparison of SG&A (the prevailing approach in the literature). This signifies the incremental importance of peer-based comparison of SG&A to historical comparison. Second, studies on value-relevance of SG&A generally ignore the effect of firm business strategy. This is the first study that examines implications of firm business strategy for SG&A expenditure decisions.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. The economics of SG&A

The components of SG&A are all likely to affect future profitability and firm value and are often discussed in the Management Discussion and Analysis (MD&A) section of the annual reports and in related press releases. SG&A is argued to be an important analytic figure for external stakeholders (e.g., investors) in their assessment of firms' cost behaviour and resource allocation (Anderson et al., 2007; Banker et al., 2011; Healy & Palepu, 2001; Messier, 2000).

Prior empirical evidence does not provide unequivocal proof of the value relevance of a firm's SG&A ratio. Although some studies document that a firm's intangible assets created by SG&A expenditure is instrumental in explaining future performance and stock returns (Banker et al., 2011; Banker et al., 2019; Eisfeldt & Papanikolaou, 2013; Johnson, 2016; Lev et al., 2009; Li et al., 2018; Peters & Taylor, 2017), other research is not able to establish a definite positive relationship between SG&A outlays and future earnings (Abarbanell & Bushee, 1997; Lev & Thiagarajan, 1993). An external observer may be inclined to focus on SG&A's effect on a firm's bottom-line, with an increase in the SG&A ratio being interpreted as diagnostic of inefficiency and managerial inability in controlling overhead expenses, and therefore as detrimental to future performance (Anderson et al., 2007; Baumgarten et al., 2010; Lev & Thiagarajan, 1993). Conversely, a decrease in the SG&A ratio is often perceived as a

signal of effective managerial control over expenses, improving future performance and firm value. Such a bottom-line perspective clearly neglects the investment features of SG&A outlays and its value-constructive capabilities. Acknowledging such trade-offs, rational investors may be inclined to search for additional instruments to support SG&A assessment and related sense-making.

2.2. Peer-based benchmarking incentives

According to BTOF, organizations rely on both their own prior performance (historical performance) and the performance of peer organizations (Greve, 1998; Massini et al., 2005), when evaluating their own achievements (Argote & Greve, 2007; Labianca et al., 2009). Peer-based benchmarking is argued to be more relevant than the historical benchmark when uncertainty surrounds decision-making (Broadbent et al., 2001). When historical comparison is not capable of providing straightforward information for assessment, a peer-based benchmark likely provides managers with an externally validated behavioural standard (norm) for assessment (Moliterno et al., 2014; Philippe & Durand, 2011). Based on BTOF, firms performing worse than the peer-based benchmark are more likely to adjust their performance towards the benchmark (Bromiley, 1991; Schimmer & Brauer, 2012; Washburn & Bromiley, 2012). However, managers of firms performing better than this benchmark are less likely to take actions to change performance (Schimmer & Brauer, 2012; Shinkle, 2012) or to lower their aspiration levels only in an attempt to be in line with peers (Washburn & Bromiley, 2012).

Expanding on these arguments, peer-based comparison of SG&A is likely to help making sense of a firm's SG&A decisions (incremental to historical comparison), allowing investors to infer managerial intent behind SG&A decisions. Given that SG&A expenditure negatively affects a firm's earnings in the short-run, investors are likely to consider an SG&A ratio exceeding the peer-based benchmark as *higher than necessary* and therefore a *negative signal* about managerial success in controlling overhead expenses (Baumgarten et al., 2010). If these arguments hold for investors, peer-based comparison of SG&A improves their assessment of firms' SG&A behaviour, *mainly* in the case of firms with negative SG&A feedback in the past (i.e., an SG&A ratio exceeding that of their peers in the previous period).[2]

[2] For the sake of easiness, henceforth we refer to the situation, where an SG&A ratio in the previous period exceeds (falls below) that of peers as negative (positive) SG&A feedback.

2.3. Peer-based benchmarking and business strategy

The way firms compete in their market environment is likely to affect the usefulness of peer-based benchmarking. Peer-based benchmarking of cost is essentially a management control device. Management controls can be described as ‘‘the formal, information-based routines and procedures used by managers to maintain or alter patterns in organizational activities.’’ (Simons 2000, p.4). The management accounting literature includes many studies that examine the role of management controls in strategy formulation and implementation (e.g., Langfield-Smith, 1997; Simons, 2000), with numerous surveys and case studies investigating the fit between particular management controls and the specific strategy adopted by the firms under a contingency theory approach (e.g., Bruggeman & Van der Stede, 1993; Chenhall & Langfield-Smith, 1998; Govindarajan & Shank, 1992). Peer-based benchmarking extends traditional management accounting techniques in the sense that it is outward-looking, peer-based and competitor-focused. This makes it more strategic in nature as it draws attention to how a firm behaves relative to peers in its market (or industry) environment. It provides a strategic orientation to the generation, interpretation and analysis of management accounting information with competitors' activities as the key dimension for comparison.

A firm's business strategy focuses on how the firm competes and positions itself against rivals in its market (or industry) environment. A number of business strategy typologies have been put forward in the literature. Miles and Snow (1978, 2003) describe business strategies with Prospectors and Defenders delineating a continuum.[3] Porter (1980) categorizes business strategy as product differentiation and cost leadership, while Treacy and Wiesrsema (1995) portray business strategy as operational excellence, product leadership and customer intimacy (Bentley et al., 2013).

In this study, we rely on the Miles and Snow typology. According to this typology, on one end of the strategy continuum Prospectors tend to focus on innovation, flexibility and change, leading to a broadening product domain. At the opposite end of the continuum, Defenders tend to focus on cost efficiency as the core of their competitive strategy. Defenders usually manage a narrower product domain and tend to have a more stable organizational

[3] Miles and Snow (1978) propose three viable strategies (i.e., Prospectors, Analyzers and Defenders), with Prospectors and Defenders each at one end of a continuum and Analyzers, which have attributes of both Prospectors and Defenders, situated between these two groups.

structure (Abernethy et al., 2019). Miles and Snow (1978, 2003) label a third viable business strategy as Analyzers, exhibiting business strategy traits of the other two groups.[4]

Although business strategy labels vary across the aforementioned typologies, inferences made based on these typologies are broadly aligned (Higgins et al., 2015). For instance, Miles and Snow's (1978, 2003) Prospector-type strategy aligns with Product Differentiators proposed by Porter (1985). Prospectors/Product Differentiators tend to compete in their industry via offering unique products, and are prone to heavily invest in SG&A-related areas such as R&D, brand development, human capital and customer service (Miller, 1987). In a similar vein, a Defender-type strategy is very similar to a Cost Leadership posture. Defenders/Cost Leaders tend to maintain their current position by striving to be the most cost-effective producer or service provider in their industry and, to that end, need to explore and utilise all sources of cost advantage. Cost advantage can come from different sources, such as the use of efficient scale facilities, offering standardised products, preferential access to raw material and strict cost and overhead control. These firms are therefore inclined to minimize cost in areas like R&D, service, sales force, advertising, that directly feed SG&A (Porter, 1985). Cost control is a highly critical key performance domain for Defenders/Cost leaders, leveraging the need to apply appropriate controls for cost management, including peer-based benchmarking of SG&A.

2.4. Hypothesis development

2.4.1. Relevance of peer-based comparison beyond perception management

As prevalence in a peer group likely reflects appropriateness (Royston & Hinings, 1996; Scott, 1995), higher similarity of a firm's SG&A ratio to its industry peers is likely to help external observers (e.g., security analysts and investors) in assessing a firm's cost behaviour and resource allocation efficiency. In this vein, Madadian *et al.* (2018) show that financial analysts use SG&A similarity to the peer-based benchmark as a tool to reduce their assessment uncertainty with regard to the firm's cost behaviour. This may, however, induce managers to opportunistically strive for higher SG&A similarity to their peers, in order to manipulate outsider perception of the effectiveness of their overhead control. If so, high(er) SG&A similarity would not convey incremental information regarding the true value of SG&A, while the uncertainty-reducing effect of peer-based benchmarking would not necessarily result in lower information asymmetry or better performance. It is therefore essential to test whether

[4] Miles and Snow (1978, 2003) indicate a fourth business strategy (Reactors), and argue that this type is not viable in the long term and is often difficult to identify. Thus, consistent with Bentley et al (2013), we only focus on the viable strategies, and more specifically Prospectors and Defenders.

higher SG&A similarity to the peer-based benchmark is useful beyond perception management and provides value-relevant information.

