The Determinants of Cost Stickiness in Family Firms: Evidence from the United States

by

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Abstract

This thesis comprises an empirical review of the cost asymmetric behaviour and two empirical studies on cost structures in family-type organisations.

In this thesis, I first introduce cost asymmetric behaviour and review the relevant literature in Chapter 2. Scholars refer to the phenomenon of cost asymmetric behaviour as "cost stickiness". This chapter includes the evidence for cost stickiness and the significant critical determinants that impact the degree of cost stickiness.

In two empirical studies in Chapters 3 and 4, I explore the cost stickiness in firms based on the unique characteristics and culture of a family type of organisational structure. Because of greater alignment of owner-manager incentives, higher accounting conservatism, and being more risk-averse, research on family firms has shown that founding family firms have fewer agency problems between owners and managers than non-family firms (Shleifer and Vishny 1997; Villalonga and Amit 2006; Anderson and Reeb 2003b; Chen et al. 2010). This context provides an interesting case for examining how managerial choices in family firms can adjust resources to influence family firms' cost structure and stickiness.

Chapter 3 investigates the effects of different agency problems on selling general and administrative (SG&A) cost stickiness in family and non-family firms based on the unique characteristics and culture of family firms. I use four measures of agency problems arising from CEOs' incentives, including free cash flow, CEO tenure of the first three years, CEO tenure of the final year, and the percentage of fixed pay in the CEO's total compensation. In additional tests, I examine the role of corporate governance in moderating to mitigate the effect of the agency problem on SG&A asymmetrical cost.

As managers in family firms face different incentives, I conjecture that they are more likely to avoid rapidly increasing or slowly decreasing SG&A costs when sales grow or decline, respectively, compared with non-family firms. The interests of managers in family firms align with those of the owners, and that effective monitoring by the board lessens managerial empire-building incentives. Therefore, reducing agency problems of separation of ownership and control in family firms decreases the degree of cost stickiness.

The results show that, compared with non-family firms, a higher free cash flow does not lessen the degree of SG&A cost stickiness in family firms. Compared with non-family firms, CEOs in the first three years of tenure are more likely to exhibit higher SG&A cost stickiness in family firms. However, CEOs in the final year of tenure are less likely to exhibit the SG&A cost stickiness in family firms. The degree of cost stickiness is more pronounced in non-family firms than in family firms when considering the CEO fixed pay percentage.

Chapter 4 examines the relationship between another characteristic of family firms, risk aversion, and cost stickiness. Current literature in family firms shows that family firms are risk-averse and conservative regarding the innovative behaviour of pursuing entrepreneurial strategies compared to non-family firms (Duran et al. 2015; Jones, Makri, and Gomez–Mejia 2008; Nordqvist and Melin 2010). Family firms are often reluctant to invest in new ventures and unwilling to develop, grow, take advantage of opportunities and take risks (Habbershon and Pistrui 2002; Cabrera-Suárez, De Saá-Pérez, and García-Almeida 2001; Hall, Melin, and Nordqvist 2001). I consider five measures of risk aversion: family ownership, founder-CEO duality, CEO gender, risk tone disclosure in 10-K, frequency of management earnings guidance, and idiosyncratic risk. I also investigate the moderating role of financial constraints in firms that make family firms more risk-averse to take innovation opportunities and affect SG&A cost behaviour.

The results show that higher ownership decreases the degree of cost stickiness in the active family firms and cost anti-stickiness in pooled and passive family firms. When founder-CEOs are in the active family firms, cost stickiness decreases. Female CEOs also decrease the degree of cost sticky behaviour. The more risk-averse content in risk tone disclosures from pooled family firms, the more they show cost anti-stickiness behaviour. Furthermore, the degree of cost stickiness behaviour in passive and pooled family firms is negatively associated with how frequently the company issues more management earnings guidance.

The two empirical studies contribute to both management and financial accounting literature. This thesis extends the cost behaviour literature by investigating how cost management decisions are related to managers' incentives, stakeholders, and organisational culture and structure. This thesis has implications for management accountants, firm

management, auditors, and analysts. They might be interested in understanding the behaviour of their expense activities (for example, when generating financial forecasts) and gaining awareness of how managers make accounting decisions to adjust their costs within a family-type governance structure in the United States.

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Author's Declaration

I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Printed Name: Li-Yu Chen

Signature: _____

Chapter One: Introduction

1.1 Motivation of the Study

This thesis consists of two main empirical studies on asymmetrical cost behaviour in family firms.

The motivations of the first and second studies (Chapters 3 and 4) are as follows: first, it is motivated by the literature on asymmetrical cost behaviour. Costs are ‘sticky’ when they respond less to decreases in activity (sales revenue) than increases in activity (Anderson, Banker, and Janakiraman 2003). This potential source considered in cost stickiness has also been shown to understand earnings management in financial accounting research and be informative in forecasting earnings (Banker and Chen 2006; Weiss 2010). The traditional cost model has a symmetric relationship between the activity and costs in different organisational structures. Cost stickiness questions the traditional mechanical cost model and brings a new way of thinking about cost and earnings. This study should make an effort to find the sources of sticky costs in light of the motivations underlying managers' resource adjustments.

Second, the first study (Chapter 3) is motivated by the growing literature on managers' deliberate resource commitment decisions. It explores that adjustment plays a central role in these decisions and is the key to understanding cost stickiness determined by prior research (Anderson, Banker, and Janakiraman 2003). Managerial choices to adjust resources influence firms’ cost structures (Kallapur and Eldenburg 2005; Banker et al. 2012; Banker, Huang, and Natarajan 2011). Managers will cut resources to a lesser extent when activity decreases than they will add resources when activity increases, which results in cost stickiness. Managers must acquire additional resources when sales revenue (activity levels) increases. By contrast, managers can choose to retain some unutilised resources to reduce the adjustment costs correlated with cutting resources when sales revenue (activity levels) decreases.

Thus, because of the adjustment costs, the managers recognise the trade-offs arise when companies acquire and retain resources (Anderson, Banker, and Janakiraman 2003). Prior studies also investigate how managerial choices maximise firm value and induce cost stickiness (Anderson, Banker, and Janakiraman 2003; Balakrishnan and Gruca 2008). Managers’

motivations induce the study of cost behaviour. Agent-driven incentives to build empires increase sticky costs (Chen, Lu, and Sougiannis 2012), and meeting earning targets diminishes stickiness (Kama and Weiss 2013). Therefore, this raises an interesting question: What are the other motivations that alter managers' decisions in adjusting resources, and also whether their background and other managers', firms', or industries' characteristics affect this cost stickiness?

