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THE EFFECTS OF AGENCY PROBLEMS AND DIVIDEND POLICY ON THE ASYMMETRIC BEHAVIOUR OF SELLING, GENERAL AND ADMINISTRATIVE EXPENSES: DOES OWNERSHIP STRUCTURE MATTER?

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ABSTRACT

This article investigates the effects of agency problems and dividend policy on the asymmetric behaviour of Selling, General and Administrative (SG&A) expenses, with an emphasis on Korean business ownership structures. Employing a robust dataset of 4,279 observations from the Korean Composite Stock Price Index from 2011 to 2021, our empirical investigation combined multiple regression models such as OLS, fixed effects, random effects and the Generalised Method of Moments (GMM) to contain endogeneity problems. The research objectives include the examination of the relationship between SG&A cost asymmetry and agency problems, the impact of dividend policy on SG&A costs, and the intervening function of Korean business ownership structures, particularly Chaebols. Unexpectedly, the results reveal that higher free cash flow is linked to lower SG&A cost asymmetry, suggesting that agency concerns can be mitigated in such corporations. Improved asset utilisation increases cost asymmetry, whereas larger operating expenses reduce asymmetry. Furthermore, higher cash dividends and payout ratios are associated with reduced SG&A cost asymmetry, which contradicts the premise that dividend constraints correlate with a higher degree of cost asymmetry. According to ownership structure analysis, Chaebols' concentrated ownership results in stronger control over cash flow, eliminating cost asymmetry more efficiently than in non-Chaebol firms. These findings add to the literature on agency theory, cost behaviour and corporate governance, providing managers and shareholders with beneficial insights. To promote

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business sustainability, improve handling of agency concerns and cost efficiency, this study recommends tailored corporate governance policies that take ownership structures into account.

Keywords: Agency problems, Corporate governance, *Chaebols*, Dividend policy, Ownership structure, SG&A cost asymmetry, Emerging markets

INTRODUCTION

When investigating the asymmetric behaviour of Selling, General and Administrative (SG&A) expenses, it is important to analyse Korea's distinctive business environment. You could question, why is cost behaviour asymmetrical? Businesses have fixed and variable costs. Fixed costs, such as rent or salaries, remain constant short-term but change with significant capacity shifts. Variable costs, like raw materials and direct labour, fluctuate with production levels. Asymmetrical cost behaviour occurs when costs rise faster with increased activity than they fall with decreased activity, often due to managerial decisions to maintain resources anticipating rebounds (Anderson et al., 2003). Cost adjustment delays can arise from contractual obligations, employee morale and strategic considerations, leading to challenges in budgeting, financial forecasting and performance measurement. Understanding cost stickiness is crucial for accurate budgeting, resource allocation and operational efficiency (Weiss, 2010; Chen et al., 2012; Prabowo et al., 2018). Firms need flexibility in cost structures and robust risk management to handle fluctuating demand. Therefore, addressing asymmetrical cost behaviour is essential for effective financial management and operational efficiency.

The Korean market, dominated by *Chaebols*, large business conglomerates characterised by concentrated ownership, provides a distinct framework for understanding the relationship between agency problems and cost behaviour (Njoku & Lee, 2024; Lee & Tulcanaza-Prieto, 2024; Kim et al., 2021; Hwang et al., 2013). *Chaebols*, according to Korean regulatory requirements, are groups of businesses under common control, frequently by a single family or entity, with a significant shareholding threshold of more than 30% of issued shares (BHSN, 2020).

This type of ownership configuration can result in significant mismatches between ownership and control, which is a hallmark of agency problems as theorised in corporate governance research (Jensen & Meckling, 1976). Conflicts of interest between managers and other stakeholders emerge chiefly because managers control a firm's assets but do not typically own a major equity stake in the

companies they oversee (Jensen & Meckling, 1976). These disputes are difficult to fully resolve just through contracts, as establishing and enforcing complete contracts may prove prohibitively costly, or downright unattainable (Fama & Jensen, 1983; Hart, 1995). As a result, in a world where perfect contracts are impossible, corporate governance mechanisms evolve to alleviate these conflicts.

Zingales (2002) describes corporate governance as a complex set of limitations governing ex-post negotiation over an entity's quasi-rents. Different governance structures, such as management ownership, boards of directors, institutional shareholders and corporate control markets, have unique costs and benefits (Ahmed & Duellman, 2007). The optimal mix of these governance tools is chosen to maximise firm value and varies across geographical markets and specific organisations. This heterogeneity stems from adjustments to corporate features such as investment opportunity set, leverage and dependence on external finance (Leftwich et al., 1981; Agrawal & Knoeber, 1996; Boone et al., 2007).

According to agency theory, conflicts of interest between managers and stockholders can result in inefficiencies such as excessive SG&A expenditures. However, significant governance tools such as ownership structures can impact the scope and manifestation of such inefficiencies. Monitoring mechanisms in markets with dispersed ownership, such as the U.S., may be weaker, potentially resulting in higher agency costs and greater SG&A cost asymmetry. Conversely, in marketplaces with concentrated ownership, such as *Chaebols*, controlling shareholders may undertake more stringent oversight, potentially mitigating these shortcomings despite inherent agency issues (Njoku & Lee, 2024; Fahlenbrach, 2009; Tulcanaza Prieto et al., 2019; Lee & Tulcanaza-Prieto, 2024; Kim & Lee, 2024).

This study builds upon the frameworks well-established by previous research on cost stickiness and corporate governance to probe the role of ownership structure in moderating the effects of agency problems and dividend policy on the asymmetric behaviour of SG&A expenses in the Korean market (Chen et al., 2012; Anderson et al., 2003; Hwang et al., 2013). Anderson et al. (2003), first identified that SG&A costs behave asymmetrically, increasing more rapidly with rising demand than they decline with decreasing demand, a phenomenon known as "cost stickiness." Chen et al. (2012) went further to provide empirical evidence on the relationship between the agency problem, corporate governance, and the asymmetrical behaviour of SG&A costs in the S&P-1500 index.

Their findings show that the agency problem has a significant impact on SG&A cost asymmetry, notably in corporations with inadequate corporate governance, organisations where SG&A costs yield minimal future value,

and older firms. They fill a gap in the cost stickiness literature by demonstrating that managerial incentives, in addition to economic factors, influence SG&A cost adjustments, resulting in deviations from optimal cost stickiness. Their findings show that asymmetrical behaviour of SG&A cost increases with free cash flow (FCF), suggesting that slack resources are frequently allocated to overhead and personnel expenses, reflecting a management empire-building behaviour. Furthermore, the research of Chen et al. (2012) demonstrates the usefulness of corporate governance in minimising agency-related concerns in SG&A cost control.

Despite the significant contributions of Anderson et al. (2003) and Chen et al. (2012), there is still a dearth of empirical research on this phenomena in the Korean market. The Korean market's distinct characteristics, particularly its ownership and corporate governance structures, set it apart from other established markets such as the U.S., where Anderson et al. (2003) and Chen et al. (2012) conducted their research. Within the Korean market, business conglomerates are distinguished by either concentrated ownership arrangements, as seen in *Chaebols*, or widely distributed ownership patterns in independent firms. The discrepancy between ownership and control in *Chaebol* enterprises often engenders significant agency problems which may affect the behaviour of SG&A expenses differently compared to markets with more diversified ownership arrangements.

While ownership structure constitutes one of the corporate governance instruments which might influence managerial choices, it has gotten little attention in the backdrop of cost stickiness. Few studies have addressed this feature as a primary study subject, despite the fact that cost stickiness may be influenced by ownership intervention in managerial choices about resource adjustment costs (Ibrahim et al., 2022). For example, in markets with dispersed ownership, such as the U.S., oversight mechanisms may be weaker, thus leading to greater agency costs and more prominent SG&A cost asymmetry. Conversely, in markets with concentrated ownership, such as *Chaebols*, controlling shareholders may exercise more severe scrutiny, potentially minimising these inefficiencies despite underlying agency problems which might correlate with a lower degree of SG&A cost asymmetry. Given these variations, empirical evidence of SG&A cost asymmetry obtained in the U.S. context may not apply to the Korean market. This provides an opportunity to offer novel empirical evidence that may differ from prior investigations.

Furthermore, whereas earlier research has focused on the relationship between agency problem and corporate governance, the simultaneous examination of the agency problem and dividend policy in the context of SG&A cost asymmetry

has received less attention. Therefore, to achieve long-term business sustainability and economic viability, companies must thoroughly understand the determinants of SG&A costs, which account for a significant amount of their expenditures.

This study investigates how ownership structures in Korean enterprises, notably *Chaebols*, shape the association between agency problems and the asymmetrical behaviour of SG&A costs. The peculiar governance mechanisms within large conglomerates, in which controlling families can exercise significant influence over managerial decisions, may result in different cost behaviours from independent businesses with more distributed ownership. To fill the gaps, this study investigates the asymmetric behaviour of SG&A costs in the Korean market, with an emphasis on the impact of agency problems and dividend policy.

The specific research objectives of this study include:

1. To investigate whether SG&A cost asymmetry in Korean firms is positively associated with agency problems, after controlling for known economic determinants.
2. To examine whether dividend policy influences SG&A cost asymmetry.
3. To analyse whether the unique ownership and governance structures of Korean firms alter the relationship between agency problems and SG&A cost asymmetry.

Previous research suggested that the degree of SG&A cost asymmetry increases with FCF. That a negative coefficient on the FCF interaction term with sales decreases indicates a higher degree of SG&A cost asymmetry (Chen et al., 2012). As a result, we anticipate that the coefficient in the FCF interaction term will be significantly negative. In addition to FCF, we incorporate two other metrics of agency costs namely Asset Utilisation Ratio (ASSUT) and Operating Expense Ratio (OPEX) based on Lee and Tulcanaza-Prieto (2024).

We additionally utilise three dividend policy variables including Cash Dividend Payment, Dividend Policy (Dummy), and Dividend Payout Ratio, to gauge the influence of dividend policy on the SG&A cost asymmetry (Njoku & Lee, 2024). Prior research suggested that a greater degree of cost stickiness correlates with lower levels of cash dividend payouts (Liu et al., 2022). As a result, we predict that firms with greater SG&A cost asymmetry will pay lower cash dividends. In this regard, a significantly negative interaction term of the dividend policy variables with sales declines is projected. This is because managers' empire-building habit encourages them to keep cash within the company to expand their control over resources, resulting in higher cost stickiness and a preference for reducing cash transfers to shareholders.

The intervening effect of ownership structure can be either positive or negative, contingent upon the degree of control exercised by the dominant shareholders. For example, controlling families in *Chaebol* companies are likely to exert tighter control over managerial decisions, potentially reducing SG&A cost asymmetry despite the presence of agency issues. In this situation, a significantly positive relationship is expected. This is because the predominant shareholders have both the incentive and the capacity to closely monitor and influence managerial behaviour in order to protect their significant investment. Independent enterprises with more distributed ownership, on the other hand, may face increased SG&A cost asymmetry as a result of less severe oversight and greater executive discretion. In this situation, a significant negative relationship between agency metrics and SG&A cost asymmetry is projected.

Our empirical findings show that contrary to assumptions, higher FCF is linked with a lower degree of SG&A cost asymmetry. This suggests that organisations with more available cash might experience less managerial opportunism than anticipated. According to the hypothesis, higher asset utilisation is associated with increased SG&A cost asymmetry, suggesting a greater degree of cost stickiness. Unexpectedly, higher operating expenses correlate to a lower degree of SG&A cost asymmetry, suggesting that increased expenses may result in tighter cost management rather than more inefficiencies.

Concerning the subsequent research objective, the findings reveal that higher cash dividend payments are associated with a lower degree of SG&A cost asymmetry, suggesting that dividend distributions could chastise opportunistic tendencies and discipline managers to minimise cost stickiness. Firms with a formal dividend policy additionally displayed a lower degree of SG&A cost asymmetry, reinforcing the notion that dividends might function as an effective governance mechanism. Furthermore, a larger payout ratio is associated with a lower degree of SG&A cost asymmetry, lending credence to dividends' function in alleviating agency problems.

The results of the investigation into the extent to which ownership structure moderates the relationship between agency problems and SG&A cost asymmetry show that *Chaebols* and non-*Chaebols* with higher FCF exhibit lower degrees of SG&A cost asymmetry. However, the effect is stronger in *Chaebol* firms, suggesting that concentrated ownership might be instrumental in stricter and enhanced control over SG&A cost behaviours compared to standalone firms. Better asset utilisation increases the degree of SG&A cost asymmetry in non-*Chaebols*, but has no significant effect in *Chaebols*. Furthermore, increased operating expenses result in a higher degree of SG&A cost asymmetry in non-*Chaebol* firms, while *Chaebol* firms do not suffer a substantial impact.

Our study enriches the existing literature by integrating perspectives on agency theory, dividend policy and corporate governance. Firstly, this study extends the literature on agency theory by empirically demonstrating that agency problems, as measured by asset utilisation and OPEXs, are significant determinants of SG&A cost asymmetry in Korean firms. The findings challenge the traditional view by showing that higher FCF is associated with lower SG&A cost asymmetry, suggesting that the availability of cash may not always lead to increased managerial opportunism. Secondly, the research contributes to the dividend policy literature by providing robust evidence that higher cash dividends, formal dividend policies and higher dividend payout ratios are associated with reduced SG&A cost asymmetry. This supports the hypothesis that dividend payouts serve as an effective governance mechanism to discipline managers and reduce cost stickiness. Finally, this study offers significant contributions to the understanding of ownership structure's impact on managerial behaviour and cost management. It reveals that *Chaebols*, with their concentrated ownership, exhibit lower SG&A cost asymmetry due to tighter control over managerial actions, whereas non-*Chaebols* with dispersed ownership experience higher cost asymmetry due to less stringent monitoring. This research enhances the body of knowledge on corporate governance in Korean firms, highlighting how the unique governance structures of *Chaebols* influence the relationship between agency problems and cost behaviour. It provides empirical support for the dual effects of ownership concentration on managerial decision-making and cost control.