2.4.2. Value relevance of SG&A similarity

SG&A effectiveness is a key factor in assessing the quality of a firm's resource allocation and predicting its future performance. Absent appropriate evaluative benchmarks, investors would need access to information about internal SG&A processes and decisions, which is difficult, if not impossible to acquire. Given the industry-specificity of the SG&A ratio (Ely, 1991; Lazere, 1996), similarity of SG&A to the industry-specific peer-based benchmark could be used as a cost-effective tool to evaluate a firm's cost behaviour in order to obtain a more accurate forecast of its future financial performance.

Consistent with Madadian *et al.* (2018), we argue that peer-based benchmarking is useful in assessment of current SG&A *only* in the case of firms with negative SG&A feedback in the previous period. BTOF arguments would predict that these firms are likely to adjust their SG&A ratios towards the benchmark as their SG&A expense is higher than the socially-accepted level (see e.g., Audia et al., 2015; Bromiley, 1991; Schimmer & Brauer, 2012; Washburn & Bromiley, 2012). Under positive SG&A feedback (i.e., when a firm's SG&A ratio falls below that of its peers in the previous period), however, firms would be less likely to adjust their SG&A ratio simply to be in line with their peers (Washburn & Bromiley, 2012).[5] The rationale behind this reasoning follows Baumgarten et al. (2010), who claim that SG&A exceeding the peer-based benchmark is perceived as indicative of lack of appropriate cost control (efficiency-destructive). Higher SG&A similarity to the peer-based benchmark in the year subsequent to negative SG&A feedback should then be indicative of improvement in cost control (efficiency).

Higher SG&A similarity for firms with negative SG&A feedback is, thus, likely to reflect incremental information about the true value of the firm's reported SG&A and efficient cost management.[6] As cost management decisions explain time-series of earnings properties (Banker et al., 2018), the decision to increase/decrease SG&A similarity to peers can have predictive value in earnings forecasts (Madadian et al., 2018). This suggests that SG&A

[5] The managerial tendency to adjust the SG&A ratio towards a peer-based benchmark (the mean SG&A ratio among peers) resembles a simple mean-reversion process. However, the BTOF perspective that we put forward to explain firms' SG&A decision making, would counteract a general mean-reversion assumption to a significant extent because of the assumed asymmetric tendencies in SG&A management (i.e., SG&A ratio adjustment towards the mean, only when it exceeds the benchmark). Investigating the speed of adjustment towards the peer-based benchmark is also beyond the scope of this study.

[6] For instance, reflecting the extent of management's success in controlling overhead expenses and/or the quality of resource allocation decisions vis-à-vis peers.

similarity is forward-looking and higher similarity subsequent to negative SG&A feedback is likely to explain future financial performance and, thus, to help investors to enhance performance prediction. If SG&A similarity fails to capture an attribute of efficient cost control that can be sustained in the future, it should not then be able to improve performance prediction. We therefore formulate our first hypothesis as follows:

> ***H1: For firms with negative SG&A feedback in the previous period, there is a positive association between SG&A similarity to the peer-based benchmark and future financial performance.***

Prediction of future financial performance is argued to be relevant for investors' valuation of a firm, affecting their decision to invest in or divest their holdings from the firm (Bergh & Gibbons, 2011; Dechow et al., 2010). If peer-based comparison of SG&A conveys information about future firm performance (as predicted in *H1*), higher SG&A similarity to the peer-based benchmark should lower information asymmetry regarding the firm's future performance, and this should be reflected in current stock returns. In this regard we formulate our second hypothesis as follows:

> ***H2: For firms with negative SG&A feedback in the previous period, there is a positive association between SG&A similarity to the peer-based benchmark and its contemporaneous stock return.***

2.4.3. Effect of business strategy on value relevance of SG&A similarity

To achieve competitive advantage and effective monitoring of performance, firms must not only develop an appropriate business strategy, but they must also ensure that their management controls are aligned with their business strategy (Collins et al., 1997; Cooper, 1996; Jermias & Gani, 2004; Kald et al., 2000). Defender- and Prospector-type business strategies represent two fundamentally different means of achieving sustainable competitive advantage and enhanced performance. A firm that pursues a Defender-type or cost leadership strategy will focus on achieving a sustainable competitive advantage by becoming the most cost-effective producer or service provider in its industry, while a firm adopting a differentiation

strategy will seek to be unique in its industry along dimensions such as brand fame, product design, after-sale services and retail facilities, but with much less prominence of cost-based concerns.

Various authors recognized the role competitor information (cost-based or product-based) plays in achieving a competitive advantage (Bromwich, 1990; Jones, 1988; Moon & Bates, 1993; Ward, 2012). Several approaches can be used to incorporate such an external perspective in management controls, such as competitive benchmarking, financial statement competitive analysis and position monitoring, and these can be based on accounting, financial and non-financial information. Peer-based benchmarking of SG&A fits this range of strategic management controls, with its financial orientation, cost-focus and diagnostic character as distinctive features within the repertoire of outward-looking controls. As a diagnostic, it focuses on goal achievement by measuring and monitoring outcomes and correcting deviations from pre-determined peer-based measures of performance.

Prior research documents that firms classified as pursuing a low cost strategy tend to perform better when they use financial controls, while differentiated firms perform better when they use non-financial controls (Auzair & Langfield-Smith, 2005; Jermias & Gani, 2004; Tsamenyi et al., 2011). Surveying the use of strategic management accounting (SMA) techniques, Cinquini and Tenucci (2010) found a "loose coupling" between the use of different types of SMA and business strategy, suggesting that similar SMA are able to support different strategic approaches. There was, however, a significant difference in the use of SMA-costing techniques, with cost-based measures being much more prominent in Defender/ Cost leader-type of firms. These findings confirmed earlier research that documented a close link between the prominence of efficiency and cost control concerns in strategy implementation and the use of cost-based controls (Abernethy & Guthrie, 1994; Guilding, 1999; Simons, 1987). The close alignment between financially-oriented, cost-based SMA and a cost leader type of strategy suggests that management controls that reflect these features will be perceived as more effective in monitoring and guiding performance assessment of Defenders/Cost leaders.

As peer-based comparison of SG&A better fits with the cost-based preoccupations of Defender-type firms, we expect that both insiders and external investors will consider peer-based measurement concerns and its inferences as more relevant for Defenders. We, thus, formulate our third hypothesis as follows:

H3: The positive association between SG&A similarity and contemporaneous stock return for firms with negative SG&A feedback in the previous period (formulated in H2) is stronger for Defenders.

Higher homogeneity in business strategy among firms within a reference group tends to be linked with stronger normative tendencies for common norms of behaviour, analytic models, and frameworks for strategic decision making (DiMaggio & Powell, 1983)Moreover, higher business strategy homogeneity within a peer group is expected to increase the diagnostic relevance of a peer-based benchmark of SG&A, both for managers and investors, as business strategy definitely affects level and substance of SG&A spending. We thus expect that, for firms from peer groups where business strategies are more homogeneous, higher SG&A similarity to the peer-based benchmark is more likely to provide investors with useful information for SG&A assessment, strengthening the value relevance of SG&A similarity. This leads us to our fourth hypothesis:

H4: The positive association between SG&A similarity and contemporaneous stock returns (formulated in H2) is stronger for firms from peer groups where business strategies are more similar.

3. RESEARCH DESIGN

3.1. Sample and data

To test our hypotheses, we rely on a sample of US listed firms from 2002 to 2019. We use COMPUSTAT to select all the firms with available data to define peer groups and to determine our similarity proxy over the period under study. Consistent with prior SG&A studies, we eliminate observations with the following characteristics: (i) SG&A expenses larger than net sales; (ii) banks, insurance firms and all other financial institutions; and (iii) public administrative institutions (see Anderson et al., 2007; Anderson et al., 2003). In addition, we exclude industries (at two-digit SIC industry code level) containing less than 44 observations

(on an annual basis).[7] To test *H2* up to *H4*, we merge data obtained from COMPUSTAT with data from CRSP (*i.e.,* stock returns). Our final sample consists of 25,346 firm-year observations.