Third, the first and second studies (Chapters 3 and 4) are motivated by the different characteristics and owner-managers incentives in family firms than in non-family firms (Jensen and Meckling 1976; Anderson and Reeb 2004; Villalonga and Amit 2006; Wu and Mazur 2018). Family firms are a prevalent organisational structure in worldwide and United States (La Porta, Lopez-de-Silanes, and Shleifer 1999; Anderson, Mansi, and Reeb 2003; Anderson and Reeb 2003b). Family firms constitute over 80 percent of all business organisations in the US (Pérez-González 2006). Founding family firms have less agency conflict between owner and manager than non-family firms because various owner-managers incentives are at play (Fama and Jensen 1983; Shleifer and Vishny 1997; Anderson and Reeb 2003b, 2004; Chen et al. 2010). The reason is that family firms have attributes by which they maintain consistent interests between management and owners.

Managers in founding family firms care more about reputation and are more likely to focus on long-term survival to maximise firms' value instead of wealth maximisation. (Anderson, Mansi, and Reeb 2003; Anderson and Reeb 2003a, b; Chen, Chen, and Cheng 2008). Family firms may have substantial incentives to reduce agency conflicts and maximise firms' value. They often have undiversified holdings of their firms' stocks because their families' welfare is closely linked to the firms' performance, which depends on their survival. Family owners in founding family firms ensure better monitoring of their managers. Family owners are typically actively involved in the firms' top management by serving as executives and/or directors. Hence, the first and second studies are motivated by various agent-driven incentives between owners and managers in the unique characteristics of family organisations' structure, as set up to examine the cost stickiness.

Finally, another motivation of the second study (Chapter 4) is the risk-aversion tendencies in family businesses (Schulze et al. 2001; Romano, Tanewski, and Smyrnios 2001; Gomez-Mejia, Nuñez-Nickel, and Gutierrez 2001). Members of family firms often stake their

entire human capital and financial capital on their enterprises, which might lead to adopting risk-averse firm policies (La Porta, Lopez-de-Silanes, and Shleifer 1999; Morck and Yeung 2003). Furthermore, family members are less likely to behave opportunistically or have short-term horizons when making decisions because family members accumulate wealth through their businesses (Anderson, Mansi, and Reeb 2003). In addition, family owners are focused more on conservation than on growth as a firm strategy (Miller, Le Breton-Miller, and Lester 2011). Thus, they are more likely to maximise the firms' value for the long-term when making decisions in investment and the adjustment of resources. Conversely, non-family firms have diversified shareholders, who are more likely to evaluate projects to maximise residual cash flows. Therefore, this motivation provides managers with various incentives to allocate and adjust the cost structure.

Based on these motivations, the first study examines the effect of the owner-managers empire-building incentives on managers' choices for managing the costs that influence the cost structure in family firms versus non-family firms. The second study considers how risk-aversion characteristics in family firms alter the managers' rational decisions in adjustments.

1.2 Research Questions

Chapter 3 examines family firms' role in the effect of agency problems on selling, general and administrative (SG&A) cost stickiness. The agency problems measures are free cash flow, CEO's first three years of tenure, CEO's final year of tenure, and CEO's fixed pay compensation ratio.

In Chapter 4, I propose that the risk aversion characteristic in taking entrepreneurial activities in family firms may affect risk-taking in day-to-day decisions on innovation activities considering unused resources and, hence, are responsible, to some extent, for cost stickiness. I use six variables to capture risk aversion in family firms: family ownership, founder-CEO, CEO gender, risk tone in 10-K, frequency of management earnings guidance, and idiosyncratic risk.

Therefore, this thesis addresses the following research questions:

The first study (Chapter 3):

Q1: Does higher free cash flow increase SG&A cost stickiness more in non-family firms than family firms?

Q2: Do family firms whose CEOs are in the first three years of their tenure are more likely to exhibit a greater SG&A cost stickiness than non-family firms whose CEOs are in their first three years of tenure?

Q3: Do family firms whose CEOs are in their last year of their tenure are more likely to exhibit a greater SG&A cost stickiness than non-family firms whose CEOs are in their last year of tenure?

Q4: Does higher fixed pay ratio reduce SG&A cost stickiness more in non-family firms than family firms?

The second study (Chapter 4):

Q5: Does higher family ownership negatively associated with cost stickiness?

Q6: Does founder-CEOs are negatively associated with cost stickiness?

Q7: Being a female CEO is negatively associated with cost stickiness?

Q8: Do firms with more risk tone disclosures negatively associated with cost stickiness?

Q9: Do firms with more frequency of management earnings forecasts disclosures (MEFs) are negatively associated with cost stickiness?

Q10: Do firms with high idiosyncratic risk negatively associated with cost stickiness?

1.3 Study Hypotheses

This thesis proposes the following hypotheses in the first study (Chapter 3) based on the above research questions in section 1.2:

H1: Higher free cash flow increases the degree of SG&A cost stickiness more in non-family firms than family firms.

H2: Family firms whose CEOs are in their first three years of tenure are more likely to exhibit a greater degree of SG&A cost stickiness than non-family firms whose CEOs are in their first three years of tenure.

H3: Family firms whose CEOs are in their last year of tenure are more likely to exhibit a greater degree of SG&A cost stickiness than non-family firms whose CEOs are in their last year of tenure.

H4: A higher fixed pay ratio reduces the degree of SG&A cost stickiness more in non-family firms than family firms.

Next, this thesis forms the following hypotheses in the second study (Chapter 4) based on the above research questions in section 1.2:

H1: Higher family ownership is negatively associated with cost stickiness.

H2: Founder-CEOs are negatively associated with cost stickiness.

H3: Being a female CEO is negatively associated with cost stickiness.

H4: Firms with more risk tone disclosures are negatively associated with cost stickiness.

H5: Firms with more frequency of MEFs disclosures are negatively associated with cost stickiness.

H6: Firms with high idiosyncratic risk are negatively associated with cost stickiness.

1.4 Study Methodology

The sample for two studies (Chapter 3 and Chapter 4) is from S&P 500, and it covers the period from 1996 to 2018. To identify family firms, I manually check proxy statements on the EDGAR website for each company and other sources such as the company's website or Fundinguniverse.

In Chapter 3, the empirical model applies the ordinary least squares (OLS) regression, which includes four variables to capture managers' empire-building incentives due to the agency problem: free cash flow, CEO in the first three years of tenure, CEO in the last year of tenure, and CEO fixed pay. The OLS regression model also includes four economic determinants: assets intensity, employee intensity, stock performance, and sales decrease in the two consecutive periods.

In an additional analysis, I consider the moderating effects of the number of directors on the board (board size), director's gender ratio, CEO-director duality, and family type. First, I use the board size and gender ratio to divide the entire sample into high and low subsamples

based on each variable's industry median in the same industry-year. Next, I consider the moderating effect of CEO-director duality, which equals one if the CEO serves as the board director and zero otherwise. Finally, I classify the total sample firms into active family firms (family member CEOs), passive family firms (outside professional CEO), and non-family firms, to examine their moderating effect on the SG&A sticky cost behaviour.