Policy recommendation is for managers to adopt stringent cost management strategies to minimise SG&A cost asymmetry. By enhancing internal controls and improving transparency, managers can reduce opportunities for discretionary spending and align cost behaviour with the firm's financial performance goals. Additionally, shareholders should push for consistent and higher dividend payouts as a mechanism to mitigate agency problems. By reducing available FCF for potential misuse, dividends can serve as an effective tool to discipline managerial behaviour and ensure that funds are utilised in sustainable ways that enhance shareholder value. Finally, regulatory authorities should strengthen legislation to encourage transparent and accountable corporate governance practices. This includes enforcing tougher reporting requirements for cost management and dividend policy, as well as fostering structures that facilitate active shareholder monitoring, particularly in enterprises with dispersed ownership. Furthermore, regulatory agencies should propose regulations that incentivise corporations to have formal dividend policies and increase oversight of managerial choices involving SG&A spending.

LITERATURE REVIEW

Literature Review on Empirical Evidence of Cost Stickiness

Early research on cost stickiness began with Noreen and Soderstrom (1994; 1997), who studied overhead costs in the U.S. hospitals from 1977 to 1992. They found that these costs do not move proportionally with activity levels, increasing more than they decrease for equivalent changes in activity. This challenged the assumption of linear cost behaviour inherent in standard costing systems like Activity-Based Costing. Anderson et al. (2003) discovered that SG&A expenditures in 7,629 U.S. enterprises climbed by 0.55% with a 1% increase in sales but fell only 0.35% with a 1% decrease. This asymmetry resulted in the resource-adjustment hypothesis, which explains managers' unwillingness to cut resources.

Subsequent studies explored cost stickiness in different contexts and regions. Via and Perego (2014) examined Italian firms from 1999 to 2008 and found stickiness in operating and labour costs but anti-stickiness in SG&A and cost of goods sold (COGS). Cheng et al. (2018) studied a vast sample of 241,982 Chinese private firms with 1,046,294 firm-year observations from 1999 to 2007, revealing sticky SG&A behaviour in large firms but anti-sticky behaviour in small and medium firms. De Villiers et al. (2014) identified sticky behaviour in audit fees using a sample of 30,298 firm-years in the U.S. from 2000 to 2008, demonstrating that these costs react more quickly to increases than decreases. Habib and Huang (2019) expanded the scope to charities, showing that large charities exhibit cost stickiness while small ones do not, based on their study of various charities. Finally, Wu et al. (2020) identified sticky cost behaviour in the operating costs of public schools in Taiwan.

This body of research collectively highlights the prevalence of cost stickiness across various types of costs and organisational contexts, emphasising the need for a thorough understanding of cost behaviour beyond the traditional linear models yet in the context of the Korea market, only few studies have explored this theme.

Determinants of Cost Stickiness

Empirical research indicates that corporate governance and management control mechanisms significantly impact cost stickiness. Calleja et al. (2006) examined cost behaviour across France, Germany, the U.K. and the U.S., finding that operating costs were less sticky in the U.K. and the U.S. due to stronger shareholder value maximisation pressures under common-law governance systems. In contrast, the

code law systems in France and Germany imposed less market control, leading to higher cost stickiness. Chen et al. (2012) studied the U.S. firms and found that cost stickiness is positively related to managerial empire-building incentives, particularly in firms with weaker corporate governance. Their findings suggest that robust corporate governance can mitigate the impact of agency problems on SG&A cost stickiness. Bugeja et al. (2015) extended this analysis to Australia, comparing it with the U.S. data, and concluded that cost stickiness decreases with stronger corporate governance, particularly in firms with non-executive directors and separated CEO and chairman roles.

In China, Xue and Hong (2016) discovered that firms with no earnings management evidence exhibited more cost stickiness, while good external governance and managerial ownership were also associated with increased stickiness. However, the combination of earnings management and corporate governance led to less cost stickiness. In Egypt, Ibrahim and Ezat (2017) observed that SG&A costs shifted from sticky to anti-sticky following corporate governance reforms, while COGS and total costs became more sticky post-reform. Ibrahim (2018) further analysed Egyptian firms and found that role duality and a higher percentage of non-executives on boards increased cost stickiness, whereas institutional ownership reduced it. Recent studies by Höglund and Sundvik (2019) and Li et al. (2021) provided additional insights. Höglund and Sundvik (2019) showed that firms with income-shifting incentives exhibited less cost stickiness when audited, suggesting that external audits can reduce managerial discretion. Li et al. (2020) found that risk-taking incentives among managers in the U.S. led to lower cost stickiness and higher cost elasticity, indicating that such incentives can influence operational decisions to adjust costs more flexibly.

These studies collectively demonstrate that corporate governance and internal controls play crucial roles in shaping cost behaviour. Strong governance structures generally lead to less cost stickiness, bringing cost adjustments closer to optimal levels.

Review on Ownership Structure

Research on the influence of ownership structure on cost stickiness is limited but significant. Prabowo et al. (2018) analysed the effect of state ownership on labour cost stickiness in 40,418 non-financial firm-years across 22 European countries from 1993 to 2012. They found that labour costs are generally sticky, with state-owned firms exhibiting higher stickiness than private firms due to state intervention in managerial employment decisions, which prevents layoffs during downturns and encourages hiring during upturns to maintain employment rates.

Similarly, Hall (2016) examined the influence of public and private ownership on labour cost management using data from banks in Argentina, Brazil, Canada and the U.S. from 1997 to 2006. The study revealed that public banks reduce labour costs to avoid earnings declines during decreased activity, while private banks cut labour costs to comply with regulatory capital requirements.

In the U.S., Chung et al. (2019) investigated the impact of institutional ownership on cost stickiness using a sample of 39,083 non-financial firm-years. Their findings indicate that long-term institutional investors reduce cost stickiness, aligning with the results of Chen et al. (2012) in the U.S. and Ibrahim (2018) in Egypt. These results suggest that private ownership and institutional investors can mitigate cost stickiness compared to state ownership. Despite the importance of ownership structure as a corporate governance mechanism influencing managerial decisions, it remains underexplored in the context of cost stickiness. Only a few studies, such as those by Chen et al. (2012) and Ibrahim (2018), have examined institutional ownership's role in cost stickiness as part of their additional analyses, highlighting a gap in the literature (Ibrahim et al., 2022).

Our study addresses this gap by focusing on the role of ownership structure in cost stickiness within Korean firms. Korean conglomerates, known as *Chaebols*, have unique ownership structures characterised by concentrated family ownership and complex cross-shareholding arrangements. This distinct context provides an excellent opportunity to explore how different ownership structures impact managerial decisions and cost behaviour. By examining Korean data, we aim to contribute to a deeper understanding of the relationship between ownership structure and cost stickiness, filling a crucial gap in the literature.

Review on Agency Problems and Dividend Policy

Building on agency cost theory, cash dividend payouts are shown to effectively alleviate agency problems and reduce agency costs. Easterbrook (1984) applies agency theory to dividend policy, proposing that companies should pay high dividends to shareholders and raise funds through external channels. This approach forces managers to accept external supervision, thus operating the enterprise in a way that aligns with shareholder interests and reduces agency costs.

According to Jensen (1986), "free cash flow" hypothesis suggests that abundant free cash flow may lead managers to expand the company unnecessarily and invest in inefficient projects. Cash dividend payouts can mitigate this by reducing retained cash flow, thus restraining managerial actions that could harm

company value. This hypothesis, which complements the Easterbrook (1984) theory, is empirically testable and has been supported by past and contemporary research (Njoku & Lee, 2024). Lang and Litzenberger (1989) confirm that market responses to dividend increases are linked to overinvestment, supporting the "free cash flow" theory.

In the context of small enterprises with high growth rates, these firms tend to reduce cash dividend payouts to accumulate internal capital for future development, which decreases the likelihood of paying dividends. DeAngelo et al. (2006) explain cash dividend payouts through the life cycle theory of companies, noting that dividend levels vary with the company's development stage. During the growth stage, companies with many investment opportunities but insufficient funds reduce dividends to retain capital for growth. Conversely, mature companies with stable business environments and fewer investment opportunities increase dividends to build good investor relationships. Fairchild et al. (2014) confirm the validity of the life cycle theory in China, showing that company maturity is positively correlated with cash dividend payouts. They also find that excessive financial leverage negatively affects this relationship, weakening the positive correlation between company maturity and dividend payouts.

Although extensive research has explored the effects of agency problems and dividend policy on firm performance and corporate value (Njoku & Lee, 2024; Lee & Tulcanaza-Prieto, 2024), few studies have specifically examined their impact on SG&A cost asymmetry. Our study aims to fill this gap by investigating how agency problems and dividend policy influence SG&A cost asymmetry in the Korean market. The unusual corporate governance structures of Korean *Chaebol* firms, characterised by concentrated family ownership and complex cross-shareholding arrangements, provide an ideal context for studying these effects. Korean data offer a distinctive opportunity to understand the economic interactions between agency problems, dividend policies and cost behaviours, contributing fresh and valuable insights to the existing literature.

Hypothesis Development

This study aims to explore the asymmetric behaviour of SG&A costs in the Korean market by investigating how the SG&A asymmetric cost behaviour is impacted by agency problems, dividend policy and the unique ownership and governance structures of Korean firms. This section develops hypotheses for each research objective, integrating insights from previous studies and theoretical frameworks. The first study objective investigates whether SG&A cost asymmetry in Korean firms is positively associated with agency problems, after controlling for known economic determinants.

Free cash flow and SG&A cost asymmetry

FCF is a commonly used proxy for agency problems and the resulting empire-building incentives. High levels of FCF can lead managers to invest in operations or negative net present value (NPV) projects instead of paying it out to shareholders, leading to overinvestment and increased SG&A costs when demand increases, and delayed cost cuts when demand decreases. Therefore, a negative coefficient on the FCF interaction term with sales decreases indicates a higher degree of cost asymmetry (Liu et al., 2022; Jensen, 1986; Stulz, 1990). However, in the Korean market, managers may face stronger external monitoring or be more disciplined, leading to more stable SG&A costs despite variations in FCF. This outcome could be influenced by the concentrated ownership in *Chaebols*, where controlling families might exert tighter control over resource allocation, reducing cost asymmetry. In this scenario, a positive coefficient on the FCF interaction term with sales decreases suggests a lower degree of cost asymmetry (Chen et al., 2012; Anderson et al., 2003; Bugeja et al., 2015).

H1a: SG&A cost asymmetry increases with higher free cash flow.

Asset utilisation ratio and SG&A cost asymmetry

ASSUT reflects managerial efficiency, the effectiveness of firms' investment decisions, and the ability to direct assets toward their most productive use. Firms with lower ASSUT tend to make sub-optimal investment decisions and use funds for unproductive assets, thereby generating agency costs for shareholders (Singh & Davidson, 2003; Lee & Tulcanaza-Prieto, 2024). The level of capacity utilisation affects managers' responses to changes in activity levels. High capacity utilisation leads to sticky costs as managers are hesitant to cut resources, while excess capacity can result in anti-sticky costs. Therefore, a negative coefficient on the ASSUT interaction term with sales decreases indicates a higher degree of cost asymmetry (Cheng et al., 2018); Balakrishnan et al., 2014; Weiss, 2010; Lee & Tulcanaza-Prieto, 2024). As a highly industrialised hub, it might not come as a surprise that better asset utilisation in Korean firms could lead to greater SG&A cost asymmetry. This implies that cost behaviour aligning with theoretical expectations and previous findings might suggest that asset utilisation is a robust predictor of cost stickiness (Anderson et al., 2003; Chen et al., 2012).

H1b: SG&A cost asymmetry increases with better asset utilisation.

Operating Expense Ratio and SG&A cost asymmetry

Calleja et al. (2006) examined cost behaviour across France, Germany, the U.K. and the U.S., finding that operating costs were less sticky in the U.K. and the U.S. due to stronger shareholder value maximisation pressures under common-law governance systems. In contrast, the code law systems in France and Germany imposed less market control, leading to higher cost stickiness. High operating expenses can lead to cost stickiness, as firms with significant fixed costs may find it difficult to reduce expenses proportionally when sales decline. Therefore, a negative coefficient on the OPEX interaction term with sales decreases indicates a higher degree of cost asymmetry (Chen et al., 2012; Calleja et al., 2006; Anderson et al., 2003; Weiss, 2010). However, a positive coefficient might be anticipated in the Korean context due to several factors. First, stringent cost control mechanisms and efficient management practices prevalent in Korean firms could ensure consistency in SG&A expenses regardless of operating expense levels. Additionally, the unique governance structures in Korean firms, particularly *Chaebols*, characterised by concentrated ownership and strong family control, may lead to rigorous oversight and strategic cost management. This oversight could ensure that resources are allocated efficiently, and expenses are tightly controlled, mitigating the typical cost stickiness observed in firms with less stringent governance practices. Consequently, despite higher operating expenses, Korean firms might exhibit more stable SG&A costs due to these disciplined management practices and effective monitoring (Bugeja et al., 2015; Ibrahim, 2018).

H1c: SG&A cost asymmetry increases with higher operating expenses.

Dividend policy and SG&A cost asymmetry

The second research objective examines whether dividend policy influences SG&A cost asymmetry. Dividend policy can signal a firm's financial health and influence managerial behaviour. Firms that pay regular dividends may have stronger governance practices, leading to more disciplined cost management and potentially lower cost asymmetry (Easterbrook, 1984; Jensen, 1986; DeAngelo et al., 2006; Fairchild et al., 2014). Therefore, a positive interaction term of dividend policy variables and sales decreases would indicate that firms with consistent dividend policies have less SG&A cost asymmetry. However, Jensen's "free cash flow" hypothesis suggests that abundant FCF may lead managers to expand the company unnecessarily and invest in inefficient projects. This opportunistic behaviour might divert cash meant for distribution to shareholders to satisfy personal interests. In this scenario, a negative coefficient on the interaction term

with sales decreases might be associated with higher degree of SG&A cost asymmetry. Prior studies predicted greater cost stickiness is associated with lower level of cash dividend payouts (Liu et al., 2022).

H2: Dividend policy is negatively associated with SG&A cost asymmetry.