3.2. Determination of peer firms

In line with prior research (e.g., Adhikari & Agrawal, 2018; Albuquerque, 2009; Black et al., 2011; Gong et al., 2011), we identify peer groups based on industry and size. To do so, within each industry (based on 2-digit SIC industry codes), we assign every firm-year observation to a size quartile (based on total assets at the beginning of the period).[8] For each year in the sample, firms within the same industry and size quartile are then considered industry-specific peers.

3.3. Measurement of similarity to an industry-specific peer-based benchmark

Consistent with existing literature on peer-based benchmarking (e.g., Massini et al., 2005), we use the average SG&A ratio of other firms within the same peer group, as the peer-based benchmark. Next, we measure SG&A similarity based on the following dissimilarity score (similar to (e.g., Deephouse, 1996; Finkelstein & Hambrick, 1990):

$$DS_{it} = \frac{\left|(\frac{SG\&A}{Sales})_{it} - M\left((\frac{SG\&A}{Sales})_t\right)\right|}{SD\left((\frac{SG\&A}{Sales})_t\right)}$$

where $(\frac{SG\&A}{Sales})_{it}$, $M\left((\frac{SG\&A}{Sales})_t\right)$ and $SD\left((\frac{SG\&A}{Sales})_t\right)$ represent the SG&A ratio for the focal firm *i* in year *t*, the average and standard deviation of SG&A ratios in the focal firm's industry-specific peer group, respectively. Finally, we multiply the obtained dissimilarity scores by *minus one* to create the SG&A similarity measure (henceforth *SIMSCORE*).

[7] 44 is an arbitrary cut off measure, which guarantees the presence of at least 11 observations with available primary data within each peer group. As will be discussed in Section 3.3, firms within each industry are assigned to size quartiles to define peer groups.

[8] We also considered market value a proxy for firm size. Reported results are not materially affected by using market value, instead of total assets, to select peer firms.

3.4. Empirical models

Following existing studies (e.g., Atwood et al., 2010; Baxter et al., 2013; Chen et al., 2014; Huang et al., 2014; Li, 2008; Skinner & Soltes, 2011), we estimate the following equation to test *H1*:

$$
\begin{aligned}
&EARNINGS_{it+1}(OCF_{it+1}) \\
&\quad = \alpha_0 + \alpha_1 SIMSCORE_{it} + \alpha_2 SIMSCORE_{it} \times ABOVE_{it-1} + \alpha_3 HISTCOMP_{it} \\
&\quad + \alpha_4 HISTCOMP_{it} \times ABOVE_{it-1} + \alpha_5 ABOVE_{it-1_{it-1}} + \alpha_6 EARNINGS_{it} \\
&\quad + \alpha_7 SIZE_{it} + \alpha_8 MTB_{it} + \alpha_9 VOLATILITY_{it} + \alpha_{10} LOSS_{it} + \alpha_{11} SI_{it} \\
&\quad + \alpha_{12} \Delta SALES_{it} + \alpha_{13} DIV_{it} + \alpha_{14} OPCOST_{it-1} + \alpha_{15} CAPEX_{it} \\
&\quad + \alpha_{16} SGA\_RESID_{it} + \alpha_{17} ACCR\_RESID_{it} + \alpha_{18} BENCH_{it} + \alpha_{19} INFOQUAL_{it} \\
&\quad + \alpha_{20} CEO\_COMPENSATION_{it} + \varepsilon_{it} \qquad \textbf{Equation (1)}
\end{aligned}
$$

(See variable definitions in Appendix A)

The coefficient of primary interest is the joint coefficient of $SIMSCORE_{it}$ and $SIMSCORE_{it} \times ABOVE_{it-1}$ and we expect it to be positive.

Based on prior literature about the effect of historical comparison on firms' decision-making, we control for *HISTCOMP*. Given the lack of consensus regarding the SG&A-future performance relationship (see e.g., Anderson et al., 2007; Banker et al., 2011; Baumgarten et al., 2010), we have no directional prediction about the coefficient for this variable.We also control for variables that are documented to positively affect future earnings: firm size (*SIZE)* (Huang et al., 2014; Khan & Watts, 2009); market-to-book ratio (*MTB*) (Khan & Watts, 2009; Li, 2008)[9]; sales growth (Δ*SALES*) (Baxter et al., 2013); capital expenditures (*CAPEX*) (Baxter et al., 2013). We also control for firm characteristics that are considered as negative signals about profitability (*i.e.,* earnings volatility (*VOLATILITY*), loss (*LOSS*) and special items (*SI*)). Moreover, we control for growth in sales (Δ*SALES*), suggested in prior research (e.g., Barth et al., 2008) to be associated with voluntary accounting decisions (e.g., emulating industry peers' SG&A decisions). Skinner and Soltes (2011) argue that firms' dividend decisions reflect management's assessment of future earnings. We, therefore, include *DIV* as a control variable. A firm's economic model encompasses expenses incurred such as operating expenses and is also a core element of its business model (Morris et al., 2005). We, therefore, include lagged

[9] As growth firms (i.e., firms with higher *MTB*) are argued to have more complex and uncertain business models (Li, 2008), *MTB* could be considered a control for firms' business models.

operating expenses (*OPCOST*)[10] to control for firm business model. Managerial intent to engage in earnings management (in any form) is likely to drive SG&A ratios' convergence to/divergence from the peer-based benchmark and affect both firm performance and stock returns. We, therefore, add *SGA_RESID* and *ACCR_RESID* into our models. Prior research argues that the tendency to avoid small losses or decreases in net income incentivises firms to engage in earnings management (see e.g., Burgstahler & Dichev, 1997; Gunny, 2010). To control for the potential effect of such tendencies, we add *BENCH* into all our models. Furthermore, to ensure that results are not materially affected by the firm's overall financial disclosure quality, we include *INFOQUAL* in all our models. Managers' compensation/bonus schemes are likely to incentivise them to cut down SG&A, in an attempt to inflate current earnings, while it may negatively affect future performance and firm value because of missing growth opportunities (Graham et al., 2005). We therefore include *CEO_COMPENSATION* in the models.

In line with prior research (e.g., Balachandran & Mohanram, 2011; Baxter et al., 2013; Easton & Harris, 1991; Fama & French, 1993; Jiang & Stark, 2013; Kousenidis et al., 2009), we estimate the following model equation to test *H2*:

$$RET_{it} = \alpha_0 + \alpha_1 SIMSCORE_{it} + \alpha_2 SIMSCORE_{it} \times ABOVE_{it-1} + \alpha_3 ABOVE_{it-1} + Controls_{it} + \epsilon_{it} \quad \textbf{Equation (2)}$$

(See variable definitions in Appendix A)

Again, the coefficient of primary interest is the joint coefficient of $SIMSCORE_{it}$ and $SIMSCORE_{it} \times ABOVE_{it-1}$, which we expect to be positive. Our choices of control variables are similar to those in Equation (1), with the inclusion of market return (*MARKET RETURN*) (Fama & French, 1993) and number of segments (*SEGMENT*) (Baxter et al., 2013).

To test *H3*, we separately estimate Equation (2) for Defenders and Prospectors. The identification of firms' business strategy is explained in Appendix B. To test *H4*, we separately estimate Equation (2) for the sub-sample of firms from peer groups with high and low business strategy similarity (denoted by *HIGH_SIM* (*LOW_SIM*)). The identification of these sub-samples is explained in Appendix B.

[10] *OPCOST* (being the sum of COS and SG&A, scaled by sales) may also capture the effect of events such as restructuring on increases/decreases in SG&A.

To estimate our models, we use OLS regressions with firm-specific fixed effects[11] to account for potential endogeneity (resulting from correlated omitted variables) and year fixed effects to control for cross-sectional correlation between the residuals. We also cluster standard errors at firm level.

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Descriptive statistics

Table 1 presents descriptive statistics for the variables used in this study. As expected (based on prior studies), SG&A accounts, on average, for 29% of net sales (with a median value of 24%) and constitutes, on average, 28% of total expenses (with a median value of 23%).