Chapter 4 examines the relationship between risk aversion factors and cost stickiness. The empirical model adopts the ordinary least squares (OLS) regression. This model uses five main proxies to measure a manager's risk aversion, including family ownership, founder–CEO duality, CEO-gender, risk tone from textual analysis, and firms' idiosyncratic risk.

To obtain family ownership, I manually check the proxy statement on the EDGAR website for each company each year to calculate the percentage owned by the family members. The disclosure of risk words in the 10-K filing is used to measure the level of managers' risk aversion. To conduct textual analysis, I download the 10-K filings from the SEC's EDGAR and then use Python programming language to parse and extract the sentence with risk words. Next, I use the level of voluntary disclosure by the firm each year in the 8-K and 10-K filings, namely, management earnings guidance, to measure the degree of the manager's risk aversion. Finally, the idiosyncratic risk is a specific and inherent risk of firms. I use the Fama-French three-factor model and the Fama–French–Carhart four-factor model to measure a firm's idiosyncratic risk.

In an additional analysis, I use the three proxies of financial constraints to measure the risk aversion in firms. The proxy variables for financial constraint include the KZ-Index developed by Kaplan-Zingales, the WW index developed by Whited and Wu (2006), and the KZ index and WW index average.

1.5 Contributions of the Study

1.5.1 Contribution to Management and Financial Accounting Literature

Cost behaviour is an accounting topic that has attracted the interest of both researchers and practitioners for decades. Cost behaviour has been included as one a topic in most accounting and managerial textbooks. (Horngren, Datar, and Rajan 2015; Noreen and Soderstrom 1997).

I extend prior studies in cost behaviour by using family firms' data sets to examine cost stickiness (Chapters 3 and 4). Holzhacker, Krishnan, and Mahlendorf (2015) use the data from California hospitals for over a decade, and Sedatole, Vrettos, and Widener (2012) focus on the airline industry.

Limited research explores the less-understood association between risk and cost behaviour. I also extend the prior study by examining how risk-aversion incentives affect cost behaviour (Chapter 4). In addition, my studies have the potential to conduct a relationship between risk incentives and cost behaviour in family firms. Li et al. (2021) document that the managerial operation decision increases cost elasticity, negatively affecting cost stickiness. It is the first study to investigate how risk-taking incentives affect cost stickiness. Hu and Jiang (2019) find a positive relationship between excessive managerial risk incentives and conditional accounting conservatism.

Moreover, costs are a fundamental determinant of earnings. My results show new insight into cost behaviour, contributing to financial research topics such as earnings quality, analysts' earnings forecasts, detection of earnings manipulation, and earnings prediction.

1.5.2 Contribution to Founding Family Firm Literature

This study is the first study in the literature to explicitly consider and examine the link between family firms and cost stickiness (Chapters 3 and 4). Previous research on cost behaviour examines using samples of firms from a single country, multiple countries, single industry sectors, multiple industry sectors, and private and public firms. My results indicate a complete understanding of cost behaviour in general and cost stickiness in particular, which are careful analyses of the firm-specific factors and the family and non-family characteristics that shape managers' decisions.

This thesis extends the dimension of cost behaviour by investigating this cost stickiness phenomenon in family firms based on family firms' intrinsic and unique characteristics. The differing management incentives in family firms lead to various accounting choices in making decisions. I study cost behaviour through family firm characteristics such as closely aligned

interests between owner and manager and risk-aversion and conservatism that impact manager decisions and cost structures.

1.5.3 Contribution to Corporate Governance Literature

This study (Chapters 3 and 4) also extends the literature on the cost stickiness phenomenon to provide the first evidence on the family firm sector from the agency perspective. My studies shed light on managers' role in making choices in adjusting costs in response to output demand by documenting the effects of agency factors on cost stickiness. Moreover, my studies contribute to the growing literature that examines the effectiveness of corporate governance in mitigating the agency problem.

The additional analysis (Chapter 3) examines corporate governance's role in mitigating the agency problem's effect on cost stickiness. From the viewpoint that corporate governance of the agency problem on cost stickiness, I expect that corporate governance should lessen the agency problem and restrain managers' incentives to extract their benefits at the expense of shareholders (Shleifer and Vishny 1997). Suppose economic circumstances are not dictated in retaining costs. In that case, monitoring encourages managers to eliminate slack in costs in response to demand decreases and discourages managers from increasing costs in response to demand increases. Therefore, I contribute to the corporate governance literature by investigating how the role of corporate governance reduces the agency problem.

1.5.4 Contribution to Disclosure Literature

My study (Chapter 4) contributes to existing disclosure literature by linking family firms' organisational structure. The empirical accounting literature devotes considerable attention to examining quantitative management.

A growing research literature in accounting and finance uses textual analysis to examine the tone and sentiment of corporate press releases, newspaper items, conference calls, investor message boards, annual reports and, 10-K reports (Antweiler and Frank 2004; Tetlock 2007; Li 2008; Dhaliwal et al. 2011; Loughran and McDonald 2011). I extend the link between

accounting literature with disclosure literature. I innovate text mining techniques to adopt the framework and analyse unstructured data for risk management standards on cost stickiness.

1.6 Structure of the Thesis

The remainder of this thesis is structured as follows. Chapter 2 discusses the literature that prior scholars have examined. The chapter discusses the evidence of cost stickiness in the literature, the three significant determinants that affect cost stickiness, and the consequences and further research on cost stickiness. This chapter provides a foundation for developing the hypotheses examined in this thesis and answering the research questions.

In Chapters 3 and 4, I answer the research questions.6 Specifically, Chapter 3 presents the first study and answers research questions 1, 2, 3, and 4, while Chapter 4 presents the second study and answers research questions 5, 6, 7, 8, 9, and 10. Both Chapter 3 and Chapter 4 provide the introduction, review of relevant literature, hypotheses development, discussion of the empirical research design applied, a presentation and discussion of the results, and several additional tests. Chapter 5 provides the concluding remarks of this thesis. It summarises the key findings of two empirical studies (Chapters 3 and 4), presents their potential limitations, and discusses potential avenues for future research.

Chapter Two: Literature Review

2.1 Overview

Cost is one of the critical aspects in determining whether a business is profitable for managers. It is essential to understand cost behaviour in cost and management accounting. Controlling operating or SG&A expenses may be the best way for managers to impact profitability. When businesses try to decrease the costs of goods sold using cheaper labour and materials, the service and product quality can become poor and lead to lost business. In addition, when businesses increase the price of their products or services to increase revenues, consumers do not want to pay the higher price.

The traditional view of cost behaviour in accounting research and textbooks is that cost is from the 'black box' model of fixed and variable costs. Fixed costs are constant, and variable costs are proportional to the cost driver in the short term. Furthermore, these costs can be mixed, combining fixed and variable components (Garrison, Noreen, and Brewer 2015; Horngren, Datar, and Rajan 2015).