Intervening role of ownership structure in agency problem and SG&A cost asymmetry association

The third research objective analyses whether the unique ownership and governance structures of Korean firms alter the relationship between agency problems and SG&A cost asymmetry. Prabowo et al. (2018) found that labour costs are generally sticky, with state-owned firms exhibiting higher stickiness than private firms due to state intervention in managerial employment decisions, which prevents layoffs during downturns and encourages hiring during upturns to maintain employment rates. In the U.S., Chung et al. (2019) investigated the impact of institutional ownership on cost stickiness using a sample of 39,083 non-financial firm-years. Their findings indicate that long-term institutional investors reduce cost stickiness, aligning with the results of Chen et al. (2012) in the U.S. and Ibrahim (2018) in Egypt. These results suggest that private ownership and institutional investors can mitigate cost stickiness compared to state ownership. In the Korean market parlance, the moderating effect of ownership structure can be either positive or negative, contingent upon the degree of control exercised by the dominant shareholders. For example, the controlling families in *Chaebol* firms, are likely to exert tighter control over managerial decisions, which could reduce SG&A cost asymmetry despite the presence of agency problems. In this case, a significantly positive association is predicted. This is because the dominant shareholders have both the incentive and the means to closely monitor and influence managerial actions to protect their substantial investment. On the other hand, independent firms with more distributed ownership might experience higher SG&A cost asymmetry due to less stringent monitoring and greater managerial discretion. In this scenario, a significantly negative association between agency metrics and SG&A cost asymmetry is predicted (Chen et al., 2012; Anderson et al., 2003; Bugeja et al., 2015; Ibrahim, 2018; Prabowo et al., 2018; Chung et al. 2019).

H3: The unique ownership structures in Korean firms moderate the relationship between agency problems and SG&A cost asymmetry.

By investigating these hypotheses, this study aims to provide a comprehensive understanding of SG&A cost asymmetry in the Korean market. The findings will shed light on the influence of agency problems, dividend policy and unique ownership structures on cost behaviour, offering novel insights that might diverge from prior studies conducted in different market contexts.

RESEARCH DESIGN

Sample Selection

The financial information of firms was downloaded from the KisValue version 3.2 database. The initial sample included 10,472 firm-year observations from 952 Korean firms listed on the Korea Composite Stock Price Index (KOSPI). After removing 456 firms with incomplete information and excluding financial institutions due to differing financial characteristics, 107 firms with missing SG&A and dividend data were also excluded (Fama & French, 1992). Firms were required to have reported sales during the sampling period. Using Python, the raw data was further synthesised, cleaned and converted into a balanced panel data structure. Ultimately, 389 non-financial firms with comprehensive financial statements were sampled from 2009 to 2021. Due to lagged variables and to capture contemporaneous estimations, our cross-sections span from 2011 to 2021, yielding a total of 4,279 firm-year observations. Winsorisation at the bottom 5% and top 95% was applied to limit extreme values and reduce the effect of potential outliers.

Estimation Method

This study employs ordinary least squares (OLS) panel data regression models to estimate the effects of agency problems and dividend policy on the asymmetric behaviour of SG&A expenses in Korean listed firms. For robustness checks, Random Effects and Least Squares Dummy Variable (Fixed Effects) models are used. Least squares dummy variables estimation (LSDV) addresses unique entity-specific effects by introducing dummy variables for each entity, capturing unobserved characteristics that remain constant over time. This method ensures a robust estimation of fixed effects models and controls for heterogeneity by estimating separate intercepts for each entity.

To address endogeneity concerns, particularly the potential endogeneity of FCF, we employ the Generalised Method of Moments (GMM) estimator. FCF may be influenced by firm size, leverage and investment opportunities, creating potential bias in regression estimates. The GMM approach mitigates

endogeneity by using instrumental variables and first-differencing to control for unobserved heterogeneity. Specifically, a Dynamic Panel Data GMM approach is implemented, using one-period lag values of the independent variables as instruments. Following Arellano and Bond (1991) and Arellano and Bover (1995), the Difference GMM method is used to transform the regression equation by first-differencing, removing unobserved firm-specific effects and establishing equality between the explanatory variables and the error term.

Research Model and Variable Specification

Our investigation is focused on addressing three pivotal questions:

1. How is SG&A cost asymmetry in Korean firms associated with agency problems, after controlling for known economic determinants?
2. To what extent does dividend policy influence SG&A cost asymmetry in Korean firms?
3. How do the unique ownership and governance structures of Korean firms alter the relationship between agency problems and SG&A cost asymmetry?

Among firms in the Korean market, broadly known as *Chaebol* (large business conglomerates under a family control or affiliated company) and non-*Chaebol* firms (characterised by widely distributed governance and ownership structures), to what extent does agency problems impact SG&A cost stickiness? In answering these research questions, the first objective is to investigate whether SG&A cost asymmetry in Korean firms is positively associated with agency problems, after controlling for known economic determinants. The second objective is to examine whether dividend policy influences SG&A cost asymmetry while the third objective is to analyse whether the unique ownership and governance structures of Korean firms alter the relationship between agency problems and SG&A cost asymmetry.

This study, closely adapting the framework of Chen et al. (2012) incorporates the SG&A cost ratio as the dependent variable. In the independent variable specification, three agency problem metrics namely: FCF, ASSUT and OPEX; three Dividend Policy metrics namely Cash Dividend Payment, Dividend Policy (Dummy) and Dividend Payout Ratio; Decreased Sales Dummy for interaction term and four economic control variables namely Employee Intensity, Asset Intensity, Successive Sales Decrease Dummy and Stock Performance were all incorporated in the model.

Equation 1 is the base regression equation to empirically validate the phenomenon of asymmetric cost behaviour of SG&A expenses documented in previous research by Anderson et al. (2003) and Chen et al. (2012).

$$\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right) = \beta_0\beta_1 \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) + \beta_2 DecDummy \times \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) + \sum_{m=3}^{6} \beta_m DecDummy \times \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) \times EconVar_{m,i,t} + \sum_{s=7}^{10} \beta_s EconVar_{s,i,t} + e_{i,t} \quad (1)$$

where $SG\&A_{i,t}$ and $Sales_{i,t}$ are selling, general and administrative costs and sales revenue, respectively, for firm i year t. *DecDummy* takes the value of one when sales revenues in year t are less than those in year t–1 and zero otherwise. Coefficient β_1 measures the percentage increase in SG&A costs with a 1% increase in sales revenue. *EconVar* stands for the four economic determinants as control variables: Employee Intensity, Asset Intensity, Successive Performance and Stock Performance. In our analysis, we control for several known economic determinants of SG&A cost asymmetry. First, we account for Employee Intensity, calculated as the ratio of the total number of employees to sales revenue, and Asset Intensity, calculated as the ratio of total assets to sales revenue (Anderson et al., 2003). These controls account for the inherent costs associated with labour and capital investments.

Second, we control for Successive Revenue Decreases, recognising that managers are more likely to perceive a negative demand shock as permanent if there are revenue decreases in two consecutive years. Successive Decrease is an indicator variable that takes the value of one if sales revenues in year t−1 are less than those in year t−2, and zero otherwise. Additionally, we include a control for Stock Performance, measured by the raw stock returns. The relationship between stock performance and cost asymmetry is unclear: firms with good stock performance might be more efficient in cutting unutilised resources, leading to a negative relationship between stock performance and cost asymmetry. Conversely, good stock performance might signal positive expectations about future earnings, prompting managers to retain some unnecessary SG&A costs, thus increasing cost asymmetry. Overinvestment could also be associated with firms with good stock performance which may increase SG&A cost asymmetry. Therefore, this study at this time does not incline to a directional prediction about the relationship between stock performance and the magnitude of cost asymmetry (Chen et al. 2012).

Agency variables

In order to address the first objective of this study which is to investigate the effect of agency problems on the asymmetric behaviour of SG&A costs, Equation 1 can be modified to incorporate both the agency and economic variables so as to provide a more comprehensive analysis of SG&A cost asymmetry (Anderson et al., 2003; Chen et al., 2012). Therefore Equation 2 is specified as follows:

$$\begin{aligned}\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right) &= \beta_0 + \beta_1 \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) + \beta_2 DecDummy \times \\ &\log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) + \sum_{m=3}^{5} \beta_m DecDummy \times \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) \times \\ &AgencyVar_{m,i,t} + \sum_{s=6}^{9} \beta_p DecDummy \times \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) \times \\ &EconVar_{p,i,t} + \sum_{q=10}^{12} \beta_q AgencyVar_{q,i,t} + \sum_{s=13}^{16} \beta_s EconVar_{s,i,t} + e_{i,t}\end{aligned} \tag{2}$$

where $SG\&A_{i,t}$ is the SG&A expenses for firm i at time t; $Sales_{i,t}$ is the sales revenue for firm i at time t; *DecDummy* is a dummy variable that takes the value of 1 if there is a decrease in sales, and 0 otherwise; $AgencyVar_{m,i,t}$ represents the agency problem proxy variables; $EconVar_{p,i,t}$ represents the economic control variables; β_0, β_1 ,…,β_{16} are the coefficients to be estimated; and $e_{i,t}$ is the error term.

We use three variables to capture managers' empire-building incentives due to the agency problem: FCF, ASSUT and OPEX. FCF is measured as cash flow from operating activities minus common and preferred dividends, scaled by total assets (Lang et al., 1991; Chen et al., 2012; Njoku & Lee, 2024). $ASSUT_{i,t}$ is computed as $Annual\ Sales_{i,t}$ deflated by $Total\ Assets_{i,t}$ of firm i, at time t. It reflects managerial efficiency, the effectiveness of firms' investment decisions, and the ability to direct assets toward their most productive use. Firms with lower ASSUTs tend to make sub-optimal investment decisions and use funds for unproductive assets, thereby generating agency costs for shareholders (Singh & Davidson, 2003; Lee & Tulcanaza-Prieto, 2024). $OPEX_{i,t}$ is computed as $Operating\ Expenses_{i,t}$ deflated by $Total\ Sales_{i,t}$ of firm i at time t. It includes managerial bonuses, managerial income, rents, equipment leasing, office buildings, equipment and fittings, communication and marketing bills, and entertainment and traveling expenses. Management has discretionary authority over these expenses, meaning that a higher ratio indicates greater agency costs due to the misalignment of interests between parties (Nguyen et al., 2020).

Dividend policy variables

In order to address the second objective of this study which is to investigate the effect of dividend policy on the asymmetric behaviour of SG&A costs, Equation 1 can be modified further to incorporate both the dividend policy variables and economic variables so as to gauge the degree of impact of dividend policy on the SG&A cost asymmetry (Anderson et al., 2003; Chen et al., 2012; Njoku & Lee, 2024). Therefore Equation 3 is specified as follows:

$$\begin{aligned}&\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right)=\beta_0+\beta_1\log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right)+\beta_2 DecDummy\times\\&\log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right)+\sum_{n=3}^{5}\beta_n DecDummy\times\log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right)\times\\&DividendVar_{n,i,t}+\sum_{p=6}^{9}\beta_p DecDummy\times\log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right)\times\\&EconVar_{p,i,t}+\sum_{d=10}^{12}\beta_d DividendVar_{q,i,t}+\sum_{s=13}^{16}\beta_s EconVar_{s,i,t}+e_{i,t}\end{aligned}\tag{3}$$

where log ($SG\&A_{i,t}/SG\&A_{i,t-1}$) is the dependent variable representing the log change in SG&A expenses; log ($Sales_{i,t}/Sales_{i,t-1}$) is the log change in sales; *DecDummy* is a dummy variable indicating a sales decrease; $DividendVar_{n,i,t}$ represents different dividend-related variables namely: Cash dividend payment is the variable representing cash dividend payment. As a dividend policy proxy, it is computed by dividing the total cash dividends paid by the net income of the company. This ratio specifically focuses on the portion of net income that is distributed to shareholders in the form of cash dividends. It provides insights into the firm's ability to generate sufficient cash flow from its operations to fund dividend payments; Dividend Policy (Dummy) is the variable representing the dividend policy for firm *i* at time *t*. As a binary variable, it assumes 1 when firm *i* pays a dividend at time *t*; otherwise, it is 0; Dividend Payout Ratio (DPR) is calculated by dividing the total amount of dividends paid by a company by its net income. The formula for the DPR = (Dividends Paid/Net Income) × 100. The DPR directly communicates the proportion of net income distributed to shareholders as dividends. This makes it a straightforward measure of how much profit the company is sharing with its investors. A consistent and reasonable DPR can indicate financial discipline and prudent capital management. It reflects a firm's approach to balancing dividend payments with retained earnings for future growth and investment; $EconVar_{p,i,t}$ represents different economic control variables; $e_{i,t}$ is the error term; and β_0, β_1, β_2, β_n, β_p, β_d and β_s are the coefficients to be estimated.

Ownership structure intervening role on agency impact on SG&A cost asymmetry

The third objective of our study is to analyse whether the unique ownership and governance structures of Korean firms alter the relationship between agency problems and SG&A cost asymmetry. Korea Fair Trade Commission, KFTC (BHSN, 2020), and corporate group portal, designate all of the affiliates of a *Chaebol* group as one large business group when the total assets of all affiliates are KRW5 trillion or more. If the leader holds 30% or more of the issued shares in conjunction with related persons, it is considered to be actually a controlling company (Kim et al., 2021). We split our full study sample of 4,279 observations into *Chaebol* firms (controlled by families or affiliated concerns with total assets of over KRW5 trillion and high ownership stakes above 30% of issued shares) and non-*Chaebol* firms with dispersed stock—ownership structures. We adopt Equation 2 to examine the empirical relationship between Agency Problem variables and SG&A cost asymmetry simultaneously for the *Chaebol* firms and the independent firms in our study sample. While the *Chaebol* firms account for 1,931 firm-year observations, the independent firms account for 2,348 firm year observations.

EMPIRICAL RESULTS

Sample Statistics

In Table 1, Panel A describes the distribution of revenue and SG&A costs. The mean sales revenue is KRW1.061 trillion, with a median of KRW0.224 trillion, and a high standard deviation of 3.527, indicating substantial variation in sales revenue among the firms. The average SG&A costs are KRW0.135 trillion, with a median of KRW0.028 trillion and a standard deviation of 0.546, showing significant variation. The mean SG&A cost as a percentage of revenue is 27.043%, with a median of 12.623% and a standard deviation of 15.154%, suggesting a wide range of efficiency in managing SG&A costs relative to revenue.