Table 1. Descriptive statistics

	Mean	Std Dev	P25	Median	P75
SG&A (million USD)	652.0907	1864.504	27.4900	107.1735	385
SG&A/Sales	.2865	.2047	.1267	.2361	.3978
SG&A/Total expenses	.2801	.2071	.1198	.23.17	.3964
SIMSCORE	-.7502	.5710	-1.0429	-.6398	-.3161
INFO_ASYM	.0184	.0388	.0012	.0064	.0214
HISTCOMP	1.0116	.2132	.9140	.9950	1.0802
EARNINGS	.0103	.1814	-.0217	.0353	.0711
Δ*EARNINGS*	.0063	.3537	-.0283	.0033	.0320
OCF	.0761	.1068	.0336	.0826	.1326
RET	.0480	.2724	-.0597	.1085	.1894
STRATEGY	17.9235	3.6249	15	18	20
MARKET RETURN	.0480	.2724	-.0597	.1085	.1894
MV	5.0161	2.3060	3.3547	4.8829	6.5807
SIZE	6.4118	2.1668	4.8799	6.4387	7.9013
MTB	2.2827	1.9151	1.1419	1.6717	2.6894
LEV	.2498	.3249	.0286	.1957	.3637

[11] As Equation (2) is a time-series model, in line with prior studies, we controlled for industry fixed effects, instead of firm fixed effects. Nevertheless, untabulated results, including firm fixed effects, are qualitatively similar to the reported ones.

VOLATILITY	.1242	.7166	.0205	.0430	.0950
LOSS	.2904	.4540	.0000	.0000	1.000
SI	.7694	.4212	1.0000	1.0000	1.0000
Δ*SALES*	.1195	.3929	-.0292	.0624	.1780
DIV	.1984	.4935	.0000	.0000	.1953
OPCOST	.8861	.1735	.7906	.8810	.9498
CAPEX	.0881	.1934	.0157	.0316	.0653
SEGMENT	2.0959	.7630	1.6094	2.0794	2.7081
SGA_RESID	-.0000	.7730	-.1297	-.0121	.0661
ACCR_RESID	.0000	98.2273	-4.5427	-.0097	1.4544
BENCH	.1270	.3330	.0000	.0000	.0000
INFOQUAL	36.5732	90.8069	.0813	2.8692	24.7120
CEO_COMPENSATION	.3420	.2123	.1656	.3842	..4140
ANALFOL	1.6888	.9492	1.0986	1.7918	2.3979

See Appendix A for variable definitions

4.2. Main analyses

Table 2 presents results of testing *H1*. In Model (1), where *peer*-based comparison variables (i.e., *ABOVE* and *SIMSCORE*) are excluded, *HISTCOMP* receives a negative coefficient (significant at the 5% level). This is consistent with the traditional approach that considers increases in SG&A detrimental to future firm performance. In Model (2), we observe that *HISTCOMP* receives a negative but only marginally significant coefficient, the negative coefficient for *HISTCOMP* × *ABOVE* is significant at the 5% level. This finding suggests that historical comparison of SG&A (the prevailing comparison method in the literature) is negatively associated with future earnings particularly for firms with negative peer-based comparison feedback, in the previous period. This is in line with Baumgarten et al. (2010), who argue that while increases in SG&A ratio, for firms with an SG&A ratio exceeding the industry average, signals inability in controlling costs, it is not necessarily so for firms with an SG&A ratio falling below the industry average.

Models (3), (4) and (5) include both *HISTCOMP* and *SIMSCORE*, while only Models (4) and (5) include the interaction of these variables with *ABOVE*. We find that the coefficient for *SIMSCORE* is not significant in Model (3). However, in Model (4), *SIMSCORE* receives a

negative coefficient, the coefficient for *SIMSCORE* × *ABOVE* is positive (both significant at the 1% level), and the positive joint coefficient of *SIMSCORE* and *SIMSCORE* × *ABOVE* is significant at the 1% level. Results of Model (5) are qualitatively similar to those of Model (4). These findings support the argument that SG&A similarity to the peer-based benchmark is not always informative about future earnings, but it is so for firms with negative SG&A feedback in the previous year (supporting *H1*). The findings of Model (4) ((5)) suggest that, for firms with negative SG&A feedback, one standard deviation increase in *SIMSCORE* results in .0047 (.0062) increase in *EARNINGS* (*OCF*), representing around 45% (8%) of its mean value.

Interestingly and importantly, we also observe that *ABOVE* has a significantly negative coefficient, which is consistent with the argument that an SG&A ratio exceeding the peer-based benchmark signals lack of control over overhead expenses (Baumgarten et al., 2010) and, thus, is detrimental to future earnings. Findings with respect to historical comparison (in Models (3) and (4)) confirm those presented in Model (2). The coefficients for other control variables are, generally, consistent across the models and in line with expectations.

Table 2: Results of testing the relationship between SG&A similarity and future financial performance

	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**		**Model (5)**	
	(EARNINGSt_{+1})		*(EARNINGSt_{+1})*		*(EARNINGSt_{+1})*		*(EARNINGSt_{+1})*		*(OCFt_{+1})*	
SIMSCORE					-.0005	*(.723)*	-.0118	*(.000)*	-.0092	*(.000)*
SIMSCORE × ABOVE							.0200	*(.000)*	.0214	*(.000)*
HISTCOMP	-.0063	*(.039)*	-.0058	(.092)	-.0063	*(.038)*	-.0071	*(.039)*	-.0026	*(.033)*
HISTCOMP × ABOVE			-.0150	(.041)			-.0162	*(.028)*	-.0135	*(.002)*
ABOVE			-.0107	*(.000)*			-.0121	*(.000)*	-.0052	*(.000)*
EARNINGS	.3304	*(.000)*	.3292	*(.000)*	.3305	*(.000)*	.3261	*(.000)*	.1840	*(.000)*
SIZE	.0039	*(.000)*	.0040	*(.000)*	.0038	*(.000)*	.0040	*(.000)*	.0027	*(.000)*
MTB	.0158	*(.000)*	.0164	*(.000)*	.0158	*(.000)*	.0167	*(.000)*	.0149	*(.000)*
VOLATILITY	-.0974	*(.000)*	-.0944	*(.000)*	-.0974	*(.000)*	-.0941	*(.000)*	-.0485	*(.000)*
LOSS	-.0316	*(.000)*	-.0308	*(.000)*	-.0316	*(.000)*	-.0303	*(.000)*	-.0061	*(.000)*
SI	-.0024	*(.756)*	-.0023	(.761)	-.0023	*(.758)*	-.0021	*(.782)*	.0048	*(.330)*
ΔSALES	.0192	*(.000)*	.0198	*(.000)*	.0192	*(.000)*	.0185	*(.000)*	.0139	*(.000)*
DIV	.0049	*(.025)*	.0047	(.031)	.0048	*(.025)*	.0043	*(.047)*	.0061	*(.000)*
OPCOST	-.0920	*(.000)*	-.0929	*(.000)*	-.0922	*(.000)*	-.0953	*(.000)*	-.1605	*(.000)*

CAPEX	-.0601	*(.000)*	-.0595	*(.000)*	-.0601	*(.000)*	-.0584	*(.000)*	-.0055	*(.212)*
SGA_RESID	-.0014	*(.517)*	.0009	(.668)	-.0014	*(.522)*	.0030	*(.180)*	.0080	*(.000)*
ACCR_RESID	-.0001	*(.000)*	-.0001	*(.000)*	-.0001	*(.000)*	-.0001	*(.000)*	-.0000	*(.059)*
BENCH	-.0128	*(.000)*	-.0090	*(.000)*	-.0092	*(.000)*	-.0089	*(.000)*	-.0088	*(.000)*
INFOQUAL	-.0092	*(.546)*	-.0000	(.348)	-.0000	*(.555)*	-.0000	*(.284)*	-.0000	*(.000)*
CEO_COMPENSATION	.0076	*(.085)*	.0071	(.106)	.0076	*(.085)*	.0064	*(.144)*	-.0061	*(.330)*
Industry FE	Included		Included		Included		Included		Included	
Year FE	Included		Included		Included		Included		Included	
Adj. R^2	.2982		.2993		.2982		.3002		.3462	
N	25,342		25,342		25,342		25,342		25,336	

See Appendix A for variable definitions

Numbers in parentheses represent p-values

The joint coefficient of *SIMSCORE* and *SIMSCORE* × *ABOVE* in Model (4) has a p-value of .001 (*i.e.,* significant at the 1% level)'

The joint coefficient of *SIMSCORE* and *SIMSCORE* × *ABOVE* in Model (5) has a p-value of .014 (*i.e.,* significant at the 5% level).