One of the most well-known types of cost accounting is activity-based costing (ABC). ABC literature recognises that costs are induced through consuming resources, such as equipment, and indirect and direct labour. These resources are used to perform activities, such as product design, processing customer orders, assembly of the finished product, finished goods distribution and machine setups (Cooper and Kaplan 1992). These activities are also considered cost drivers and are the measures used to allocate overhead costs. Therefore, activity changes lead to proportional resource changes (Noreen 1991; Garrison, Noreen, and Brewer 2015; Horngren, Datar, and Rajan 2015). In other words, costs change proportionately with the level of activity.

Cooper and Kaplan (1992) and (Noreen and Soderstrom 1997) are among the first studies documenting that costs do not change in equivalent amounts when sales increase and decrease. Cooper and Kaplan (1992) and Banker and Hughes (1994) indicate many resources only change when managers decide to adjust them; instead, an activity decrease does not automatically remove unused resources, and an activity increase does not automatically add

needed resources. Anderson, Banker, and Janakiraman (2003) label this behaviour of cost asymmetry as ‘Cost Stickiness’. Ibrahim, Ali, and Aboelkheir (2022) reviewed 80 research papers from prior scholars on cost stickiness from 1997 to 2020, identified the potential research gaps, reviewed the cost stickiness models, and discussed the different aspects such as historical development and cost category by countries, theories employed, and research impact.

In contemporary cost management research, scholars study the determinants in managers’ decisions to increase or decrease costs and look at the consequences of cost stickiness. When companies face a decline in sales, the managers may consider adjusting the cost structure by analysing cost behaviour to take on uncertainty risks and maintain competitiveness. This thesis analyses companies’ cost strategies when current sales decrease. Moreover, strategies adopted by organisations, such as marketing, financing, investment and cost strategies, are affected by their corporate governance. Therefore, this thesis explores how corporate governance affects cost strategy and how managerial choices in adjusting resources influence companies’ cost structure.

This chapter draws from the relevant previous literature to achieve three purposes. First, this chapter gives a background of the components of cost structure and then introduces cost stickiness and describes evidence of cost stickiness. Next, the chapter introduces three significant determinants of cost stickiness, including resource adjustment costs, managers’ future expectations, and opportunities and incentives. Finally, I describe the consequences of cost stickiness and further research and conclude with a summary of the key points.

2.1.1 Components of Cost Structure

This section explains the components of costs in financial statements. Most scholars use SG&A expenses to measure costs in cost stickiness literature. SG&A expenses are the costs associated with businesses’ everyday operating expenses, excluding costs in producing goods or delivering services. Thus, SG&A is part of companies’ operating expenses, and companies use the term SG&A when referring to their operating expenses.

US accounting standards treat research and development (R&D) as a separate operating expense rather than part of SG&A (Stobierski 2020). Cost of goods sold treated as separate

items within operating expenses, including direct costs, are tied to companies' goods and services production but exclude indirect expenses, such as overhead costs. The 'other expenses account' is another expense on the income statement that includes non-core business activities, like interest paid on loan amounts. Other expenses are not considered operating expenses. Operating and SG&A expenses are critical in tracking net income (the amount left over after expenses and taxes are subtracted from revenue).

The table below shows an example where SG&A fits on Caterpillar Inc.'s income statement in 2019 (all numbers are in millions) (The Wall Street Journal)

Table 2. 1 Example of SG&A on an Income Statement

Total sales and revenues	**$53,800**
Operating costs:	
Cost of goods sold	$36,630
SG&A	**5,162**
R&D	1,693
Interest expense of financial products	754
Other operating (income) expenses	1271
Total operating costs	**$45,510**

SG&A expenses formula

SG&A expenses = Selling expenses + General and Administrative expenses

SG&A expenses may include payroll, insurance, leases in supplies, advertising, utilities, rent, office supplies, legal costs, sales and marketing, travel and entertainment and repairs and maintenance. First, the 'selling' expenses in SG&A are broken down into the direct and indirect costs associated with product sales. Direct expenses, such as shipping and sales commissions, only occur when products are sold. Indirect expenses, such as advertising and marketing, travel costs, and sales personnel salaries, occur throughout the manufacturing process and after the products are finished. Therefore, the products do not have to be sold for an indirect expense to be incurred.

The ‘general and administrative’ expenses in SG&A refer to company overhead costs. For example, general and administrative costs occur when companies open their doors each day. Moreover, general and administrative costs are more fixed than selling costs because they include expenses, such as a building’s rent or mortgage, utilities and insurance, and non-sales personnel salaries.

Table 2. 2 Expense categories of expenses in SG&A

Selling expenses	General expenses	Administrative expenses
Advertising	Equipment (unrelated to production)	Administrative staff compensation
Marketing	Facilities repair/maintenance (unrelated to production)	Compensation for other non-salespeople
Sales professionals’ base salaries (fixed)	Insurance	Executive compensation
Sales professionals’ commissions (variable)	Internet and communication services	HR services
Sales-related travel and entertainment	Office supplies	
Product shipping	Leases on supplies	
Social media/website costs	Rent	
	Utilities (unrelated to production)	
	Professional services (accounting, legal, and consulting)	
	Travel and entertainment	

2.1.2 Reasons of Cost Stickiness

In business operations, SG&A costs play a significant proportion of the costs. The R&D costs to total assets ratio are 3 percent but the SG&A costs to total asset ratio are 27 percent (Banker, Huang, and Natarajan 2011). Cost behaviour is a mechanical relation between costs and concurrent activities, modelled as fixed and variable costs in the traditional view. However, current research shows that SG&A costs behave asymmetrically. SG&A costs increase more rapidly when demand increases than when demand decreases (Anderson, Banker, and Janakiraman 2003). The phenomenon of this cost stickiness has been given great attention by scholars and the accounting literature (Balakrishnan and Gruca 2008; Balakrishnan, Labro, and Soderstrom 2014; Banker, Byzalov, and Plehn-Dujowich 2014).

The cost stickiness phenomenon occurs because of managers' rational decisions as they keep slack resources to trade off the costs of resource adjustments (Noreen and Soderstrom 1997; Anderson, Banker, and Janakiraman 2003). Anderson, Banker, and Janakiraman (2003) argue that many costs arise from managers' deliberate decisions about committing resources. To adjust multiple resources in the short term is costly. The adjustment costs incurred while allocating the resources are severance payments to lay-off workers, training costs for new employees, and disposal costs and installation of equipment. Thus, managers may avoid these resource adjustment costs by retaining slack resources. Cost stickiness literature has predominantly explained economic factors of assets intensity, employee intensity, and uncertainty of future demands (Anderson, Banker, and Janakiraman 2003; Banker, Byzalov, and Plehn-Dujowich 2014; Banker et al. 2014; Balakrishnan, Labro, and Soderstrom 2014).