Table 1
Descriptive statistics

Variables	Mean	Median	S.D.
Panel A: Revenue and SG&A costs			
Sales revenue (KRW trillion)	1.061	0.224	3.527
SG&A costs (KRW trillion)	0.135	0.028	0.546
SG&A as % of revenue	27.043	12.623	15.154

(*Continued on next page*)

Table 1 (*Continued*)

Variables	Mean	Median	S.D.
Panel B: Economic variables			
Employee intensity	1.12×10^{-8}	1.49×10^{-9}	4.79×10^{-7}
Asset intensity	8.947	1.389	187.181
Successive decrease (indicator)	0.193	0.000	0.395
Stock performance	50.564	10.700	147.651
Variables	Mean	Median	S.D.
Panel C: Agency variables			
Free cash flow (FCF)	0.045	0.041	0.074
Asset utilisation ratio (ASSUT)	0.810	0.717	0.576
Operating expense ratio (OPEX)	0.270	0.126	3.359
Panel D: Dividend policy variables			
Cash dividend payment (CSDIVPAY)	0.009	0.005	0.016
Dividend policy (indicator)	0.688	1.000	0.464
Dividend payout ratio (DPR)	0.379	0.130	11.724
Panel E: Other variables			
Ownership concentration	30.774	27.580	16.607
Total assets (KRW trillion)	1.529	0.351	4.738

Note: Observations = 4,279

Panel B of Table 1 describes the Economic Variables. The Employee Intensity variable has an extremely low mean of 1.12×10^{-8} and median of 1.49×10^{-9}, with a large standard deviation of 4.79×10^{-7}, indicating high variability in employee intensity across firms. The mean asset intensity is 8.947 with a median of 1.389 and a very high standard deviation of 187.181, reflecting significant differences in asset utilisation. Successive Decrease is an indicator variable that is equal to 1 if revenue in year t–1 is less than revenue in t–2 and 0, otherwise. This binary indicator has a mean of 0.193 and a median of 0, indicating that about 19.3% of the observations experienced successive decreases. The mean stock performance is 50.564, with a median of 10.700 and a standard deviation of 147.651, indicating a wide range of stock performance among the firms. Panel C describes the Agency costs variables. The average FCF is 0.045 with a median of 0.041 and a standard deviation of 0.074, indicating moderate variability. The mean ASSUT is 0.810, the median is 0.717, and the standard deviation is 0.576, showing differences in how effectively firms use their assets. The mean OPEX is 0.270 with a median of 0.126 and a high standard deviation of 3.359, suggesting variability in operating efficiency.

Panel D captures the Dividend Policy variables. The average cash dividend payment is 0.009 with a median of 0.005 and a standard deviation of 0.016, indicating that dividend payments vary but are generally low. Dividend Policy is an indicator which equals 1 when a firm pays dividend and 0 otherwise. This binary variable has a mean of 0.688 and a median of 1.000, showing that 68.8% of firms have a dividend policy in place. The mean DPR is 0.379 with a median of 0.130 and a high standard deviation of 11.724, reflecting significant differences in dividend distribution practices. Panel E describes other variables such as ownership concentration and total assets. The mean ownership concentration is 30.774%, with a median of 27.580% and a standard deviation of 16.607%, indicating varied levels of ownership concentration. The mean total assets are KRW1.529 trillion with median of KRW0.351 trillion and a standard deviation of 4.738, showing substantial variability in the size of firms. The descriptive statistics reveal substantial variability across the study variables, indicating diverse operational, financial and governance practices among the firms in the sample. The wide range in many of the metrics, such as sales revenue, SG&A costs, asset intensity, stock performance and dividend payout ratios, suggests that firms in the KOSPI context operate under significantly different conditions and strategies.

Correlation Analysis

Table 2 provides the correlation analysis, which shows the pairwise correlations between different variables. SG&A Ratio is the logarithm of the ratio of Selling, General and Administrative expenses of year *t* to that of year *t*–1. Similarly, Sales Ratio is the logarithm of the ratio of sales revenue of year *t* to that of year *t*–1. SG&A Ratio has a strong positive correlation with Sales Ratio (0.672), ASSUT (0.086) and Ownership Concentration (0.041), whereas it has a strong negative correlation with Successive Decrease (−0.139) and OPEX (−0.123). Sales Ratio has a strong positive correlation with Employee Intensity (0.054), Asset Intensity (0.039), ASSUT (0.125), Cash Dividend Payment (0.030) and Ownership Concentration (0.042) while negatively, it correlates with Successive Decrease (–0.216) and OPEX (–0.308). While Employee Intensity has a strong positive correlation with Asset Intensity (0.980), Asset Intensity indicates a weakly negative correlation with ASSUT (–0.026). Successive Decrease has a strong negative correlation with FCF (–0.062), ASSUT (–0.079), Cash Dividend Payment (–0.042) and Dividend Policy (–0.074).

Table 2
Cross-correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) SG&A ratio	1.00												
(2) Sales ratio	0.0672***	1.000											
(3) Employee intensity	0.002	0.054***	1.000										
(4) Asset intensity	–0.010	0.039***	0.980***	1.000									
(5) Successive decrease	–0.139***	–0.216***	–0.009	–0.010	1.000								
(6) Stock performance	0.010	0.006	–0.002	–0.004	–0.014	1.000							
(7) Free cash flow	0.019	0.023	0.001	0.000	–0.062***	0.106***	1.000						
(8) Asset utilisation ratio	0.086***	0.125***	–0.022	–0.026*	–0.079***	–0.033**	0.248***	1.000					
(9) Operating expense ratio	–0.123***	–0.308***	0.007	0.012	–0.008	–0.001	–0.002	–0.043***	1.000				
(10) Cash divided payment	0.021	0.030**	–0.008	–0.011	–0.042***	0.109***	0.284***	0.062***	–0.005	1.000			
(11) Dividend payout ratio	0.008	0.003	0.000	0.002	–0.008	–0.003	–0.007	–0.020	0.002	0.011	1.000		
(12) Dividend policy	0.010	0.017	0.011	0.008	–0.074***	0.173***	0.218***	–0.046***	0.008	0.391***	0.022	1.000	
(13) Ownership concentration	0.041***	0.042***	–0.010	–0.004	–0.006	–0.063***	0.142***	0.239***	–0.008	0.040***	0.000	–0.022	1.000

Note: Observations = 4,279; *, ** and *** denote significance levels of 10%, 5% and 1% respectively.

According to Table 2, Stock Performance correlates positively with FCF (0.106), Cash Dividend Payment (0.109) and Dividend Policy (0.173) but negatively correlates ASSUT (–0.033) and Ownership Concentration (–0.063). FCF shows a strong positive correlation with ASSUT (0.248), Cash Dividend Payment (0.248), Dividend Policy (0.218) and Ownership Concentration (0.142). ASSUT shows a strong negative correlation with OPEX (–0.043) and Dividend Policy (–0.046) but positive correlations with Cash Dividend Payment (0.062) and Ownership Concentration (0.239). Cash Divided Payment indicates strong positive correlation with Dividend Policy (0.391) and Ownership Concentration (0.040).

We note here that the positive correlations indicate that certain financial and operational metrics tend to increase together, while the negative correlations indicate inverse relationships. Insignificant correlations suggest no strong linear relationship between those variables. However, further analysis, such as regression, would be necessary to explore causal relationships.

Multicollinearity Tests

Multicollinearity can distort regression analysis by causing unreliable coefficient estimates and inflated standard errors. Ensuring low Variance Inflation Factor values enhances the robustness and accuracy of study estimates, providing reliable insights into the relationships between the regressors and the dependent variable. The Appendix shows that VIF values for each independent variable range from approximately 1.00 to 2.90, indicating minimal multicollinearity. Low VIF values are desirable as they signify that the variables are not highly correlated, which is crucial for accurate coefficient estimation and reliable regression analysis inferences (Njoku & Lee, 2024).

Documentation of the SG&A Asymmetric Cost Behaviour

This study estimates the following regression equation to empirically validate the phenomenon of asymmetric cost behaviour of expenses documented in previous research by Anderson et al. (2003) and Chen et al. (2012).

$$\begin{aligned}\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right) &= \beta_0 + \beta_1 \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) + \beta_2 DecDummy \times \\ \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) &+ \sum_{m=3}^{6} \beta_m DecDummy \times \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) \times \\ EconVar_{m,i,t} &+ \sum_{s=7}^{10} EconVar_{s,i,t} + e_{i,t}\end{aligned} \tag{4}$$

where $SG\&A_{i,t}$ and $Sales_{i,t}$ represent the SG&A costs and sales revenue, respectively, for firm i at year t. The variable *DecDummy* equals one when sales

revenue in year t is less than in year $t - 1$ and 0 otherwise. The coefficient β_1 captures the percentage increase in SG&A costs with a 1% increase in sales revenue. *EconVar* includes four economic determinants as control variables: Employee Intensity, Asset Intensity, Successive Decrease and Stock Performance. Continuous variables used in interaction terms are mean-centred to reduce multicollinearity and facilitate interpretation of main effects (Anderson et al., 2003; Chen et al., 2012). Since *DecDummy* equals one when sales revenue decreases, the sum of coefficients ($\beta_1 + \beta_2$) indicates the percentage decrease in SG&A costs with a 1% decrease in sales revenue. A significantly positive β_1 and a significantly negative β_2 support cost asymmetry (Anderson et al., 2003; Chen et al., 2012). Using Equation 1, this study estimates the asymmetrical adjustment of SG&A costs at the firm level. In order to confirm cost asymmetry, β_1 should be significantly positive and β_2 significantly negative according to prior empirical investigations (Anderson et al., 2003; Chen et al., 2012). The results are presented in Table 3.

Table 3
Regressing annual changes in SG&A costs on annual changes in sales revenue for the sample period 2011–2021

Variable	Predicted sign	OLS		Fixed effect		Random effect	
		Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
Intercept		0.035***	6.284	0.038***	5.811	0.035***	6.146
Sales change	+	0.342***	17.533	0.317***	14.406	0.020***	17.148
DecDummy*Sales change	–	0.225***	5.433	0.267***	5.878	0.042***	5.314
Interaction terms: (Variable*DecDummy * Sales Change):							
Employee intensity	+	0.001003	0.487	0.000575	0.257	0.001003	0.477
Asset intensity	–	–0.023***	–6.192	–0.028***	–6.997	–0.023***	–6.056
Successive decrease	+	0.103***	4.563	0.104***	4.283	0.103***	4.463
Stock performance	?	0.00142***	5.630	0.00137***	4.896	0.001423***	5.507
Standalone variables:							
Employee intensity		0.345	0.790	0.316	0.635	0.345	0.773
Asset intensity		–0.000132	–1.176	–0.000108	–0.848	–0.000132	–1.151
Successive decrease		0.018	1.559	0.033	2.497	0.018	1.525
Stock performance		4.42×10^{-5}	1.528067	2.87×10^{-5}	0.489	4.42×10^{-5}	1.495
Firm fixed effects		No		Yes		No	
Year fixed effects		No		Yes		No	
R^2		0.450		0.482		0.450	
Adjusted R^2		0.449		0.428		0.449	
F-statistic		349.825***		8.832***		349.825***	

(*Continued on next page*)

Table 3 (*Continued*)

Variable	Predicted sign	OLS		Fixed effect		Random effect	
		Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
Prob (F-statistic)		0.000		0.000		0.000	
Durbin-Watson stat		2.392		2.503		2.392	
Correlated Random Effects-Hausman Test							
Test summary	Chi^2 Statistic	Chi^2 d.f.	Prob.				
Cross-section random	28.369	10.000	0.002				

Note: Total Panel (balanced) observations = 4,279; Cross-sections included = 389; *** indicate significance levels at 1%. In Table 3, the regression models provided use OLS, Fixed Effects and Random Effects estimations. The dependent variable is the logarithm of annual changes in SG&A costs, ($\log(SG\&A_{i,t}/SG\&A_{i,t-1})$) regressed on the logarithm of annual changes in sales revenue, ($\log(Sales_{i,t}/Sales_{i,t-1})$) with interaction terms involving economic variables, and standalone variables included.

According the results in Table 3, the coefficient for intercept is positive and highly significant across the three estimation models with OLS: 0.035 ($t = 6.284$), Fixed Effects: 0.038 ($t = 5.811$) and Random Effects: 0.035 ($t = 6.146$).

The coefficient for sales change (β_1) is positive and highly significant across all models with OLS: 0.342 ($t = 17.533$), Fixed Effects: 0.317 ($t = 14.406$) and Random Effects: 0.020 ($t = 17.148$). This evidence indicates that an increase in sales revenue leads to an increase in SG&A costs. Surprisingly, the coefficient for *DecDummy * Sales Change* (β_2), which is the interaction between sales change and the decrease dummy is positive and highly significant across all the estimation models with OLS: 0.225 ($t = 5.433$), Fixed Effects: 0.267 ($t = 5.878$) and Random Effects: 0.042 ($t = 5.314$). This suggests that SG&A costs decrease when sales revenue decreases. Comparing the prior empirical evidence of Chen et al. (2012) and the current study, we observe that both studies found positive coefficients for the effect of increased sales revenue on SG&A costs (β_1), indicating that as sales revenue increases, SG&A costs also increase. For the effect of decreased sales revenue on SG&A costs (β_2), Chen et al. (2012) found a negative coefficient, implying that as sales revenue decreases, the firms experience a higher degree of SG&A costs stickiness, consistent with cost asymmetry. However, contrary to prior evidence, our study found a positive coefficient for β_2, suggesting that when sales revenue decrease, the firms experience a lower degree of SG&A cost asymmetry. It is important to note that while the direction of the effect for β_1 is consistent between the two studies, there is a discrepancy in the direction of the effect for β_2. Based on the asymmetrical behaviour of costs assumption opined by Anderson et al. (2003) and validated by Chen et al. (2012), the aggregated sum of the coefficients ($\beta_1 + \beta_2$) measures the percentage decrease in SG&A costs with a

1% decrease in sales revenue. In line with this assumption, the aggregated sum of the coefficients ($\beta_1 + \beta_2$) in the OLS estimation model of our study = 0.567 (0.342 + 0.225). This suggests that SG&A costs decrease by approximately 0.567% for every 1% decrease in sales revenue. While the present study found a positive coefficient for β_1 and a positive coefficient for β_2, which is contrary to prior evidence, the sum of the coefficients ($\beta_1 + \beta_2$) still indicates a disproportionate decrease in SG&A costs with an equivalent decrease in sales revenue. The combined effect of ($\beta_1 + \beta_2$) in Chen et al. (2012) and that of the present study suggests that SG&A costs tend to decrease to some extent in response to decreases in sales revenue, albeit to different degrees. Taken together, both studies provide evidence consistent with the cost stickiness phenomenon proposed by Anderson et al. (2003), although our study's positive coefficient for β_2 deviates from the expected negative sign.