Table 3 reports results of testing *H2*. The models are ordered in the same way as in Table 2. As a general observation, in none of the models, the coefficient neither for *HISTCOMP* nor for its interaction with *ABOVE* is significant at the conventional levels. In Model (8), the coefficient for *SIMSCORE* does not attain statistical significance. In Model (9), we observe no significant coefficient for *SIMSCORE*, but *SIMSCORE* × *ABOVE* receives a significantly positive coefficient (significant at the 1% level). These findings imply that investors react positively to SG&A similarity, *only* in the case of firms with negative SG&A feedback in the previous period (supporting *H2*). The test of economic significance shows that, for firms with negative SG&A feedback, one standard deviation increase in *SIMSCORE* increases *RET* by .0211, representing 44% of its mean value.

Overall, these findings are consistent with the argument that higher SG&A similarity is not necessarily desired by investors, but it is so *only* for those firms that failed to maintain their SG&A ratio at a socially-accepted level in the previous period.

TABLE 3: Results of testing the relationship between SG&A similarity and stock returns and future market value

	Model (6)	**Model (7)**	**Model (8)**	**Model (9)**	**Model (10)**
	(DV: RETt)	*(DV: RETt)*	*(DV: RETt)*	*(DV: RETt)*	*(DV: MVt_{+1})*
SIMSCORE			.0141 *(.902)*	-.0174 *(259)*	-.0524 *(.019)*

SIMSCORE × ABOVE							.0543	*(.003)*	.1167	*(.000)*
HISTCOMP	-.0091	*(.507)*	-.0136	*(.385)*	-.0068	*(.621)*	-.0112	*(.533)*	.0140	*(.383)*
HISTCOMP × ABOVE			.0152	*(.549)*			.0490	*(.156)*	.0043	*(.904)*
ABOVE			-.0038	*(.701)*			-.0241	*(.058)*	-.0697	*(.000)*
MARKET RETURN	1.0785	*(.000)*	1.0786	*(.000)*	1.0787	*(.000)*	1.0786	*(.000)*		
EARNINGS	-.0650	*(.000)*	-.0654	*(.000)*	-.0649	*(.000)*	-.0671	*(.011)*	.1318	*(.000)*
ΔEARNINGS	.1399	*(.000)*	.1400	*(.000)*	.1397	*(.000)*	.1393	*(.000)*	.0540	*(.000)*
SIZE	-.1466	*(.000)*	-.1468	*(.000)*	-.1464	*(.000)*	-.1465	*(.000)*	.5151	*(.000)*
MTB	-.0106	*(.000)*	-.0106	*(.000)*	-.0106	*(.000)*	-.0106	*(.000)*	.0151	*(.000)*
LEV	.0295	*(.285)*	.0296	*(.285)*	.0303	*(.273)*	.0330	*(.322)*	-.8532	*(.000)*
ΔSALES	.0617	*(.000)*	.0624	*(.000)*	.0610	*(.000)*	.0604	*(.000)*	.2297	*(.000)*
DIV	-.0151	*(.048)*	-.0151	*(.049)*	-.0151	*(.048)*	-.0149	*(.026)*	-.0050	*(.648)*
OPCOST	.3162	*(.000)*	.3191	*(.000)*	.3207	*(.000)*	.3381	*(.000)*	-.2552	*(.000)*
CAPEX	-.2150	*(.000)*	-.2146	*(.000)*	-.2131	*(.000)*	-.2059	*(.000)*	-.0131	*(.803)*
SEGMENT	.0085	*(.366)*	.0087	*(.359)*	.0086	*(.365)*	.0095	*(.321)*	.0344	*(.013)*
SGA_RESID	-.0129	*(.126)*	-.0128	*(.129)*	-.0131	*(.119)*	-.0119	*(.000)*	-.1823	*(.000)*
ACCR_RESID	.0000	*(.906)*	.0000	*(.912)*	.0000	*(.903)*	.0000	*(.800)*	-.0609	*(.000)*
BENCH	.0021	*(.781)*	.0022	*(.779)*	.0022	*(.780)*	.0020	*(.755)*	-.0100	*(.356)*
INFOQUAL	.0002	*(.400)*	.0001	*(.445)*	.0002	*(.457)*	.0001	*(.111)*	.0226	*(.169)*
CEO_COMPENSATION	-.0208	*(.258)*	-.0210	*(.254)*	-.0203	*(.271)*	-.0214	*(.197)*	-.1657	*(.000)*
Firm FE	Included		Included		Included		Included		Included	
Year FE	Included		Included		Included		Included		Included	
Adj. R^2	.3418		.3420		.3419		.3421		.1844	
N	24,192		24,192		24,192		24,192		19,189	

See Appendix A for variable definitions

Numbers in parentheses represent p-values

The p-value of the joint coefficient of *SIMSCORE* and *SIMSCORE × ABOVE* in Model (10) equals .000 (i.e., significant at the 1% level).

Table 4 presents results of testing *H3*, with Model (11) ((12)) reporting the estimation results of Equation (2) for Defenders (Prospectors). We observe that, for Defenders with an SG&A ratio falling below the peer-based benchmark in the previous period (positive feedback), the coefficient for *SIMSCORE* is not significant at the conventional levels. However, for those Defenders with negative SG&A feedback, *SISMCORE* receives a significantly positive coefficient at the 5% level (see the coefficient for *SIMSCORE × ABOVE*). On the contrary, the

coefficients for these variables do not attain statistical significance in the case of Prospectors (see results of Models (12)). These findings support our primary conjecture that value-relevance of SG&A similarity in the case of firms with negative SG&A feedback in the previous period *mainly* holds for Defenders (supporting *H3*).

TABLE 4: Results of testing the effect of the business strategy on the value-relevance of SG&A similarity

	Model (11)		**Model (12)**	
DV: RET$_t$	*Defenders*		*Prospectors*	
SIMSCORE	-.0276	*(.690)*	.0326	*(.423)*
SIMSCORE × ABOVE	.0784	*(.034)*	-.0007	*(.988)*
HISTCOMP	.0507	*(.240)*	.0217	*(.019)*
HISTCOMP × ABOVE	.1236	*(.503)*	.0522	*(.341)*
ABOVE	-.0736	*(.053)*	.0282	*(.446)*
MARKET RETURN	1.4831	*(.000)*	1.1858	*(.000)*
EARNINGS	-.0862	*(.108)*	-.0999	*(.237)*
∆EARNINGS	.1406	*(.001)*	.1572	*(.000)*
SIZE	-.1644	*(.000)*	-.1765	*(.000)*
MTB	-.0093	*(.033)*	-.0108	*(.000)*
LEV	.0026	*(.986)*	-.0416	*(.639)*
∆SALES	.2082	*(.004)*	.0370	*(.357)*
DIV	-.0531	*(.032)*	.0163	*(.454)*
OPCOST	.4232	*(.006)*	.4993	*(.000)*
CAPEX	-.1691	*(.050)*	-.1641	*(.097)*
SEGMENT	.0212	*(.642)*	.0255	*(.242)*
SGA_RESID	-.4659	*(.035)*	-.0685	*(.476)*
ACCR_RESID	.0123	*(.731)*	.0591	*(.014)*
BENCH	-.0167	*(.546)*	.0072	*(.654)*
INFOQUAL	-.0118	*(.699)*	-.0311	*(.371)*
CEO_COMPENSATION	-.1895	*(.091)*	.0493	*(.275)*
Firm FE	Included		Included	
Year FE	Included		Included	
Adj. R^2	.2935		.3605	

N	2,057	4,224

See Appendix A for variable definitions

Numbers in parentheses represent p-values

Table 5 presents results of testing *H4*. From Model (13) (related to the subsample of firms from peer groups with high similarity in marketing strategies), we observe that for firms with an SG&A ratio falling below the peer-based benchmark in the previous period, there is no statistically significant association between SG&A similarity and stock return, whereas this relationship is positive for firms with an SG&A ratio exceeding the benchmark (see the positive joint coefficient of *SIMSCORE* and *SIMSCORE* × *ABOVE*). Interestingly and importantly, for firms from peers groups with lower similarity in business strategy strategies, the coefficient for neither *SIMSCORE* nor *SIMSCORE* × *ABOVE* attains statistical significance (see results in Model (14)). These findings support our conjecture that value-relevance of SG&A similarity in the case of firms with negative SG&A feedback in the previous period *mainly* holds for firms from peer groups with higher similarity in business strategies (supporting *H4*).