One of the significant impacts of cost behaviour is the managerial incentives. Managerial incentives affect the managers' choices in managing the costs, which influence firms' cost structures. Managers recognise and control sticky costs. Managers recognise and control sticky costs. The managers can decide whether to increase or reduce the adjustment costs to change the degree of committed resources. For instance, the managers may use temporary employees or outsource functions based on the sales volume to adjust the supply of resources (Anderson, Banker, and Janakiraman 2003).

In addition, scholars determined the impact of agency considerations on managers' incentives (Chen, Lu, and Sougiannis 2012; Kama and Weiss 2013). The misalignment of interests between managers and shareholders could lead to agency problems in agency theory. The managers take on the activities which will benefit them rather than the shareholders' in the firms (Jensen and Meckling 1976).

Finally, Li et al. (2021) establish managerial risk-taking incentives as another major determinant planned to induce effective operating decisions, and it is systematically associated with cost stickiness. The risk tone of 10-K reports and management earnings guidance is used to measure the level of risk-aversity of managers. Unstructured textual documents represent essential roles of financial information in corporations' disclosure (Henry and Leone 2015; Li 2010) The corporate strategy for operations is hidden between lines in the documents.

2.2 Family Firms

Anderson, Mansi, and Reeb (2003) and Anderson and Reeb (2003b) point out that nearly one-third of the Standard and Poor's (S&P) 500 companies in the US are family businesses.

Founding family firms have attributes in that they have aligned interests between management and owners/shareholders. The incentives for family-type ownership organisational structure are to pass the firms to subsequent generations of family members and protect the firm's reputation. Family owners have more significant litigation concerns as they bear higher litigation costs due to their undiversified holdings in the firms (Chen, Chen, and Cheng 2008). Because family owners and members hold and invest large shares in the family firms, they bear both direct costs (for example, attorney fees and settlement costs) and indirect costs (reputational damage and share price associated with lawsuits). Founding family firms do not wish to risk the possible loss of reputation or image. Thus, family firms have less agency conflict and maximised firm value as they often have undiversified holdings of their firms' stocks. Their families' welfare is closely linked to the firms' performance and depends on their survival.

Family owners also have better access to information and can better monitor, reducing the agency problem between management and shareholders (Chen, Chen, and Cheng 2008). Family owners are also typically actively involved in firms' top management by serving as

executives and/or directors. Because of family monitoring, managers are also less likely to have myopic behaviour to forgo suitable investments to boost current earnings (Stein 1988, 1989). The managers have aligned interests with the family owners. The family owners own a significant stake in the firms, which can affect the financial reporting in the most beneficial direction (Chen, Chen, and Cheng 2014; Ferramosca and Ghio 2018).

Scholars argue that family firms are risk-averse (Schulze et al. 2001; Gomez-Mejia, Nuñez-Nickel, and Gutierrez 2001; Romano, Tanewski, and Smyrnios 2001; Schulze, Lubatkin, and Dino 2003). Founding family firms are more likely to focus on long-term survival to maximise firm value instead of wealth maximisation (Anderson, Mansi, and Reeb 2003; Anderson and Reeb 2003a; Chen, Chen, and Cheng 2008). They are more likely to maximise firm value for the long-term when making decisions in investment and adjustment of resources.

Family owners in firms have strong incentives to minimise firm risk and favour long-term investment options due to their undiversified concentrated ownership. Family owners focus on conservation rather than growth as a firm strategy (Miller, Le Breton-Miller, and Lester 2011). Lee, Chae, and Lee (2018) argue that families with less ownership take less risk in pursuing their benefits and show that families with greater ownership align their interests with their firms by investing in more risky projects. The decision-makers who serve on corporations' board of directors strongly influence management decisions. Outside owners prefer growth-oriented risk-taking more than family owners. Higher risk-aversion and investment horizon preference is affected by the managers' family affiliation and family ownerships with higher degrees of family involvement (Wu and Mazur 2018).

Stewardship theory is rooted in sociology and psychology which addresses the relationship between the principals and the steward-managers (Davis, Schoorman, and Donaldson 1997). It is also from the perspective of behaviour and governance. However, stewardship theory focuses on a more humanistic aspect and views managers as stewards whose behaviour facilitates the natural alignment of interests between the managers and principals (Hernandez 2008). Principals will adopt governance mechanisms to encourage the managers' steward behaviour and the continued alignment of interests, increasing firm performance (Davis, Schoorman, and Donaldson 1997).

Therefore, from the viewpoint of family firms, stewardship theory argues that when family firms' managers are held by a family member or someone who has relatives with the family member, the managers will maximise shareholders' wealth and pursue altruism, not just for self-interest. Managers will sacrifice self-interest to protect the interests of the firm and shareholders, namely, to drive the attitude of stewardship, making family firms have more long-term strategies and goals than non-family firms (Miller and Le Breton-Miller 2006; Miller, Le Breton-Miller, and Scholnick 2008).

This thesis first introduces the cost stickiness to the readers and investigates the different characteristics and owner-managers incentives in family firms (Jensen and Meckling 1976; Anderson and Reeb 2004; Villalonga and Amit 2006; Wu and Mazur 2018). The differing management incentives in family firms lead to various accounting choices in making decisions.

2.3 Cost Stickiness

2.3.1 Evidence of Cost Stickiness

This section discusses how 'cost stickiness' is found and how cost stickiness examines in different industry sectors and countries.

Cost stickiness, which Germany the 1920s first identifies, brought the attention of researchers over the last two decades. In Germany, (Brasch 1927) refers to the cost asymmetry phenomenon as 'Kostenremanez' attracted the attention of current researchers for empirical analytics. Anderson, Banker, and Janakiraman (2003) translate this German term as 'cost stickiness'.

Cooper and Kaplan (1992) and Noreen and Soderstrom (1997) are among the first studies documenting that costs do not change in equivalent amounts when sales increase and decrease. Cooper and Kaplan (1992) discover cost stickiness behaviour in a Hewlett Packard Quarter to Date (QTD) case with the newly installed activity-based cost system in the United States. The system allocates a cost driver by accumulated costs at each process and used to monitor production performance. In a related study, Noreen and Soderstrom (1997) use cross-sectional data from 108 Washington, United States hospitals' annual data from 1977 to 1992 to

examine whether costs change proportionally to activity changes. The authors assume costs are proportional to activity (as in conventional or ABC systems). Instead, they find modest evidence that costs change more readily in response to increases than decreases in activities.