The interaction terms' coefficients on economic variables align largely with prior literature. The significantly negative coefficient for Asset Intensity [OLS: –0.023 (t = –6.192), Fixed Effects: –0.028 (t = –6.997) and Random Effects: –0.023 (t = –6.056)] indicates greater SG&A cost asymmetry in asset-intensive firms. This evidence suggests that firms that rely on a greater supply of assets to support their activities experience greater SG&A cost asymmetry when sales decrease. Successive Decrease coefficient is significantly positive (OLS: 0.103 (t = 4.563), Fixed Effects: 0.104 (t = 4.283) and Random Effects: 0.103 (t = 4.463), indicating lower SG&A cost asymmetry in firms facing negative demand shocks for two consecutive years. The significantly positive coefficient on Stock Performance (OLS: 0.00142 (t = 5.630), Fixed Effects: 0.00137 (t = 4.896) and Random Effects: 0.001423 (t = 5.507) suggests lower SG&A cost asymmetry in firms with strong stock performance. Unlike the findings of Chen et al. (2012) with a significantly positive coefficient on Employee Intensity in their study samples, implying lower SG&A cost asymmetry in employee-intensive firms, our study found that Employee Intensity Coefficient is positive but failed to register any statistical significance in any of the three estimation models [OLS: 0.001 (t = 0.487) Fixed Effects: 0.001 (t = 0.257) Random Effects: 0.001 (t = 0.477)]. We conjecture that this discrepancy may be as result of the contextual differences in the sample populations between our KOSPI-listed study firms and that of S&P 1500-listed firms for Chen et al. (2012).

In the model diagnostics, we observe a moderate fit of the estimation models to the data with R^2 values of OLS: 0.450, Fixed Effects: 0.482 and Random Effects: 0.450. Adjusted R^2 values (OLS: 0.449, Fixed Effects: 0.428 and Random Effects: 0.449) are slightly lower than R^2, thereby disciplining the models and reflecting the number of predictors. The F-Statistic is highly significant in all

models [OLS: 349.825 (p = 0.000), Fixed Effects: 8.832 (p = 0.000), and Random Effects: 349.825 (p = 0.000)], indicating that the overall model is statistically significant.

Durbin-Watson Stat values (OLS: 2.392, Fixed Effects: 2.503 and Random Effects: 2.392) close to 2 suggest no autocorrelation in the residuals. Hausman Test with (Chi^2 = 28.369, p = 0.002) suggests the Fixed Effects model is preferred over the Random Effects model.

The above regression results provide an empirical validation of prior studies of Anderson et al. (2003) and Chen et al. (2012) by indicating significant cost stickiness in SG&A expenses, with SG&A costs increasing more with rising sales revenue than they decrease with falling sales revenue. However, the significant positive interaction coefficient between the decrease dummy and sales change (β_2), provides novel empirical evidence. Contrary to prior evidence, our study found a positive coefficient for β_2, suggesting that when sales revenue decrease, the firms experience a lower degree of SG&A cost asymmetry.

The Effect of Agency Problem on SG&A Asymmetric Cost Behaviour

The H1a to H1c proposed by this study states that the severity of the agency problem is positively related to the extent of SG&A cost asymmetry, even after accounting for economic factors. Consequently, the coefficient for the interaction term β_2 in Equation (1) can be framed as a function of both the agency problem and economic variables. To test H1a to H1c, this investigation closely adapting Chen et al. (2012), also extends Equation (1) with the following model.

$$\begin{aligned}\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right) &= \beta_0 + \beta_1 \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) + \beta_2 DecDummy \times \\ \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) &+ \sum_{m=3}^{5} \beta_m DecDummy \times \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) \times \\ AgencyVar_{m,i,t} &+ \sum_{p=6}^{9} \beta_p DecDummy \times \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) \times \\ EconVar_{p,i,t} &+ \sum_{q=10}^{12} \beta_q AgencyVar_{q,i,t} \sum_{s=13}^{16} EconVar_{s,i,t} + e_{i,t}\end{aligned} \tag{5}$$

In this model, *AgencyVar* represents the three agency variables: FCF, ASSUT and OPEX. *EconVar* denotes the four economic determinants used as control variables: Employee Intensity, Asset Intensity, Successive Performance and Stock Performance. The presented coefficients and *t*-statistics are calculated with firm-clustered standard errors, which correct for challenges related to heteroskedasticity and within-firm error correlation typical in panel data.

Continuous variables in the interaction terms are mean-centred before analysis to reduce multicollinearity and simplify the interpretation of main effects (Aiken & West, 1991; Chen et al., 2012). The regression result of Equation (2) is provided in Table 4.

Table 4
The effect of agency problem on SG&A asymmetric cost behaviour

Variable	Predicted sign	OLS		Fixed effect		Random effect	
		Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
Intercept		–0.000384	–0.041	–0.044***	–2.509	–0.000384	–0.040
Sales change	+	0.344***	18.869	0.319***	15.668	0.344***	18.567
DecDummy*Sales Change	-	0.222***	5.693	0.260***	6.145	0.222***	5.602
Interaction terms: (Variable*DecDummy*Sales Change):							
Free cash flow	-	0.898***	8.870	0.801***	7.286	0.898***	8.728
Asset utilisation ratio	-	–0.193***	–2.860	–0.221***	–2.947	–0.193***	–2.814
Operating expense ratio	-	0.014***	7.768	0.030***	10.232	0.014***	7.643
Employee intensity	+	0.000926	0.433	–0.00161	–0.693	0.000926	0.426
Asset intensity	-	–0.029***	–5.700	–0.034***	–6.190	–0.029***	–5.608
Successive decrease	+	0.193***	8.024	0.188***	7.288	0.193***	7.895
Stock performance	?	0.000848***	3.483	0.000715***	2.665	0.000848***	3.427
Standalone variables:							
Free cash flow		0.147***	2.590	0.146**	2.029	0.147***	2.549
Asset utilisation ratio		–0.002	–0.249	0.016	0.901	–0.002	–0.245
Operating expense ratio		0.130***	8.004	0.275***	10.393	0.130***	7.875
Employee intensity		0.1312	0.323	0.9849	0.214	0.131	0.318
Asset intensity		–0.000079	–0.754	–0.000057	–0.480	–0.0000785	–0.742
Successive decrease		0.024**	2.156	0.031***	2.498	0.024**	2.122
Stock performance		0.0000280	1.034	0.000051	0.931	0.0000280	1.018
Firm fixed effects		No		Yes		No	
Year fixed effects		No		Yes		No	
R^2		0.501		0.536		0.501	
Adjusted R^2		0.499		0.487		0.499	

(*Continued on next page*)

Table 4 (*Continued*)

Variable	Predicted sign	OLS		Fixed effect		Random effect	
		Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
F-statistic		267.618***		10.790***		267.618***	
Prob (F-statistic)		0.000		0.000		0.000	
Durbin-Watson stat		2.350		2.443		2.350	
Correlated Random Effects-Hausman Test							
Test summary	Chi^2 statistics	Chi^2 d.f.	Prob.				
Cross-section random	95.464***	16.000	0.000				

Note: Total Panel (balanced) observations = 4,279; Cross-sections = 389; *** and ** indicate significance levels at 1% and 5%, respectively.

The regression results from Table 4 aim to analyse the effect of agency problems and various economic variables on the asymmetric behaviour of SG&A expenses. This study employs three estimation models: OLS, Fixed Effects and Random Effects. The table provides coefficients and *t*-statistics for each variable and interaction term, which we will interpret based on the hypotheses and previous studies, particularly Anderson et al. (2003) and Chen et al. (2012).

Looking at the key variables and their predicted signs, Sales Change is expected to have a positive effect on SG&A costs (as found by Anderson et al. (2003) and Chen et al. (2012)). In Table 4, the coefficient is highly significant and positive across all models: OLS (Coeff: 0.344, *t*-stat: 18.869), Fixed Effects (Coeff: 0.319, *t*-stat: 15.668), and Random Effects (Coeff: 0.344, *t*-stat: 18.567). This confirms that SG&A costs increase with sales, consistent with prior literature. DecDummy*Sales Change is expected to be negative for cost asymmetry; however, the coefficient is significantly positive: OLS (Coeff: 0.222, *t*-stat: 5.693), Fixed Effects (Coeff: 0.260, *t*-stat: 6.145), and Random Effects (Coeff: 0.222, *t*-stat: 5.602). This suggests that the degree of SG&A costs asymmetry is lower in the KOSPI sample compared to the U.S. firms studied by Chen et al. (2012).

Coming to the interaction terms with agency variables, the first agency problem proxy measure is FCF. H1a predicts a negative sign, indicating increased SG&A cost asymmetry with higher FCF. Table 4 reveals that the interaction term with agency variable for FCF has a significantly positive coefficient: OLS (Coeff = 0.898, *t*-stat = 8.870), Fixed Effects (Coeff = 0.801, *t*-stat = 7.286), and Random Effects (Coeff = 0.898, *t*-stat = 8.728). This indicates a lower degree of SG&A cost asymmetry with higher FCF, contrary to the expected negative sign and the findings in the literature (Chen et al., 2012). This evidence does not support the

first study prediction. The second agency problem proxy measure is ASSUT. H1b predicts a negative sign, indicating increased SG&A cost asymmetry with better asset utilisation. The coefficient of the interaction term with ASSUT is significantly negative: OLS (Coeff = –0.193, *t*-stat = –2.860), Fixed Effects (Coeff = –0.221, *t*-stat = –2.947), and Random Effects (Coeff = –0.193, *t*-stat = –2.814). This aligns with expectations, suggesting that better asset utilisation is associated with a higher degree (increase) of SG&A cost asymmetry. This evidence supports H1b. The third agency problem variable measure is OPEX. H1c predicts a negative sign, indicating increased SG&A cost asymmetry with higher operating expenses. The coefficient of the interaction term with OPEX is significantly positive: OLS (Coeff = 0.014, *t*-stat = 7.768), Fixed Effects (Coeff = 0.030, *t*-stat = 10.232), and Random Effects (Coeff = 0.014, *t*-stat = 7.643). This indicates a lower degree of SG&A cost asymmetry with higher operating expenses, contrary to the expected negative sign. The evidence does not support H1c.

Among the four established economic variables tested, the coefficient on the Employee Intensity interaction term did not reveal any statistical significance. The coefficient across the three models of estimation, OLS (Coeff = 0.000926, *t*-stat = 0.433), Fixed Effects (Coeff = –0.00161, *t*-stat = –0.693), and Random Effects (Coeff = 0.000926, *t*-stat = 0.426), indicate no strong effect on SG&A cost behaviour. The significantly negative coefficient on Asset Intensity interaction term is: OLS (Coeff = –0.029, *t*-stat = –5.700), Fixed Effects (Coeff = –0.034, *t*-stat = –6.190), and Random Effects (Coeff = –0.029, *t*-stat = –5.608), suggests that higher asset intensity is associated with a greater degree of SG&A cost asymmetry. It means that KOSPI firms that require relatively more assets to support their activities experience greater degree of SG&A cost asymmetry. This evidence agrees with prior studies (Chen et al., 2012). The coefficient on Successive Decrease is significantly positive: OLS (Coeff = 0.193, *t*-stat = 8.024), Fixed Effects (Coeff = 0.188, *t*-stat = 7.288), and Random Effects (Coeff = 0.193, *t*-stat = 7.895), suggesting a lower degree of SG&A cost asymmetry in firms experiencing negative demand shocks in two consecutive years. This finding supports prior evidence in literature. The significantly positive coefficient on Stock Performance: OLS (Coeff = 0.000848, *t*-stat = 3.483), Fixed Effects (Coeff = 0.000715, *t*-stat = 2.665), and Random Effects (Coeff = 0.000848, *t*-stat = 3.427), suggests that the degree of SG&A cost asymmetry is lower in firms with better stock performance.

Stand-alone agency and economic variables provide a baseline understanding of how these factors individually affect SG&A cost behaviour. This helps in interpreting the interaction terms by showing how each variable influences costs independently. The coefficient on FCF : OLS (Coeff = 0.147,

t-stat = 2.590), Fixed Effects (Coeff = 0.146, *t*-stat = 2.029), and Random Effects (Coeff = 0.147, *t*-stat = 2.549), shows a significantly positive main effect on SG&A cost changes. The coefficient on OPEX: OLS (Coeff = 0.130, *t*-stat = 8.004), Fixed Effects (Coeff = 0.275, *t*-stat = 10.393), and Random Effects (Coeff = 0.130, *t*-stat = 7.875), suggests a significantly positive main on SG&A cost changes. The coefficient on Successive Decrease: OLS (Coeff: 0.024, *t*-stat: 2.156), Fixed Effects (Coeff = 0.031, *t*-stat = 2.498), and Random Effects (Coeff = 0.024, *t*-stat = 2.122), reveals a significantly positive main effect on SG&A cost changes. In terms of the model diagnostics, R^2 is about 50% for all models, indicating that the models explain about half of the variability in SG&A cost changes. Adjusted R^2 is slightly lower than R^2, reflecting the number of predictors used. F-statistic is highly significant across all models, indicating the overall model is statistically significant. Durbin-Watson stat is around 2.35, suggesting no strong evidence of autocorrelation in the residuals. The Hausman Test reveals a significant Chi^2 statistic (95.464, *p*-value: 0.000) indicates that the Fixed Effects model is preferred over the Random Effects model due to potential correlation between the predictors and the individual effects. The findings presented in Table 4 robustly support our prediction that the agency problems, alongside established economic factors, play a significant role in explaining the asymmetry in SG&A costs albeit at different degrees. The results indicate significant differences in the behaviour of SG&A costs between the KOSPI firms and U.S. firms studied by Chen et al. (2012). Specifically, the positive sign of the *DecDummy*Sales Change* and the FCF interaction terms suggest lower SG&A cost asymmetry in the Korean market, potentially due to unique ownership structures and corporate governance mechanisms prevalent in *Chaebols*. These findings highlight the importance of considering market-specific factors when studying cost behaviours and agency problems.