TABLE 5: Results of testing the effect of the business strategy similarity in the peer group on the value-relevance of SG&A similarity

	Model (13)		**Model (14)**	
DV: RET$_t$	*HIGH_SIM*		*LOW_SIM*	
SIMSCORE	-.0335	*(.100)*	.0328	*(243)*
SIMSCORE × ABOVE	.0635	*(.009)*	.0032	*(.922)*
HISTCOMP	-.0121	*(.588)*	-.0199	*(.540)*
HISTCOMP × ABOVE	.0483	*(.333)*	.0750	*(.180)*
ABOVE	-.0333	*(.056)*	.0051	*(.815)*
MARKET RETURN	1.0778	*(.000)*	1.0743	*(.000)*
EARNINGS	-.0485	*(.223)*	-.0940	*(.023)*
∆EARNINGS	.1152	*(.000)*	.1536	*(.000)*
SIZE	-.1512	*(.000)*	-.1430	*(.000)*
MTB	-.0113	*(.000)*	-.0104	*(.000)*
LEV	.0453	*(.365)*	.0282	*(.590)*
∆SALES	.0596	*(.014)*	.0551	*(.044)*

DIV	-.0079	*(.457)*	-.0245	*(.010)*
OPCOST	.3481	*(.000)*	.3420	*(.000)*
CAPEX	-.2261	*(.000)*	-.1932	*(.001)*
SEGMENT	.0086	*(.546)*	.0002	*(.987)*
SGA_RESID	-.0196	*(.150)*	-.0100	*(.003)*
ACCR_RESID	.0000	*(.284)*	-.0000	*(.769)*
BENCH	-.0153	*(.102)*	.0199	*(.053)*
INFOQUAL	-.0001	*(.000)*	.0002	*(.140)*
CEO_COMPENSATION	-.0061	*(.803)*	-.0319	*(.267)*
Firm FE	Included		Included	
Year FE	Included		Included	
Adj. R^2	.3430		.3510	
N	12,888		11,304	

See Appendix A for variable definitions

Numbers in parentheses represent p-values

5. ADDITIONAL ANALYSIS: EFFECT OF SG&A SIMILARITY ON INFORMATION ASYMMETRY

Our findings thus far show that for firms with negative SG&A feedback in the previous period higher current SG&A similarity to the benchmark is informative about future performance and therefore value-relevant. This implies that higher SG&A similarity reduces the information asymmetry between investors and these firms regarding their cost controlling, thereby providing investors with a clearer view about future firm performance. In the current section, we directly test this argument via estimating the following model equation:

$$INFO\_ASYM_{it} = \alpha_0 + \alpha_1 SIMSCORE_{it} + \alpha_2 SIMSCORE \times ABOVE_{it-1} + \alpha_3 ABOVE_{it-1} + Controls_{it} + Firm\ FEs + YEAR\ FEs + \varepsilon_{it} \qquad \textbf{Equation (3)}$$

(See variable definitions in Appendix A)

We are interested in the joint coefficient of *SIMSCORE* and *SIMSCORE* × *ABOVE* and we expect it to be negative. Our choices of control variables are similar to those in Equation (2), with the addition of *ANALFOL*. Table 6 presents results of this additional analysis. As we observe, in none of the models the coefficient for *HISTCOMP* attains statistical significance at

the conventional levels. This implies that historical comparison of SG&A does not reduce information asymmetry. In Model (17), where we include *SIMSCORE* (without its interaction with *ABOVE*), we observe that its coefficient does not attain statistical significance. Interestingly, in Model (18), where we also include *SIMSCORE* × *ABOVE*, we observe that while the coefficient for *SIMSCORE* does not attain statistical significance at the conventional levels, *SIMSCORE* × *ABOVE* receives a negative coefficient (significant at the 10% level). This suggests that *only* for firms with negative SG&A feedback in the previous period, higher SG&A similarity results in lower information asymmetry. In other words, higher SG&A similarity does not necessarily contribute to investors' assessment of firm cost behavior, but it does so for firms with negative SG&A feedback in the previous period.

TABLE 6: Results of testing the effect of SG&A similarity on information asymmetry

	Model (15)		**Model (16)**		**Model (17)**		**Model (18)**	
DV: *INFO_ASYM$_{t+1}$*								
SIMSCORE					.0001	*(.280)*	.0004	*(.500)*
SIMSCORE × ABOVE							-.0010	*(.084)*
HISTCOMP	.0001	*(.399)*	.0001	*(.418)*	.0001	*(.378)*	-.0003	*(.347)*
HISTCOMP × ABOVE			-.0002	*(.481)*			-.0005	*(.234)*
ABOVE			.0002	*(.179)*			.0009	*(.000)*
Controls	Included		Included		Included		Included	
Industry FE	Included		Included		Included		Included	
Year FE	Included		Included		Included		Included	
Adj. R^2	.5981		.5981		.5982		.5986	
N	17,007		17,007		17,007		17,007	

See Appendix A for variable definitions

Numbers in parentheses represent p-values

6. ROBUSTNESS CHECKS

6.1. Alternative performance and value relevance measures

To test *H1*, we use operating cash flow (*OCF*) as an alternative dependent variable in Equation (1). Model (5) in Table 2 presents results of this alternative model estimation. Similar

to Model (4), for firms with positive SG&A feedback in the previous period, higher SG&A similarity is negatively associated with future operating cash flows, while this relationship is reverse for those with negative SG&A feedback in the previous period (see the joint coefficient for *SIMSCORE* and *SIMSCORE* × *ABOVE* in Model (5)). This, again, confirms that for firms that already managed to maintain their SG&A ratio at an acceptable level, SG&A peer-based benchmarking does not necessarily result in performance improvement, and is *even* performance-destructive. However, SG&A peer-based benchmarking explains future financial performance, for firms that failed to do so in the previous period (consistent with *H1*).

As another robustness check, we estimate Equation (2), using the market value of the firm at the end of the subsequent fiscal period (*MV*) as dependent variable. Model (10) in Table 3 presents results of this robustness check. We observe that while *SIMSCORE* receives a negative coefficient (significant at the 5% level), *SIMSCORE* × *ABOVE* receives a positive coefficient (significant at the 1% level) and the positive joint coefficient is significant at the 1% level. This implies that higher SG&A similarity is value-constructive, but only for firms with negative SG&A feedback in the previous period.

6.2. Endogeneity test

To alleviate potential bias in coefficients because of an endogeneity problem (due to omitted correlated variables), we control for the firm-specific fixed effect in all our models, except for the ones with $EARNINGS_{t+1}/OCF_{t+1}$. To further alleviate our concern about endogeneity, we also conduct a Hausman endogeneity test, by estimating a 2SLS regression using an instrumental variable approach (Wooldridge, 2002). Relying on our strategy variable (*STRATEGY*), we define two indicator variables as our instruments: (i) *PROSPECTOR*, if *STRATEGY* ≥ 24, and (ii) *DEFENDER*, if *STRATEGY* ≤ 12 (See Appendix B for definition of *STRATEGY*). To conduct the Hausman test, in the first-stage regression, we estimate *SIMSCORE* using our instruments and all our control variables. Next, we add the residual term obtained from the first-stage regression (denoted by *first-stage residual*) in the second-stage regression. A significant coefficient for this residual term is indicative of an endogeneity problem. We rely on F-statistics of the first-stage model to test the strength of these instruments, with F-statistics larger than 10 being indicative of a strong instrument (Staiger & Stock, 1997). Table 7 presents results of our endogeneity test.