Anderson, Banker, and Janakiraman (2003) indicate cost stickiness means that when activity rises, costs increase more than they decrease when activity falls by the equivalent amount. Specifically, costs are sticky if the increase in costs associated with an increase in volume (total annual sales volume) is greater than the magnitude of the decrease in costs related to an equivalent reduction in volume. They use a US sample covering 1979 to 1998 and find that SG&A costs increase on average 0.55% per 1% increase but only 0.35% per 1% decrease in sales. Mangers may delay reducing committed resources when there is uncertainty about future demand until they are more confident regarding the permanence of a decline in demand.

In addition, the authors examine whether the delayed decision-making of managers and contracting lags in the stickiness observed during one period are reversed in a subsequent period due to future demand uncertainty. They support their argument by documenting the reversal of stickiness t in period t + 1 and the reduction of stickiness in aggregated measurement periods. This study opens up a black box of cost behaviour that is not mechanistic but might be driven by managers' deliberate adjustments (asset and employee intensity) and future expectations (Gross domestic product (GDP) growth and the previous year's sales decrease).

In another study, Calleja, Steliaros, and Thomas (2006) compare and examine the cost stickiness of operating costs in different countries. This study replicates the models of Anderson, Banker, and Janakiraman (2003) to draw an international comparison between the United Kingdom, the United States, France, and Germany, from 1988 to 2004. The study reveals that companies' costs in the four countries exhibited a common characteristic of cost stickiness. However, costs tend to be less sticky when aggregated over extended periods and when companies sustain significant falls in sales revenue. Therefore, when revenue decreases for several periods or significantly falls, and the managers perceive that the revenue will likely not return, they reduce costs to decrease the degree of cost stickiness. It also finds that costs are stickier in the French and German companies than those in US and UK businesses. In these countries, operating costs increase by 0.97% per 1% increase in revenue but decrease by only 0.91% per 1% decrease in revenue, on average, across the sample. In addition, Banker et al.

(2014) also find cost stickiness in the components of SG&A costs, including advertising costs, other SG&A costs, costs of goods sold and total employee costs, using a 1979-2009 sample from the United States.

In another study, a 1979 to 2000 United States sample investigates whether the sticky cost behaviour of SG&A and cost of goods sold differs across four major industry groups, manufacturing, merchandising, financial, and services, characterised by different production, operational and economic environments (Subramaniam and Weidenmier 2016). The authors also investigate whether sticky cost behaviour arises in all activity level changes (as measured by revenue changes) or only in significant changes in activity level. It shows that in both SG&A and cost of goods sold, cost stickiness results from managers' asymmetric response to considerable demand change. In addition, different industries show variance in the stickiness of SG&A and cost of goods sold costs and the determinants of sticky behaviour. For example, manufacturing is the stickiest industry due to high fixed assets and inventory levels, making it harder to adjust the costs when revenue decreases. Thus, this study presents that industry affiliation affects cost stickiness, and that stickiness is not present for all magnitudes of changes and industries.

Ibrahim (2015) examines whether cost stickiness exhibit by looking at three cost components, SG&A, cost of goods sold, and operating costs, separately using an Egypt sample from 2004 to 2011. The findings show cost stickiness in SG&A and cost of goods sold expenses but not operating expenses. Moreover, the author investigates the influence of economic growth on cost stickiness during the economic prosperity period (2006-2008) with the economic recession period (2009-2011). The results indicate that SG&A costs are sticky during the prosperity period but cost anti-stickiness during the recession period. The cost of goods sold is sticky in both periods, and the degree of cost stickiness is more significant in the prosperity period.

Xu and Sim (2017) examine cost stickiness in China's listed manufacturing companies from 2010 to 2014. Their study shows that costs are sticky and biased in China's manufacturing companies. However, they find that cost stickiness does not reverse in subsequent years. The authors theorise that cost stickiness is likely to decrease during the subsequent periods of a downturn when managers' have pessimistic expectations. Finally, this research concludes that

cost stickiness increases with macroeconomic growth in GDP. The authors believe those managers predict the coming years' economic trends in operating decisions. Therefore, if the macroeconomy continuously increases, managers generally anticipate maintaining continuous growth. Additionally, even if sales revenue declines, managers are still likely to increase expenditure to reverse this trend, resulting in increased cost stickiness.

Stimolo and Porporato (2019) examine cost stickiness behaviour using a sample in Argentina from 2004 to 2012. The results document the cost stickiness exhibited in Argentina. Cost stickiness is not affected by protective employment laws but is by social and cultural factors such as labour inflexibility driven by powerful unions. Cost stickiness is exhibited in administrative costs in SG&A when GDP grows but not when it declines.

Furthermore, scholars examine the cost stickiness in different sizes, listed and non-listed, and sectors. Dalla Via and Perego (2014) investigate the cost stickiness in small and medium-sized companies (SMEs) using a sample of Italian listed and non-listed businesses from 1999 to 2008. The study investigates whether SMEs exhibit cost stickiness regarding different cost components (SG&A, cost of goods sold, labour, and operating costs). The results show that cost stickiness emerged in the labour costs but not in the SG&A, cost of goods sold, and operating costs. Operating cost stickiness only occurred in the sample of listed companies.

In addition, Nagasawa (2018) investigates long-term cost behaviour using Japanese local public enterprises (LPEs). This study compares the cost behaviour of LPEs with the cost behaviour of commercial enterprises (CEs) from 1974 to 2013. LPEs are one type of public organisations in Japan. LPEs have a legal property and corporate tax restriction to generate retained earnings. The LPEs have the normative institutional constraints of efficiency and public interest, such as the responsibility to support people's lives, so they are vulnerable to institutional pressure. The results show that costs are sticky in CEs, but anti sticky in LPEs.

Loy and Hartlieb (2018) examine cost stickiness in listing cohorts (companies initially listed on the stock exchange) using a 1970 to 2014 sample from the United States. The study shows that each new listing cohort invests more in intangible capital through SG&A and research and development costs. Listing cohorts increase the risk of newer companies with low profitability but high growth prospects (Fama and French 2004) and competitive product

markets (Srivastava and Tse 2016). Loy and Hartlieb (2018) also point out that newly listed businesses emphasise intangible capital in different earnings and balance sheet properties. The findings conclude that cost stickiness increases with each successive listing cohort.

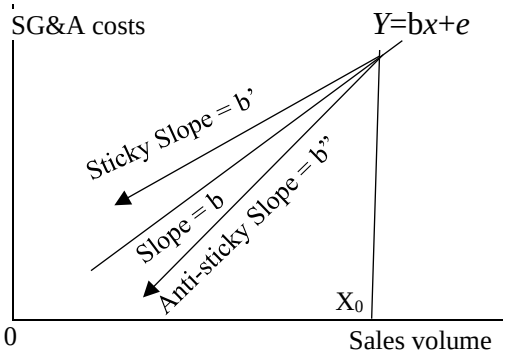
Balakrishnan, Petersen, and Soderstrom (2004) use a clinic-level management report on the number of hours staffed by employee type for 49 physical therapy clinics of 1,898 clinic-months data in the United States. They extend Anderson, Banker, and Janakiraman (2003) to capture the effect of two factors potentially moderating the managers' response to changing activity levels. The authors consider the first factor that the significant transaction costs associated with changing cost levels might rationally mean that a large change in activity response is proportionately more significant than a slight change in activity response. The second factor they consider is that current capacity utilisation could affect the managers' response to changes in activity levels. They argue that managers might be more likely to use the slack to absorb the demand from increased activity levels when the companies experience excess capacity. However, an additional decrease in activity levels could confirm a permanent reduction in demand, triggering a more significant response.