The Effect of Dividend Policy on SG&A Asymmetric Cost Behaviour

This regression equation investigates the interaction effect of dividend policy variables on cost asymmetry, controlling for economic determinants.

$$\begin{aligned}\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right) &= \beta_0 + \beta_1 \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) + \beta_2 DecDummy \times \\ &\log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) + \sum_{m=3}^{5} \beta_m DecDummy \times \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) \times \\ &DividendVar_{n,i,t} + \sum_{p=6}^{9} \beta_p DecDummy \times \log\left(\frac{Sales_{i,t}}{Sales_{i,t-1}}\right) \times \\ &EconVar_{p,i,t} + \sum_{d=10}^{12} \beta_d DividendVar_{d,i,t} + \sum_{s=13}^{16} \beta_s EconVar_{s,i,t} + e_{i,t}\end{aligned} \tag{6}$$

where, log ($SG\&A_{i,t}/SG\&A_{i,t-1}$) = the dependent variable representing the change is SG&A costs; log ($Sales_{i,t}/Sales_{i,t-1}$) = the change in sales revenue; *DecDummy* is a dummy variable that takes the value of 1 when sales revenue decreases from year $t-1$ to year t; $DividendVar_{n,i,t}$ represents the dividend policy variables; $EconVar_{p,i,t}$ represents the economic determinants; β_0, β_1, β_2, β_n, β_p, β_d and β_s are the coefficients to be estimated; and $e_{i,t}$ is the error term.

Tables 5, 6 and 7 present the results of the regression analysis examining the effect of dividend policy on SG&A cost asymmetry in Korean firms. Three different measures of dividend policy are considered: Cash Dividend Payment, Dividend Policy (Dummy), and DPR. Equally three estimation models are employed : OLS, LSDV (Fixed Effects) and Random Effects.

In Table 5, the regression models (OLS (1), OLS (2), OLS (3)) include interaction terms to capture the impact of these variables on the degree of SG&A cost asymmetry, alongside several control variables.

The intercept (β_0) is positive and significant across all models, indicating a baseline effect on SG&A cost behaviour. The coefficient on Sales Change (β_1) is highly significant ($p < 0.01$) and positive in all models, suggesting that SG&A costs increase as sales increase, reflecting the nature of cost behaviour. The coefficient on the interaction term (β_2) for the *DecDummy* and *Sales Change* (*DecDummy*Sales Change*) is positive and significant in models OLS (1) and OLS (3), suggesting that when sales revenue decrease, the firms experience a lower degree of SG&A cost asymmetry. This evidence is consistent with that of Tables 3 and 4.

Empirical evidence from Table 5 reveals more regarding the interaction terms with dividend policy variables. The coefficient on the Cash Dividend Payment interaction term [OLS (1)], is significantly positive at the 1% level (Coeff = 11.631, *t*-stat = 8.631), suggesting that firms paying higher cash dividends have lower SG&A cost asymmetry, contrary to the hypothesis that higher dividend payouts would constrain managers and increase cost asymmetry. The coefficient on the *Dividend Policy (Dummy)* interaction term [OLS (2)], is also significantly positive at the 1% level (Coeff = 0.222, *t*-stat = 10.279), indicating that firms with a dividend policy have lower SG&A cost asymmetry. The coefficient for the DPR interaction term [OLS (3)], is significantly positive at the 5% level (Coeff = 0.029, *t*-stat = 1.974), again suggesting that a higher payout ratio is associated with lower SG&A cost asymmetry.

Table 5
The effect of dividend policy on SG&A asymmetric cost behaviour (OLS Estimation)

Variable	Predicted sign	OLS (1)		OLS (2)		OLS (3)	
		Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
Intercept	?	0.030***	5.006	0.030***	3.547	0.035***	6.314
Sales change	+	0.344***	17.77	0.341***	17.683	0.342***	17.52
DecDummy*Sales Change	-	0.154***	3.678	0.028	0.613	0.231***	5.573
Interaction terms: (Variable*DecDummy*Sales Change):							
Cash dividend payment	-	11.631***	8.631				
Dividend policy (Dummy)	-			0.222***	10.279		
Dividend payout ratio	-					0.029**	1.974
Employee intensity		0.00107	0.523	–0.006***	–2.63	0.00145	0.701
Asset intensity		–0.027***	–7.318	–0.029***	–7.757	–0.023***	–6.265
Successive decrease		0.193***	7.818	0.097***	4.34	0.103***	4.559
Stock performance		0.000352	1.26	0.000726***	2.802	0.00134***	5.221
Standalone variables:							
Cash dividend payment		0.428	1.599				
Dividend policy (Dummy)				0.01	1.046		
Dividend payout ratio						0.000268	0.751
Employee intensity		0.19406	0.045	0.31208	0.722	0.35186	0.805
Asset intensity		–0.000044	–0.395	–0.000123	–1.111	–0.000133	–1.192
Successive decrease		0.026**	2.306	0.018	1.59	0.018	1.531
Stock performance		0.0000204	0.703	0.0000284	0.981	0.0000423	1.461
Firm fixed effects		No		No		No	
Year fixed effects		No		No		No	
R^2		0.46		0.464		0.451	
Adjusted R^2		0.458		0.462		0.449	
F-statistic		302.680***		307.482***		292.013***	
Prob(F-statistic)		0		0		0	
Durbin-Watson stat		2.388		2.419		2.391	

Note: Total Panel (balanced) observations = 4,279; Cross-sections = 389; *** and ** indicate significance levels at 1% and 5%, respectively.

It is worth noting here that prior literature had investigated the effect of cost stickiness on cash dividend policy and found that stickier costs lead to lower cash dividends, primarily due to managers' preference to retain cash for self-use (Liu et al., 2022). Our analysis indicates that firms with higher cash dividend payments, a dividend policy in place, and higher DPRs exhibit lower SG&A

cost asymmetry. This implies that in the Korean context, dividend policies might be associated with better cost management practices, reducing the asymmetry of SG&A costs. While evidence from prior studies suggested that the negative impact of cost stickiness on dividend payouts is exacerbated by poor corporate governance, our study's positive interaction terms with dividend policy variables suggest that better corporate governance (implied by consistent dividend payments) is associated with reduced SG&A cost asymmetry. This aligns with the notion that effective governance mechanisms can mitigate the adverse effects of managerial self-interest on cost behaviour (Mitton, 2004; Chen et al., 2012; Hwang et al., 2013; Liu et al., 2022). While evidence from prior studies suggests that managers of firms with stickier costs and poor governance retain cash for self-use rather than paying dividends, the significant positive interaction terms for Korean firms imply that dividend policies may act as a mechanism to align managers' interests with those of shareholders, promoting better cost management and reducing cost asymmetry (Chen et al., 2012; Hwang et al., 2013; Liu et al., 2022).

Taken together, while Liu et al. (2022) highlight the negative impact of cost stickiness on cash dividends in Chinese firms, exacerbated by poor corporate governance, our analysis of Korean firms suggests that consistent dividend policies are associated with lower SG&A cost asymmetry. This implies better cost management practices, potentially due to stronger corporate governance mechanisms that align managerial actions with shareholder interests. Among the four economic variables tested, the coefficient on the Employee Intensity interaction term reveals mixed results in the models. The coefficient is negative and significant in OLS (2) (Coeff = –0.006, *t*-stat = –2.630) suggesting that the degree of SG&A cost asymmetry is higher in firms that require relatively more employees to support operations. However, this economic variable is not significant in OLS (1) and OLS (3) at any statistical significance. The significantly negative coefficient on Asset Intensity is consistent across all models and suggests a greater degree of SG&A cost asymmetry in firms that require greater assets to support their operations. The coefficient on Successive Decrease is positive and significant in all models, suggesting a lower degree of SG&A cost asymmetry in firms absorbing negative demand shocks in two consecutive years. The significantly positive coefficient on Stock Performance in OLS (2) and OLS (3), suggests that the degree of SG&A cost asymmetry is lower in firms with impressive stock performance.

In the model diagnostics, the R^2 values (0.460, 0.464, 0.451) and Adjusted R^2 values (0.458, 0.462, 0.449) indicate that the models explain a substantial portion of the variance in SG&A cost behaviour. The high F-statistic values (302.680, 307.482, 292.013) and their corresponding *p*-values (0.000) indicate that the models are overall significant. Durbin-Watson stat: Values close to 2 (2.388, 2.419, 2.391) suggest no severe autocorrelation in the residuals.

To confirm the robustness of the results, the effect of dividend policy on SG& cost asymmetry is estimated using the LSDV (Fixed Effects) and Random Effects models as well. In the overall model diagnostics, the R^2 and Adjusted R^2 values for OLS, Fixed Effects, and Random Effects models indicate a moderate fit to the data, with values ranging from 0.428 to 0.482. The F-statistic is highly significant across all models, confirming their overall statistical significance. Given the consistency in dividend policy proxies' coefficient effects and significance levels across the three estimation models (OLS, Fixed effects and Random effects), and considering the higher F-statistic value for the OLS model, we proceed to report the results based on the OLS estimation output. This approach is justified as it simplifies the presentation without compromising the robustness and validity of our findings.

Table 6 provides the fixed effect estimation of the dividend policy effect on SG&A cost asymmetry. The trends observed shows robustness to those of Table 5.

Table 6
The effect of dividend policy on SG&A asymmetric cost behaviour (Fixed Effect Estimation)

Variable	Predicted sign	Fixed effect (1)		Fixed effect (2)		Fixed effect (3)	
		Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
Intercept		0.032***	4.098	0.021*	1.697	0.038***	5.835
Sales change		0.320***	14.659	0.320***	14.705	0.316***	14.378
DecDummy*Sales Change		0.188***	4.100	0.061	1.226	0.273***	5.982
Interaction terms:(Variable*DecDummy*Sales Change):							
Cash dividend payment		12.614***	8.663				
Dividend policy (dummy)				0.224***	9.582		
Dividend payout ratio						0.028**	1.741
Employee intensity		–0.00066	–0.296	–0.007	–3.119	–0.00018	–0.079
Asset intensity		–0.032***	–8.074	–0.034***	–8.364	–0.028***	–7.043
Successive decrease		0.202***	7.589	0.097***	4.028	0.104***	4.267
Stock performance		0.000152	0.489	0.000677***	2.363	0.00129***	4.525

(*Continued on next page*)

Table 6 (*Continued*)

Variable	Predicted sign	Fixed effect (1)		Fixed effect (2)		Fixed effect (3)	
		Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
Standalone variables:							
Cash dividend payment		0.467	1.051				
Dividend policy (dummy)				0.024	1.565		
Dividend payout ratio						0.000031	0.081
Employee intensity		–0.9716997	–0.197	–0.2569475	–0.523	–0.3250904	–0.654
Asset intensity		–0.0000027	–0.021	–0.000096	–0.758	–0.000110	–0.866
Successive decrease		0.044	3.309	0.033***	2.484	0.033***	2.465
Stock performance		0.0000213	0.366	0.0000358	0.615	0.0000296	0.503
Firm fixed effects		Yes		Yes		Yes	
Year fixed effects		Yes		Yes		Yes	
R^2		0.492		0.494		0.483	
Adjusted R^2		0.438		0.441		0.428	
F-statistic		9.138***		9.217***		8.799***	
Prob(F-statistic)		0.000		0.000		0.000	
Durbin-Watson stat		2.504		2.513		2.501	

Note: Total Panel (balanced) observations = 4,279; Cross-sections = 389; ***, ** and * indicate significance levels at 1% , 5% and 10%, respectively.

Table 7 provides the random effect estimation of the dividend policy effect on SG&A cost asymmetry. The trends observed shows robustness to those of Table 5.

In Table 5, 6 and 7, the standalone dividend policy variables (Cash Dividend Payment, Dividend Policy Dummy and DPR) do not show significant coefficients, implying that their direct effects are not as pronounced as their interaction effects with the *DecDummy* and *Sales Change*.

Table 7
The effect of dividend policy on SG&A asymmetric cost behaviour (Random Effect Estimation)

Variable	Predicted sign	Random effect (1)		Random effect (2)		Random effect (3)	
		Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
Intercept		0.030***	4.899	0.030***	3.466	0.035***	6.174
Sales change		0.344***	17.393	0.341***	17.280	0.342***	17.133
DecDummy*Sales Change		0.154***	3.600	0.028	0.599	0.231***	5.450
Interaction terms:(Variable*DecDummy*Sales Change):							
Cash dividend payment		11.631***	8.448				
Dividend policy (dummy)				0.222***	10.045		
Dividend payout ratio						0.029**	1.930
Employee intensity		0.00107	0.512	0.006***	2.570	0.00145	0.686
Asset intensity		–0.027***	–7.163	–0.029***	–7.580	–0.023***	–6.127
Successive decrease		0.193***	7.652	0.097***	4.241	0.103***	4.459
Stock performance		0.000352	1.233	0.000726***	2.738	0.00134***	5.106
Standalone variables:							
Cash dividend payment		0.428	1.565				
Dividend policy (dummy)				0.010	1.023		
Dividend payout ratio						0.000268	0.734
Employee intensity		0.19406	0.044	0.31208	0.706	0.35186	0.787
Asset intensity		-0.0000440	–0.386	–0.000123	–1.086	–0.000133	–1.165
Successive decrease		0.026***	2.257	0.018	1.553	0.018	1.497
Stock performance		0.0000204	0.688	0.0000284	0.958	0.0000423	1.428
Firm fixed effects		No		No		No	
Year fixed effects		No		No		No	
R^2		0.460		0.464		0.451	
Adjusted R^2		0.458		0.462		0.449	
F-statistic		302.680 ***		307.482***		292.013***	
Prob(F-statistic)		0.000		0.000		0.000	
Durbin-Watson stat		2.388		2.419		2.391	

Note: Total Panel (balanced) observations = 4,279; Cross-sections = 389 ***, and ** indicate significance levels at 1% and 5%, respectively.

Taken together, the regression analysis results suggest that dividend policy variables significantly influence the degree of SG&A cost asymmetry in Korean firms. Contrary to initial expectations, higher dividend payouts (measured through various proxies) are associated with lower SG&A cost asymmetry. These findings highlight the unique aspects of cost behaviour in the Korean market, possibly due to differences in ownership structures and agency problems compared to the U.S. context.

The Effect of Agency Problems on SG&A Cost Asymmetry Within *Chaebol* and Non-*Chaebol* Firms

The third objective of this study is to empirically investigate whether the concentrated ownership structures in Korean *Chaebols* lead to different SG&A cost behaviours compared to firms with more dispersed ownership. This analysis provides valuable insights into how corporate governance and ownership dynamics influence cost management practices in the context of agency problems. A priori, the expected positive sign on *Sales Change* indicates the normal reaction to changes in sales. The expected negative sign on *DecDummy*Sales Change* suggests higher SG&A cost asymmetry (stickiness) when sales decrease. But signs on the Interaction Terms (*Variable*DecDummy*Sales Change*) can vary based on the degree of control exercised by the dominant shareholders.