In Panel A of Table 7, we observe that the F-statistic of the first-stage regression equals 19.91, which is sufficiently large to convince us that our instruments are strong. Panel B, presents estimation results pertaining to the second-stage regression related to the models with $EARNINGS_{t+1}$ and RET_t as dependent variables. Findings show that neither in Model (20) nor Model (21) the coefficient for *first-stage residual* attains statistical significance at the conventional levels, confirming that our estimates are not biased because of an endogeneity problem.

Table 7. Endogeneity test (2SLS)

Panel A: Estimation results of the first-stage OLS regression (using *PROSPECTOR* and *DEFENDER* as instruments)

	Model (19)	
Dependent variable: *SIMSCORE*		
	Coefficient	
PROSPECTOR	-.1204	*(.000)*
DEFENDER	-.2112	*(.000)*
Control variables	Included	
Firm/year FEs	Included	
F-statistics	19.91	
Adj. R^2	.0655	
N	25,342	

Panel B: Estimation results of the second-stage OLS regression

	Model (20)		**Model (21)**	
Dependent variable	$EARNINGS_{t+1}$		RET_t	
	Coefficient		**Coefficient**	
first-stage residual	.0135	*(.222)*	.0128	*(.796)*
SIMSCORE	-.0247	*(.023)*	-.0302	*(.558)*
SIMSCORE × ABOVE	.0183	*(.000)*	.0544	*(.003)*
Control variables	Included		Included	
Firm/year FEs	Included		Included	
Adj. R^2	.3002		.3421	
N			24,192	

Numbers is brackets are p-values;

Note: For variable definitions, see section "Measures"

6.3. Other robustness checks

We estimate Equation (2), using market-adjusted buy-and-hold stock returns (*i.e.,* stock returns after subtracting by the market return), as the dependent variable. Results (not reported) are not materially different.

We also test our business strategy-related hypotheses, using *STRATEGY* calculated based on the typology proposed by Porter (1980), who identifies firms' business strategy across a continuum with Cost leadership and Differentiation at two ends. Results (not reported) are not materially different.

In order to capture the effect of audit quality on managerial decisions and avoid the omitted correlated variable problem, we add a dummy variable into all the models (*BigN*) equal to one, if a firm hires a *BigN* auditor[12] (and zero otherwise). Results (not reported) are not materially different.

7. CONCLUSION

Drawing on the behavioral theory of the firm, we provide evidence that SG&A similarity to an industry-specific peer-based benchmark is a sense making and reliable tool for assessment of firms' cost behavior. Our findings confirm that investors consider SG&A ratios exceeding the peer-based benchmark as unfavorable and that the traditional view on SG&A (i.e., larger SG&A being detrimental to financial performance) only holds when the SG&A ratio is larger than the peer-based benchmark. These results are overall in line with, but complementary to, Madadian, *et al.*'s (2018), as they document that, only for firms with negative SG&A feedback in the previous period, higher SG&A similarity reduces financial analysts' information uncertainty. However, their results could still be valid, even if managers employ SG&A similarity to the peer-based benchmark as a tool to manipulate analysts' expectations regarding the firm's future performance, without conveying any value-relevant information. Our findings, as such, confirm that peer-based SG&A benchmarking functions beyond perception management of capital market participants and is value-relevant.

[12] The BigN are: PricewaterhouseCoopers (PwC); Klynveld Peat Marwick Goerdeler (KPMG); Deloitte; Ernst & Young; and Arthur Andersen (for the observations of 2002).

Interestingly, we find that this SG&A value relevance mainly holds for firms adopting a Defender-type business strategy (and especially for those from peer groups with higher homogeneity in business strategies), suggesting that investors expect Defenders' SG&A expenditure, more than Prospectors', to be aligned with the peer-based benchmark. The significant difference between Defenders and Prospectors with respect to the following key business strategy characteristics substantiates this finding: '*competitive advantage'* (cost minimization for Defenders vs innovation and thus higher SG&A costs for Prospectors (Higgins et al., 2015)); '*efficiency'* (higher tendency for efficiency through downsizing existing processes, including those underlying SG&A activities, and reducing the inefficient costs to align total costs with low product prices for Defenders vs less need for cost minimization because of higher product prices for Prospectors (Chenhall & Langfield-Smith, 1998)); and '*marketing'* (less need for marketing campaigns due to their narrow product focus for Defenders vs higher tendency for marketing because of focusing on delivering wide ranges of unique and innovative products for Prospectors (Bentley et al., 2013)).

APPENDIX A

Definitions of Variables

$EARNINGS$	Earnings, calculated as net income[13] scaled by total assets;
OCF	Net cash flow from operations scaled by total assets
RET	Raw buy-and-hold stock returns including dividend payment, for the period starting from the beginning of the 9th month before fiscal year-end date and ending at the end of month 3 after fiscal year-end date;
$STRATEGY$	Business strategy variable following Bentley et al. (2013) (see Appendix B for further details on the calculation of this variable);
MV	Market value of equity, calculated as the natural logarithm of the product of the firm's number of shares outstanding and stock price at the fiscal year-end date;
$SIMSCORE$	SG&A similarity score (see Section 3.3.);
$INFO\_ASYM$	Information asymmetry, calculated as the average bid-ask spread over thirty days starting from the third day after the 10-K filing date;
$HISTCOMP$	Historical comparison, calculated as SG&A ratio in year *t* scaled by average SG&A ratio over the preceding three-year period (i.e., *t*-3 up to *t*-1).;
$SIZE$	Firm size, calculated as the natural logarithm of total assets;[14]
MTB	Market-to-book, calculated as sum of market value of equity and book value of debts, scaled by total assets;

[13] Alternative measures of earnings, such as income before extraordinary items and earnings before interests and tax (EBIT), produce results that are qualitatively similar. Also, using lagged/current total assets as a deflator does not materially affect our results.

[14] Using natural logarithm of market value of a firm as a proxy for size does not materially change our results.

$VOLATILITY$	Volatility of return on assets (ROA), calculated as the standard deviation of ROA over the last five years;
$LOSS$	Dummy variable that is coded one if the firm incurs a loss, and zero otherwise;
SI	Dummy variable that is coded one if the firm reports a special item, and zero otherwise;
$\Delta SALES$	Change in net sales at fiscal year-end date, scaled by $Sales_{t-1}$ (*i.e.,* $\Delta Sales_t/Sales_{t-1}$);
DIV	Dividend payout ratio, calculated as dividend scaled by net income;
$OPCOST$	Operating costs, calculated as the sum of SG&A and COS, scaled by net sales;
$CAPEX$	Capital expenditures, scaled by sales;
SGA_RESID	A measure of real earnings management, calculated as the residual of the SG&A model suggested by Gunny (2010) (see **Equation (4)** in Appendix B for detailed information);
$ACCR\_RESID$	A measure of accruals management, calculated as the residual of the model suggested by Dechow and Dichev (2002) (see **Equation (5)** in Appendix B for detailed information);
$BENCH$	Dummy variable that is coded one if either a firm's relative net income (being net income scaled by total assets) or its relative change in net income (being change in net income divided by total assets) falls within the range [0, 0.01]; and zero otherwise;[15]
$INFOQUAL$	A measure of financial disclosure quality, calculated as the firm-specific standard deviation of residuals from estimation of

[15] Consistent with Gunny (2010), we opted for .01 as a cut-off value. Employing alternative cut-off values, being .005 (consistent with Burgstahler and Dichev (1997)) and .02 (arbitrarily chosen), do not materially affect our results.