Furthermore, Cannon (2014) examines whether managers retain idle capacity when demand falls using US air transportation industry data. The 1992 to 2007 sample included 504 usable quarterly observations from nine airlines. Finally, Venieris, Naoum, and Vlismas (2015) investigate SG&A cost behaviour relating to firms' intangible investments in organisation capital[1] using a 1979 to 2009 United States sample.

Figure 1 shows the relationship between SG&A costs and sales volume. Figure 2 represents the slopes of sticky and anti-sticky costs. X_0 is the sales volume in the prior period and X_1 is the sales volume in the current period. When $X_1 > X_0$, the marginal effect is b. When $X_1 < X_0$, the marginal effect is b' which represents as sticky costs and marginal effect is b" as anti-sticky costs.

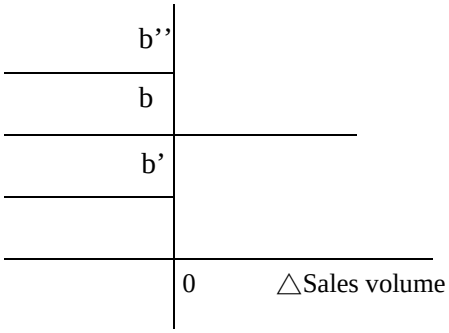
[1] Organisation capital is a term used to describe the utilisation efficiency of resources and leverage the organisation's capability in delivering goods or services. Organisational capital enables tangible and intangible resources, such as machines, patents, brands, and human capital, to be productive. As such, organizational capital is the prime intangible asset of a business.

Figure 2. 1
SG&A costs and sales volume



Note: This figure describes SG&A cost stickiness.

Figure 2. 2
Slopes of cost stickiness



Note: This figure shows the slopes of sticky and anti-sticky costs.

This section discusses how scholars find cost stickiness behaviour and the evidence of cost stickiness exhibits in different sectors, countries, industries, and institutions. Cost stickiness occurs when costs increase more than they decrease when activity falls by the equivalent amount. Readers should now understand what cost stickiness is. The next section of this chapter will discuss the determinants that affect managerial decisions that impact the degree of cost stickiness.

2.3.2 Determinants of Cost Stickiness

2.3.2.1 Resource Adjustments Costs

In the literature on cost stickiness, this chapter summarises three determinants examined by scholars that affect managerial deliberation decisions in changing the degree of cost stickiness. The determinants are resource adjustment costs, managers' future expectations, and managerial incentives. This section discusses extant studies examining the impact of resource adjustment costs on cost stickiness.

One of the significant determinants of cost stickiness is the managerial deliberation to adjust resources in response to changes in customer demand. Anderson, Banker, and Janakiraman (2003) examine this phenomenon by conjecturing that labour and asset adjustment costs are the main reasons for cost stickiness. They argue that the committed resources

adjustment costs are higher for companies relying on more employees and assets to support sales volume. The authors refer to the labour-related adjustment costs as employee intensity and the costs of fixed assets as asset intensity. Resource adjustment costs are relative to resources that the company needs to spend when it increases or decreases costs, like severance payments to dismissed workers or training and recruiting costs for new hires. In addition, the companies need to pay selling costs and lose company-specific investments like customisation and installation costs when disposing of their assets. However, these substantial resource adjustment costs may be even more expensive than retaining the resources (Anderson, Banker, and Janakiraman 2003).

Banker and Byzalov (2014) recognise the primitives of cost behaviour, resource adjustment costs, and managerial decisions, using a 1988 to 2008 sample from 20 countries. They argue that the resource adjustment costs in cost behaviour are based on 'sticky' and 'anti-sticky' costs and traditional fixed and variable costs. When sales increase, companies may have insufficient product resources for the sales amount in the initial stages, leading to sticky costs. However, sufficient resources lead to anti-sticky cost behaviour. First, the results show cost stickiness as a pervasive global phenomenon. Second, the degree of stickiness increases with the magnitude of resource adjustment costs. The authors argue that fixed resources, such as rent or disposal of buildings and equipment, are prohibitively costly to adjust over a short period. However, variable resources, such as direct materials, are flexible to adjust in the short term.

Another study by Banker, Byzalov, and Plehn-Dujowich (2014) reveals similar findings. They examine the relationship between demand uncertainty and cost stickiness in the manufacturing industry analytically and empirically using a 1979 to 2008 sample from the United States. They refer to the adjustment costs as congestion costs. Congestion costs are costs that do not decrease in the short term with decreased sales. In high congestion costs, more significant demand uncertainty leads companies to increase their fixed activity resource capacity commitments, resulting in a more rigid short-term cost structure with higher fixed and lower variable costs.

Following the Anderson, Banker, and Janakiraman (2003) model and concept, Banker, Byzalov, and Chen (2013) examine the proposition of cost stickiness when looking into employment protection legislation (EPL) provisions in different countries using a 1990–2008 sample of 19 Organisation for Economic Co-operation and Development (OECD) countries.

Using EPL provisions for labour adjustment costs, this study finds that countries with stricter EPL provisions are associated with greater cost stickiness. In another study, Prabowo, Hooghiemstra, and Van Veen-Dirks (2018) suggest that companies in strategic industries such as electricity, utilities, defence and mining industries rely more on skilled employees, to bring higher adjustment costs which lead to a greater degree of labour cost stickiness. Using a dataset spanning 22 European countries and 40,418 observations between 1993 and 2012.

Golden, Mashruwala, and Pevzner (2020) verify the Banker, Byzalov, and Chen (2013) argument above by using a new proxy for labour adjustment costs which captures skilled labour reliance across industries in the United States from 1999 to 2016. The authors conjecture that a higher reliance on skilled labour can be associated with more significant cost stickiness. They argue skilled labours incur higher adjustment costs because they have more significant costs of hiring and firing workers than unskilled labours. Moreover, they reveal that cost stickiness is more pronounced because of the effect of labour adjustment when unemployment rates are low in companies with high Wrongful Discharge Laws (WDL) states and in low hiring-credit (hiring-credit programmes reduce hiring costs to create quality jobs with high earning potentials) states.