In Table 8, for both *Chaebols* and non-*Chaebols*, the coefficient on Sales Change is positive and highly significant (*t*-stat = 10.984 for *Chaebols* and *t*-stat = 16.497 for non-*Chaebols*). This indicates a strong positive relationship between sales change and SG&A cost changes, suggesting that as sales increase, SG&A costs also increase significantly for both types of firms.

Table 8
The effect of agency problems on SG&A Cost Asymmetry (OLS Estimation)

Variable	Predicted sign	Chaebols		Non-Chaebols	
		Coefficient	*t*-stat	Coefficient	*t*-stat
Intercept	?	0.015	1.170	–0.020	–1.398
Sales Change	+	0.248***	10.984	0.470***	16.497
DecDummy*Sales Change	–	0.347	1.360	0.071	1.513
Interaction terms: (Variable*DecDummy*Sales Change):					
Free cash flow	–	1.177***	3.533	0.843***	7.062
Asset utilisation ratio	–	0.015	0.128	–0.248**	–2.317
Operating expense ratio	–	–0.032	–0.937	–0.015***	–6.718
Employee intensity	+	0.001	0.131	0.004	1.512

(*Continued on next page*)

Table 8 (*Continued*)

Variable	Predicted sign	Chaebols		Non-Chaebols	
		Coefficient	*t*-stat	Coefficient	*t*-stat
Asset intensity	–	0.023	0.725	–0.029***	–4.059
Successive decrease	+	0.0000394	0.000749	0.323***	10.521
Stock performance	?	–0.00167***	–3.538	–0.00131***	–4.071
Standalone variables:					
Free cash flow		0.122	1.528	0.154**	1.909
Asset utilisation ratio		0.004	0.491	–0.009	–0.699
Operating expense ratio		0.128***	4.806	–0.141***	–6.860
Employee intensity		–0.538	–0.053	–0.324	–0.436
Asset intensity		0.0000313	0.256	–0.0000218	–0.112
Successive decrease		–0.000923	–0.058	–0.0499***	–3.196
Stock performance		–0.0000490	–0.940	–0.0000456	–1.426
Firm fixed effects		No		No	
Year fixed effects		No		No	
R^2		0.472		0.544	
Adjusted R^2		0.467		0.541	
F-statistic		106.856***		173.796***	
Prob(F-statistic)		0.000		0.000	
Durbin-Watson stat		2.073		2.213	

Looking at the interaction terms, Table 8 reveals that the coefficient on the FCF interaction term is significantly positive at the 1% level for both *Chaebols* (Coeff = 1.177, *t*-stat = 3.533) and non-*Chaebols* (Coeff = 0.843, *t*-stat = 7.062) suggesting that higher FCF is associated with lower SG&A cost asymmetry. However, *Chaebols* have a higher coefficient (1.177***) compared to non-*Chaebols* (0.843***), indicating a stronger effect in *Chaebols*. The coefficient on ASSUT interaction term for non-*Chaebols* is significantly negative (Coeff = –0.248**, *t* = –2.317), indicating higher SG&A cost asymmetry, while *Chaebols* show no significant effect. This suggests that efficient asset utilisation is associated with higher SG&A cost asymmetry in non-*Chaebols*. The coefficient on the OPEX interaction term for non-*Chaebols* is significantly negative (Coeff = –0.015, *t*-stat = –6.718) indicating higher SG&A cost asymmetry, whereas *Chaebols* do not show a significant effect. This suggests that higher operating expenses are associated with higher SG&A cost asymmetry in non-*Chaebols*. The coefficient on Asset Intensity interaction term for *Chaebols* is not significant (*t*-stat = 0.725), but for non-*Chaebols*, it is significantly negative (Coeff = –0.029, *t*-stat = –4.059). This suggests that non-*Chaebol* firms that require relatively more assets to support their activities are associated with a greater degree of SG&A cost asymmetry.

The coefficient on Successive Decrease for *Chaebols*, is not significant (*t*-stat = 0.000749), while for non-*Chaebols*, it is significantly positive (Coeff = 0.323, *t*-stat = 10.521). This suggests a lower degree of SG&A cost asymmetry in non-*Chaebol* firms experiencing negative demand shocks in two consecutive years. The significantly negative coefficients on Stock Performance for both *Chaebols* (Coeff = –0.00167, *t*-stat = –3.538) and non-*Chaebols* (Coeff = 0.00131, *t*-stat = –4.071) suggest that better stock performance is associated with higher degree of SG&A cost asymmetry, with a slightly stronger impact in non-*Chaebols*.

Stand-alone agency and economic variables provide a baseline understanding of how these factors individually affect SG&A cost behaviour. This helps in interpreting the interaction terms by showing how each variable influences costs independently. While FCF does not significantly influence SG&A cost changes in *Chaebol* firms, it has a significant positive effect in non-*Chaebol* firms at the 5% level (Coeff = 0.154, *t*-stat = 1.909). This indicates a significantly positive main effect on SG&A cost changes. The coefficient on OPEX for *Chaebol* firms (Coeff = 0.128, *t*-stat = 4.806) indicates a significantly positive main effect on SG&A cost changes whereas in non-*Chaebol* firms the coefficient on OPEX (Coeff = –0.141, *t*-stat = –6.860) implies a significantly negative main effect on SG&A cost changes. The coefficient on Successive Decrease (Coeff: –0.0499, *t*-stat = –3.196) suggests a significantly negative main effect on SG&A cost changes in non-*Chaebol* firms while it is not significant in *Chaebol* firms.

The model diagnostics for Table 8 indicate that both regression models fit the data well, with R^2 values of 0.472 for *Chaebol* firms and 0.544 for non-*Chaebol* firms. The adjusted R^2 values are slightly lower but still indicate a good fit. The F-statistics for both models are highly significant, suggesting that the included predictors are jointly effective in explaining the variability in SG&A cost asymmetry. The Durbin-Watson statistics for both models are close to 2, indicating no significant autocorrelation in the residuals. Overall, the diagnostic measures suggest that the regression models are robust and reliable for analysing the effect of agency problems on SG&A cost asymmetry in both *Chaebol* and non-*Chaebol* firms.

DISCUSSION AND IMPLICATIONS

The findings support the hypothesis that the unique ownership structures in Korean firms moderate the relationship between agency problems and SG&A cost asymmetry. Specifically, the results highlight differences in how agency problems manifest in *Chaebol* versus non-*Chaebol* firms, providing evidence that concentrated ownership structures in *Chaebols* lead to distinct cost behaviours

compared to firms with more dispersed ownership. The positive and significant coefficients for FCF in both *Chaebols* and non-*Chaebols* suggest that higher FCF reduces SG&A cost asymmetry, supporting the hypothesis that ownership structures moderate this relationship. However, the stronger effect in *Chaebols* indicates that controlling families in these firms may exert more stringent control over cash flow usage, thereby mitigating cost asymmetry more effectively than in non-*Chaebols*.

The empirical evidence from the analysis of the third objective of our study has interesting implications for corporate governance. In the case of *Chaebols*, the findings imply that tighter control by dominant shareholders can lead to more disciplined cost management practices, reducing cost asymmetry. However, the negative effect of stock performance on cost asymmetry suggests potential overinvestment or resource hoarding, since high stock prices can exacerbate managerial empire building incentives rather than maximising shareholder value, highlighting areas for improving governance practices.

For non-*Chaebols*, the significant negative effects of asset utilisation, OPEX, and asset intensity on cost asymmetry indicate that these firms face higher cost management challenges due to less stringent monitoring. Enhancing corporate governance mechanisms to improve oversight and efficiency in these areas could mitigate cost asymmetry.

The findings of our study also portend significant implications for managers and shareholders. Managers in *Chaebols* should leverage the tighter control environment to optimise resource allocation and cost management. Shareholders in non-*Chaebols* should advocate for stronger governance frameworks to ensure efficient use of assets and operating expenses, reducing cost asymmetry.

The results of our investigation has useful contributions to literature. Firstly, in the agency theory literature, the study provides empirical evidence on how ownership concentration moderates the relationship between agency problems and cost behaviour, contributing to a better understanding of agency dynamics in different ownership structures. Additionally, the findings extend the cost stickiness literature by showing how ownership structures influence cost asymmetry, particularly in emerging markets like Korea. Finally, the differential effects observed between *Chaebols* and non-*Chaebols* highlight the importance of tailored governance strategies to address unique challenges posed by different ownership structures, contributing to the broader discourse on effective corporate governance. Taken together, the results from Table 8 provide robust evidence that the ownership structures in Korean firms significantly influence the relationship between agency problems and SG&A cost asymmetry. This has important

implications for corporate governance, cost management practices and policy-making in emerging markets. The study contributes valuable insights to the literature on agency theory, cost stickiness, and corporate governance, offering a foundation for future research in this domain.

Table 9 provides the LSDV estimation of the effect of agency problems on SG&A cost asymmetry within *Chaebol* and Non-*Chaebol* firms. The trends observed shows robustness to those of Table 8.

Table 9
The effect of agency problems on SG&A cost asymmetry (Fixed Effect Estimation)

Variable	Predicted sign	*Chaebols*		Non-*Chaebol*	
		Coeff.	*t*-stat	Coeff.	*t*-stat
Intercept		–0.031	1.258	–0.069***	–2.483
Sales Change	+	0.225***	8.652***	0.457***	13.903
DecDummy*Sales Change	–	0.486*	1.662	0.114**	2.080
Interaction terms: (Variable*DecDummy*Sales Change):					
Free cash flow	–	1.314***	3.618	0.666***	5.034
Asset utilisation ratio	–	–0.105	–0.790	–0.367***	–3.025
Operating expense ratio	–	–0.014	–0.377	–0.031***	8.016
Employee intensity	+	0.000288	0.023	0.000825	0.261
Asset intensity	–	0.00750	0.215	–0.0415***	–5.227
Successive decrease	+	0.0102	0.178	0.316***	9.293
Stock performance	?	–0.00204***	–3.975	–0.00124***	–3.370
Standalone variables:					
Free cash flow		0.082	0.813	0.169*	1.604
Asset utilization ratio		0.009	0.454	–0.021	–0.666
Operating expense ratio		0.347***	7.406	–0.285***	–8.040
Employee intensity		–0.471	–0.413	–0.215	–0.247
Asset intensity		0.000130	0.933	–0.00000497	–0.022
Successive decrease		0.024	1.309	0.050***	2.747
Stock performance		–0.0000251	–0.185	–0.00000778	–0.103
Firm fixed effects		Yes		Yes	
Year fixed effects		Yes		Yes	
R^2		0.538		0.588	
Adjusted R^2		0.466		0.529	
F-statistic		7.442***		9.952***	
Prob(F-statistic)		0.000		0.000	
Durbin-Watson stat		2.283		2.342	

Note: Panel Observation*: Chaebols* = 1,931 and non-*Chaebols* = 2,348; Cross-sections = 389; ***, ** and * indicate significance levels at 1%, 5% and 10%, respectively.

Table 10 provides the random effect estimation of the impact of agency problems on SG&A cost asymmetry within *Chaebol* and non-*Chaebol* firms. The trends observed shows robustness to those of Table 8.

Table 10
The effect of agency problems on SG&A cost asymmetry (Random Effect Estimation)

Variable	Predicted sign	Chaebols		Non-Chaebols	
		Coeff.	*t*-stat	Coeff.	*t*-stat
Intercept		0.015	1.162	–0.020	–1.372
Sales Change	+	0.248***	10.903	0.470***	16.191
DecDummy*Sales Change	–	0.347	1.350	0.071	1.485
Interaction terms: (Variable*DecDummy*Sales Change):					
Free cash flow	–	1.177***	3.507	0.843***	6.931
Asset utilisation ratio	–	–0.015	–0.127	–0.248**	–2.274
Operating expense ratio	–	–0.032	–0.930	–0.015***	–6.594
Employee intensity	+	0.00145	0.130	0.00422	1.484
Asset intensity	–	0.023	0.720	–0.029***	–3.984
Successive decrease	+	0.0000394	0.001	0.323***	10.326
Stock performance	?	–0.00167***	–3.512	–0.00131***	–3.996
Standalone Variables:					
Free cash flow		0.122	1.517	0.154*	1.874
Asset utilisation ratio		0.00446	0.487	–0.00924	–0.686
Operating expense ratio		0.128***	4.770	–0.141***	–6.733
Employee intensity		–0.538	–0.052	–0.324	–0.428
Asset intensity		0.0000313	0.255	0.0000218	0.110
Successive decrease		–0.000923	–0.057	0.0499***	3.137
Stock performance		–0.0000490	–0.934	–0.0000456	–1.399
Firm fixed effects		No		No	
Year fixed effects		No		No	
R^2		0.472		0.544	
Adjusted R^2		0.467		0.541	
F-statistic		106.856***		173.796***	
Prob(F-statistic)		0.000		0.000	
Durbin-Watson stat		2.073		2.213	

Note: Panel Observation: *Chaebols* = 1,931 and non-*Chaebols* = 2,348; Cross-sections = 389; ***, ** and * indicate significance levels at 1%, 5% and 10%, respectively.

Model Diagnostics and Performances

In Table 11, we provide the summary of the model diagnostics and performances. The fixed effect model has the highest R^2 values for both *Chaebol* and non-*Chaebol* firms, indicating it best explains the variance in SG&A cost asymmetry by accounting for firm-specific characteristics. The OLS and random effect models show identical performance, suggesting that the random effects do not significantly differ from the pooled OLS estimation in this context. It has implications for the objectives of our study. The results confirm that ownership structures (*Chaebols* vs. non-*Chaebols*) have a significant impact on the relationship between agency problems and SG&A cost asymmetry. The higher explanatory power in non-*Chaebol* firms, as indicated by the R^2 values, suggests that these firms may have more variability in their cost behaviour related to agency issues compared to *Chaebols*. There are practical implications for corporate governance, for example, the findings suggest that tailored strategies are needed for *Chaebols* and non-*Chaebols* to address agency problems and cost management. Managers and shareholders should consider the unique ownership dynamics when designing policies to mitigate cost asymmetry. In emerging markets, these insights can inform governance reforms to enhance transparency and accountability, potentially reducing agency costs.