	Equation (5) from year t-3 up to year t-1[16] (see Appendix B for detailed information);
$CEO\_COMPENSATION$	CEO compensation, calculated as sum of CEO salary and cash bonuses scaled by total CEO compensation;
$MARKET\ RETURN$	Market return in the same period as *RET*, calculated as sum of CRSP monthly value-weighted[17]stock market returns;
$\Delta EARNINGS$	Change in earnings, calculated as change in net income, scaled by lagged market value;[18]
LEV	Leverage, calculated as total debt scaled by total assets;
$SEGMENT$	Number of segments, calculated as natural logarithm of the sum of reported business and geographic segments;
$ANALFOL$	Natural logarithm of one plus the number of analysts following the firm at the end of fiscal year-end date;
GPM	Gross profit margin, calculated as net revenue *minus* cost of goods sold scaled by net revenue (averaged over the last three years, i.e., *t-2* to *t*);
ATO	Asset turnover ratio, calculated as net revenue divided by total assets (averaged over the last three years, i.e., *t-2* to *t*);
$Firm\ FE$	Firm fixed effects;
$Year\ FE$	Year fixed effects;
i and *t*	Denote firms and years.

[16] Using a 5-year standard deviation of residuals (i.e., over year t-4 to year t) does not materially change our results.

[17] Results of model estimation using CRSP equal-weighted stock returns are qualitatively similar.

[18] Defining $\Delta EARNINGS$ as $ROA_t - ROA_{t-1}$ does not materially affect our results. Also, results of model estimation using lagged earnings and current earnings together to proxy unexpected earnings instead of using current earnings and change in earnings are qualitatively similar.

APPENDIX B

Measurement of *SGA_RESID* (a real earnings management proxy)

Consistent with Gunny (2010), we estimate the following equation for every industry (on a yearly basis) with at least 15 observations:

$$\frac{SG\&A_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 MV_{it} + \alpha_3 Q_{it} + \alpha_4 \frac{INT_{it}}{A_{it-1}} + \alpha_5 \frac{\Delta SALES_{it}}{A_{it-1}} + \alpha_6 \frac{\Delta SALES_{it}}{A_{it-1}} \times D_{it} + \varepsilon_{it} \quad \textbf{Equation (4)}$$

Where,

A	Total assets;
MV	Market value of equity, being the natural logarithm of the product of common shares outstanding and the closing price on the last trading day in a year;
Q	Tobin's Q, being the sum of market value of equity, preferred stock, current portion of long-term debts and long-term debt, scaled by lagged total assets;
INT	Internal funds, being the sum of depreciation and amortisation, income before extraordinary items and research and development (R&D) expenses;[19]
$\Delta SALES$	Change in net sales (i.e., $Sales_t$ - $Sales_{t-1}$);
D	Dummy variable equal to 1 when total sales decrease between t-1 and t, zero otherwise.[20]

Note that Equation (4) estimates the normal level of SG&A based on economic variables, residuals of the estimated model (i.e., *SGA_RESID*), therefore, represent deviations

[19] Missing values of R&D are replaced with zero. Eliminating the observations with missing value of R&D expenses or dropping *INT* from equation 2 does not materially affect our current results.

[20] Similar to (Gunny, 2010), we exclude D from Equation 4, because of that the corresponding VIF well exceeds the critical value (i.e., 10), generating the problem of multicolinearity. Nevertheless, results based on estimating Equation 4 including D, are not materially different.

discretionary SG&A. Firm-year observations with lower residuals are more likely to engage in real earnings management (i.e., managerial intent to report higher earnings) (Gunny 2010).[21]

Measurement of *ACCR_RESID* (an accruals management proxy)

Consistent with existing studies on accruals management (e.g., Francis et al., 2005; Francis et al., 2004), we estimate the following equation to calculate our proxy for accruals management (all variables are scaled by average of beginning- and end-of-period total assets):

$$TCA_{it} = \beta_0 + \beta_1 CFO_{it-1} + \beta_2 CFO_{it} + \beta_3 CFO_{it+1} + \beta_4 \Delta SALES_{it} + \beta_5 PPE_{it} + \gamma_{it} \quad \textbf{Equation (5)}$$

Where,

TCA	Total working capital accruals, being change in current assets minus the sum of change in current liabilities and change in cash plus change in debt in current liabilities;
CFO	Cash flow from operating activities;
PPE	Property, plant and equipment.

Residuals of this model provide us with a metric that captures accruals management (firms with larger residual are more likely to engage in accruals management). The residual term obtained from Equation (5) (i.e., *ACCR_RESID*), therefore, represents our proxy for accruals management in the final.

Measurement of *INFOQUAL* (a proxy of a firm's information environment quality)

In order to capture a firm's financial information quality, we include, in our models, the standard deviation of residuals obtained from Equation (5) (discretionary accruals) over a three-

[21] Alternatively, consistent with Gunny (2010), within every peer group (i.e., firms within the same industry-year and quartile number based on size) we sorted firms based on their *SGA_RESID*. Next we defined a dummy variable coded one if a firm was assigned to the lowest quartile; zero otherwise. This dummy variable next could proxy real earnings management. Results of using this dummy instead of *SGA_RESID* are not materially different.

year period (i.e., year t-2 up to year t) (*INFOQUAL*), (see e.g., Francis et al. 2004, Francis et al. 2005 for further explanation).

Measurement of *STRATEGY* (the firm business strategy variable)

Following Bentley *et al.* (2013), we measure the business strategy variable (denoted by *STRATEGY*) based on the typology of Miles and Snow (1978, 2003). In this regard, we use the following set of input variables (each capturing an aspect of a firm's business strategy): (i) the ratio of employees to sales, (ii) a historical sales growth measure (one-year percentage change in total sales), (iii) the ratio of marketing (SG&A) to sales, (iv) employee fluctuations (standard deviation of total employees), (v) capital intensity (net PPE scaled by total assets), and (vi) the ratio of gross profit (*i.e.,* net sales minus cost of sales) to sales.[22] To remove fluctuations over time, we compute the variables as a 5-year rolling average (Bentley-Goode et al., 2019; Bentley et al., 2013; Habib & Hasan, 2020; Higgins et al., 2015). Next, within each two-digit SIC code and year, we rank the variables in quintiles, attributing a score of 5 to firm-year observations in the highest quintile down to a score of 1 to firm-year observations in the lowest quintile.[23] Next, for each firm-year observation, we sum the scores across the six variables. Higher (lower) values of *STRATEGY* are closer to firms with a Prospector-type (Defender-type) business strategy. Finally, we create two sub-samples: a sub-sample with $STRATEGY \geq 24$, and a sub-sample with $STRATEGY \leq 12$. To test our *H3*, we estimate Model equation (2) for each sub-sample separately.

[22] Given the large number of missing data on R&D, we replace the ratio of R&D to sales with the ratio of gross profit to sales revenue in this set of ratios. We believe it is a valid replacement as Prospectors' higher involvement in R&D and their tendency to offer innovative and differentiated products, generally entails higher sales prices and therefore a higher ratio of gross profit to sales. Nevertheless, the (untabulated) results of our models using the R&D to sales measure in a reduced sample are not materially different from our main results.

[23] As higher capital intensity is typical for firms with Defender business strategy, we inverse the capital intensity measure, so that observations in the lowest (highest) quintile are given a score of 5 (1).

Measurement of *STRATEGY_SIM* (business strategy similarity)

To measure similarity of business strategy in a peer group, we compute for every firm in a year:

$$STRATEGY\_SIM_{it} = (-1) \times \frac{|(\text{STRATEGY}_{it}) - M(\text{STRATEGY}_{t})|}{SD(\text{STRATEGY}_{t})}$$

where $M(\text{STRATEGY}_{it})$ and $SD(\text{STRATEGY}_{it})$ represent the average and standard deviation of $STRATEGY$ in the focal firm's industry-specific peer group, respectively. Next, every year, we average *STRATEGY_SIM*s for each peer group. Each averaged *STRATEGY_SIM* thus represents a peer group. We stratify, every year, the averaged *STRATEGY_SIM*s into two sub-samples: a sub-sample of peer groups with *STRATEGY_SIM*s equal to or greater than the median of the averaged *STRATEGY_SIM*s and those lower than the median. Next, for each sub-samples, we define a dummy variable that is coded one if the firm belongs to the relevant sub-sample (denoted as *HIGH_SIM* and *LOW_SIM*). *HIGH_SIM* (*LOW_SIM*) represents the firms from the subsample of peer groups with averaged *STRATEGY_SIM*s equal to or greater (lower) than the median.

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