Table 11
Model diagnostics and performances

Model		*Chaebol* firms	Non-*Chaebol* firms
OLS	R^2	0.472	0.544
	Adjusted R^2	0.467	0.541
	F-statistic	106.856***	173.796**
	Prob (F-statistic)	0.000	0.000
Fixed effect	R^2	0.538	0.588
	Adjusted R^2	0.466	0.529
	F-statistic	7.442***	9.952***
	Prob (F-statistic)	0.000	0.000
Random effect	R^2	0.472	0.544
	Adjusted R^2	0.467	0.541
	F-statistic	106.856***	173.796***
	Prob (F-statistic)	0.000	0.000

The Hausman test results are significant for both *Chaebol* (Chi^2 statistic: 69.909, $p < 0.001$) and non-*Chaebol* firms (Chi^2 statistic: 39.025, $p = 0.001$) (see Table 12). This suggests that the fixed effects model is preferred over the random effects model because the assumption of no correlation between the random effects and the regressors is violated.

Table 12
Hausman test results for Chaebol and non-Chaebol firms

Correlated Random Effects-Hausman Test							
	Chaebol firms				Non-*chaebol* firms		
Test summary	Chi^2 statistics	Chi^2 d.f.	Prob.	Test summary	Chi^2 statistics	Chi^2 d.f.	Prob.
Cross-section random	69.909***	16	0.000	Cross-section random	39.025***	16	0.001

Note: For *Chaebols* firms: Total Panel observations = 1,931; Cross-sections = 389; *** indicate significance levels at 1%; For non-*Chaebols* firm: Total Panel observations = 2,348; Cross-sections = 389; *** indicate significance levels at 1%.

Additional Robustness Tests

Addressing endogeneity in Equation 2 using Generalised Method of Moments

Equation 2 in our study, which examines the relationship between agency problems and SG&A cost asymmetry, assumes the exogeneity of FCF. However, prior literature (e.g., Jensen, 1986; Chen et al., 2012) suggests that FCF is likely endogenous. It can be influenced by firm size, leverage and investment opportunities, creating potential bias in our regression estimates. Two specific issues needs to be addressed here. The first one is the endogeneity of FCF. In this case, FCF may be influenced by the firm's operational performance, investment decisions and financing activities. Ignoring this endogeneity can lead to biased and inconsistent parameter estimates, thus misrepresenting the true relationship between FCF and SG&A cost asymmetry. The second issue is the unobserved firm effects. Fixed effect regression models (LSDV) control for individual firm effects but can introduce endogeneity by correlating demeaning operations with the error term, especially if there are time-invariant unobserved characteristics affecting SG&A costs. In order to address these concerns, we employ the GMM estimator. The GMM approach helps mitigate endogeneity by using instrumental variables and first-differencing to control for unobserved heterogeneity.

The methodological approach for GMM estimation in this study is the Dynamic Panel Data GMM approach. We implement a dynamic panel data GMM approach to utilise past values of the independent variables as instruments. Specifically, one-period lag values are selected to address potential endogeneity issues. One of the robust techniques is the Difference GMM method. Following Arellano and Bond (1991) and Arellano and Bover (1995), the difference GMM method transforms the regression equation by first-differencing to remove unobserved firm-specific effects. This method also helps to establish equal-sided conditions between the explanatory variables and the error term.

In the instrument specification, the instrument list includes lagged values of the dependent variable (LOG SG&A CHANGE) and independent variables, including the interaction terms with *DecDummy* and *Sales Change*. The GMM regression equation can be summarised as follows:

$$\begin{aligned} &\Delta LOGSGACHG_{it} = \alpha + \beta \Delta Sales\ Change_{it-1} + \\ &\gamma \Delta (DecDummy \times Sales\ Change)_{it-1} + \delta \Delta (Interaction\ Terms)_{it-1} + \\ &\theta \Delta (Standalone\ Variables)_{it-1} + \epsilon_{it} \end{aligned} \tag{4}$$

where $LOGSGACHG_{it}$ is the SG&A Cost Change and the dependent variable.

Table 13 presents the result of the GMM regression analysis. SG&A Change(–1), the lagged dependent variable is negative and significant, indicating persistence in SG&A cost changes. *Sales Change* is positive and significant, confirming that SG&A costs increase with sales. *DecDummy*Sales Change* is positive and marginally significant, suggesting some degree of lower cost stickiness when sales decrease.

The coefficient on FCF interaction terms is positive and highly significant, indicating that higher FCF is associated with lower SG&A cost asymmetry.

The coefficient on ASSUT is negative and significant, suggesting efficient asset utilisation is linked to higher SG&A cost asymmetry. The coefficient on OPEX is positive and significant, showing higher operating expenses are linked to lower cost asymmetry. The coefficient on Asset Intensity is negative and significant indicating higher degree of SG&A cost asymmetry. It suggests that KOSPI firms that require relatively more assets to support their activities experience greater degree of SG&A cost asymmetry. The coefficient on Successive Decrease interaction term is significantly positive: (Coeff: 0.191, *t*-stat: 2.865), suggesting a lower degree of SG&A cost asymmetry in firms experiencing negative demand

shocks in two consecutive years. The coefficient on Stock Performance interaction term is positive and significant (Coeff: 0.001, *t*-stat: 1.912), suggesting that better stock performance is linked to lower cost asymmetry.

Table 13
The effect of agency problem on SG&A asymmetric cost behaviour

Variable	Predicted sign	Generalised method of moments estimation	
		Coefficient	*t*-stat
SG&A Change (–1)		–0.056***	–2.885
Sales Change	+	0.098**	2.123
DecDummy*Sales Change	–	0.228*	1.844
Interaction terms: (Variable*DecDummy*Sales Change):			
Free cash flow	–	1.681***	3.962
Asset utilisation ratio	–	–0.583***	–2.781
Operating expense ratio	–	0.086***	4.649
Employee intensity	+	0.007	0.947
Asset intensity	-	–0.007**	–2.249
Successive decrease	+	0.191***	2.865
Stock performance	?	0.001**	1.912
Standalone variables:			
Free cash flow		0.139*	1.896
Asset utilisation ratio		–0.070	–0.557
Operating expense ratio		0.802***	4.666
Employee intensity		0.498	0.350
Asset intensity		–0.000108	–0.397
Successive decrease		–0.007	–0.220
Stock performance		–0.001**	–2.133
J-statistic		77.713***	
Prob (J-statistic)		0.001	
Instrument rank		61.000	

Note: Total Panel observations = 3,496; Cross-sections = 389; ***, ** and * indicate significance levels at 1%, 5% and 10%, respectively.

In terms of the model performance and diagnostics, the J-statistic of 77.713 (p = 0.001) indicates that the instruments are valid and the model is correctly specified. With an instrument rank of 61, the model employs a sufficient number of instruments to account for endogeneity. The analysis shows the AR (1) and AR (2) statistics, measuring first- and second-order serial correlation in the residuals of the dynamic panel model. In the GMM estimation, a significant AR (1) statistic indicates first-order autocorrelation, while an insignificant AR (2) statistic

suggests the absence of second-order autocorrelation, supporting the validity of the model's instruments. Taken together, the GMM estimation effectively addresses the endogeneity of FCF by using lagged values as instruments, ensuring more reliable and consistent parameter estimates. The coefficients of the agency interaction terms (FCF and OPEX) support the first hypothesis which states that the severity of the agency problem is positively related to the extent of SG&A cost asymmetry, even after accounting for economic factors.

Additional GMM Regression Analysis and Validation

We conducted additional GMM regression analyses to validate our earlier findings, focusing on two aspects: the effect of dividend policy on SG&A asymmetric cost behaviour and the effect of agency problems on SG&A cost asymmetry between *Chaebol* and non-*Chaebol* firms. These analyses were performed to ensure the robustness and consistency of our initial results from the OLS, LSDV and Random Effect models.

The effect of dividend policy on SG&A asymmetric cost behaviour

The additional GMM regression study confirmed that the association between dividend policy and SG&A asymmetric cost behaviour is consistent with the findings from the OLS, LSDV and Random Effect models in Tables 5, 6 and 7. The consistency of various methodologies highlights the robustness of our findings on how dividend policy influences cost behaviour, supporting our second hypothesis and suggesting that dividend payouts can alleviate agency problems by limiting cash flow available for potentially inefficient expenditures.

The effect of agency problems on SG&A cost asymmetry within Chaebol and non-Chaebol firms

The GMM analysis on the impact of agency problems on SG&A cost asymmetry within *Chaebol* and non-*Chaebol* firms supports the earlier results, confirming that ownership structures in Korean firms moderate this relationship. Specifically, *Chaebols*, with their concentrated ownership, exhibit different cost behaviours compared to non-*Chaebols*, reflecting the influence of dominant shareholders on cost management. These findings, consistent with those in Tables 8, 9 and 10, and supporting our third hypothesis, demonstrate that the unique ownership and governance structures in Korean firms significantly affect SG&A cost behaviour, with *Chaebols* showing distinct patterns of cost stickiness compared to non-*Chaebols.*

The additional GMM regression analyses provide robust validation of the initial results. The findings consistently show that both dividend policy and agency problems have significant impacts on SG&A asymmetric cost behaviour, regardless of the estimation method used. The results from the GMM analyses align closely with those from OLS, LSDV and Random Effect models, reinforcing the reliability of our conclusions. This consistency confirms that our findings are not sensitive to the estimation technique, thereby enhancing their generalisability. By addressing potential endogeneity concerns through GMM, we further substantiate our results, ensuring that the observed relationships are not the consequences of omitted variable bias or reverse causality. For the sake of brevity, these new results (untabulated) are not presented in detail, although they are duly acknowledged for confirming our earlier results.

CONCLUSION

This study explores the relationship between agency problems, dividend policy, and SG&A cost asymmetry within Korean firms. The investigation focuses on three specific objectives. The first objective investigates whether SG&A cost asymmetry in Korean firms is positively associated with agency problems, after controlling for known economic determinants. The findings reveal that higher FCF, contrary to expectations, is associated with lower SG&A cost asymmetry. This suggests that firms with more available cash may experience less managerial opportunism than anticipated. In line with predictions, better asset utilisation is linked to increased SG&A cost asymmetry, indicating more significant cost stickiness. Unexpectedly, higher operating expenses correlate with lower SG&A cost asymmetry, implying that increased expenses might lead to tighter cost management rather than increased inefficiencies.

The second objective examines whether dividend policy influences SG&A cost asymmetry. The results show that higher cash dividends are associated with lower SG&A cost asymmetry, suggesting that dividend payouts might discipline managers and reduce cost stickiness. Firms with a formal dividend policy also show lower SG&A cost asymmetry, reinforcing the idea that dividends can serve as a governance mechanism. Additionally, a higher payout ratio correlates with lower SG&A cost asymmetry, further supporting the role of dividends in mitigating agency problems.

The third objective analyses whether the unique ownership and governance structures of Korean firms alter the relationship between agency problems and SG&A cost asymmetry. The findings indicate that both *Chaebols* and non-*Chaebols* with higher FCF exhibit lower SG&A cost asymmetry. However, the

effect is stronger in *Chaebols*, suggesting that concentrated ownership might enhance control over cost behaviours. In non-*Chaebols*, better asset utilisation leads to higher SG&A cost asymmetry, while no significant effect is observed in *Chaebols*. Furthermore, higher operating expenses result in greater SG&A cost asymmetry in non-*Chaebols*, whereas *Chaebols* do not show a significant impact.

This study makes significant contributions to the literature on agency theory, cost stickiness and corporate governance. It extends the understanding of how agency problems and dividend policies influence cost behaviour, particularly in the context of unique ownership structures like those found in Korean *Chaebols*. The findings emphasise the importance of considering ownership structures in studies of cost behaviour and agency problems. The findings challenge some established theories, particularly regarding the impact of FCF and operating expenses on cost asymmetry.

This study has several critical implications. For managers and shareholders, these insights emphasise the importance of governance mechanisms like dividend policy in curbing agency costs and enhancing cost efficiency. For managers, it highlights the importance of transparent and effective governance practices to mitigate agency costs. Implementing robust dividend policies can align managerial interests with those of shareholders. For shareholders, particularly in firms with concentrated ownership, the findings suggest that closer monitoring and control can lead to more efficient cost management and reduced agency problems. Policymakers should encourage transparent and robust dividend policies to improve corporate governance, reduce agency costs and enhance firm value. Additionally, fostering a regulatory environment that supports efficient asset utilisation can help firms manage their SG&A costs more effectively. Academics can build on this study by further exploring the variations of ownership structures in different cultural and economic contexts.

The study's limitations include its focus on Korean firms, which may limit the generalisability of the findings. Future research could extend this analysis to other countries and industries to validate and expand upon these results. Additionally, investigating other potential moderating variables, such as market conditions or technological advancements, could provide a more comprehensive understanding of SG&A cost behaviours. By addressing the interaction between agency problems, dividend policy and ownership structures, this study offers valuable insights for improving corporate governance and cost management strategies, emphasising the need for robust governance mechanisms and providing a foundation for future research in diverse economic contexts.

INFORMED CONSENT STATEMENT

Not applicable.

DATA AVAILABILITY STATEMENT

The dataset and codes presented in this study are available on request from the corresponding author. This is according to the laboratory rules.

CONFLICTS OF INTEREST

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses or interpretation of data; in the writing of the manuscript or in the decision to publish the results.

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APPENDIX

Multicollinearity Tests

Variable	Coefficient variance	Centered VIF
Sales Ratio	8.77×10^{-8}	1.28438
Successive Decrease	0.00011	1.06983
Stock Performance	7.71×10^{-10}	1.04459
Free Cash Flow	0.00357	1.19935
Asset Utilisation Ratio	0.00014	2.86179
Operating Expense Ratio	1.61×10^{-6}	1.12917
Cash Dividend Payment	0.07998	1.24655
Dividend Payout Ratio	1.17×10^{-7}	1.00334
Dividend Policy	9.36×10^{-5}	1.24944
Ownership Concentration	6.39×10^{-8}	1.09482
Asset Intensity	4.06×10^{-5}	2.90109
Employee Intensity	2.38×10^{-6}	1.02887

Note: Included Observations = 4,279; VIF = Variance Inflation Factor