In section 2.3.1, this chapter discusses the Loy and Hartlieb (2018) finding that cost stickiness increases with each successive listing cohort. The authors point out that temporary labour is typically associated with relatively low adjustment costs. Cost stickiness seems to be partially mitigated in younger listing cohort companies by increased reliance on temporary labour, presumably by high reliance on the younger samples.

Moreover, Lee, Pittman, and Saffar (2020) examine labour adjustment costs using a 1995 to 2012 sample of 55 countries. Labour adjustment costs are higher in election years than non-election years, leading to greater cost stickiness after controlling for other company-level and country-level determinants. Additionally, a robust test shows the importance of political uncertainty in the cost stickiness of rigorous political (democratic countries) and legal environments. Naturally, domestic political strategy is essential to labour legislation (Boutchkova et al. 2012). Shortly after coming to power, politicians might change labour laws favouring (against) employees, leading to higher (lower) labour adjustment costs for businesses. This uncertainty and shifts in policy affect managers' resource commitment decisions.

Accordingly, organisations may elect to delay employment decisions under political uncertainty. In addition, if companies perceive a decline in sales as temporary (or cyclical), they might choose to retain more workers than technically necessary in attempting to economise on costs stemming from dismissing, hiring, and training workers (Giroud and Mueller 2017). This 'labour hoarding' is more extensive in the presence of uncertainty, ultimately resulting in more significant asymmetry in labour costs under uncertainty.

Furthermore, the scholars examine cost adjustments in different industry segments. For example, in section 2.3.1 evidence, Cannon (2014) examines sticky behaviour in the US air transportation industry. Managers who believe that a decrease in demand is only temporary will choose to retain idle capacity because capacity change is costly. The significant adjustment costs in capacity decisions include adding and disposing of aircraft, purchase agreement deposits or termination penalties, seller or buyer search fees, and customisation or scrap costs. Therefore, managers have to decide whether to add or move aircraft by considering the adjustment costs incurred. The author finds managers remove capacity to save more when demand falls than remove capacity when demand grows, which leads to anti-sticky costs.

In addition, scholars investigate the factors affecting the willingness of managers to make decisions regarding adjustment costs when adjusting resources. Xu and Zheng (2018) examine the relationship between tax avoidance and cost stickiness, taking a US sample from 1990 to 2003. They suggest that tax savings can generate additional funds as a financing source (Edwards, Schwab, and Shevlin 2016) and use the cash effective tax rate (CETR) to measure tax avoidance. Therefore, tax avoidance is related to cost stickiness because it improves cash flow by reducing companies' tax liabilities. The authors argue the additional internal funds from tax savings may bring managers to retain excess resources when activity falls, leading to a greater degree of cost stickiness. However, tax avoidance may diminish managers' concerns about adjustment costs when reducing committed resources caused by decreased sales demand. Thus, managers could choose to cut under-utilised resources more rapidly when sales fall. The results show that the degree of cost stickiness is lower when tax avoidance is higher.

Li and Zheng (2020) investigate whether rollover risk influences managers' resource adjustment decisions in a US 1979 to 2015 sample. Rollover is the risk that businesses may be unable to refinance their debts when the debts becomes due (Li and Zheng 2020). The rollover

risk measures by significant amounts of long-term debt maturing in year t from the end of year t - 1. They find companies have higher rollover risk; managers cut more operating costs when sales decline. Therefore, when companies have higher rollover risk, managers are willing to forego the benefits of cost stickiness. Additionally, a negative relationship between rollover risk and degree of cost stickiness is stronger in businesses with fewer financing sources and more financial constraints.

However, Nagasawa (2018) finds that anti-cost stickiness is more substantial in projects with higher resource adjustment costs. This study was discussed in section 2.3.1, showing evidence that costs are sticky in Japanese CEs, but anti-sticky in LPEs. A decreased population and an increasing number of elderly adults are major issues in Japan. The LPE administrators need to act in cost management in response to population changes in order to maintain stable cost management in the future. The author finds the cost behaviour of LPEs is negatively associated with the changes in the population of the increasing elderly population and the decreasing total population. The results suggest that population changes must be a factor in considering management needs.

Finally, Sun et al. (2019), in a sample of Chinese listed manufacturing firms from 2007 to 2015, argue that cost stickiness shows the risk businesses encounter when they face difficulties in reducing costs, such as research and development when declining in demand. Therefore, companies become more careful in investing in research and development. The results show that only research and development exhibits cost stickiness but no significant effect on the cost of goods sold and total costs.

This section discusses the prior studies that explore the second major determinant of cost stickiness. The costs of resource adjustment affect managerial decisions to adjust resources when the companies' sales activity changes because resource adjustment costs are higher than resource reduction costs. In addition, the previous literature's investigation of the factors that change managerial decisions to make adjustment costs is discussed here. As a result, readers should better understand how adjustment costs play a significant role in cost stickiness.

2.3.2.2 Managers' Future Expectations

This section discusses the prior studies that explore the second major determinant of cost stickiness. This determinant is the managers' future expectations when deliberating decisions that could change the degree of cost stickiness when adjusting company resources.

Several studies extend the Anderson, Banker, and Janakiraman (2003) research by identifying factors of sticky behaviour. Banker et al. (2014) show a more complex pattern of cost stickiness that combines cost stickiness conditional on previous increases in sales and cost anti-stickiness conditional on previous sales decreases (two-period model) in a 1979 to 2009 US sample. These predictions reflect managers' expectations for future sales relative to their current resource commitments and the general structure of optimal decisions for resource adjustment costs. When revenue decreases in two consequent periods, managers deliberate whether the revenue is likely to return in the next period. As a result, the managers might reduce resource costs, causing the degree of cost stickiness to become less pronounced.

Moreover, costs in the current period are sticky when previous sales increase and are anti-sticky when previous sales decrease. The authors argue that when previous sales increase but current sales decrease, managers predict that the sales may decrease in the next period and do not reduce the company's resource costs. However, when current sales decrease and a previous sales decrease, managers are more likely to think that as sales have already decreased for two consequent periods, they might also decrease in the next period. In this situation, the managers might further reduce resources to only the volume necessary for the companies' current sales.

Banker et al. (2014) also argue that managerial optimism and pessimism reflect rational behavioural bias and future demand inference. Banker and Byzalov (2014) reveal that managers' optimism (pessimism) about future sales increases (reduces) the degree of cost stickiness or reduces (increases) the degree of cost anti-stickiness. Optimistic managers are more likely not to decrease the adjustment costs when sales decrease. The authors use the two-period sales decrease (SUCCDEC) dummy, order backlog, and GDP growth rate as proxies to measure managerial optimism and pessimism. The higher order backlog and higher GDP growth represent managers' higher optimism about future sales. SUCCDEC and change in GDP serve

as signals of managers' expectations. (Successive sales decreases diminish the degree of stickiness, and GDP growth increases the degree of stickiness).

Furthermore, Silge and Wöhrmann (2019) use a US 1990 to 2014 sample to assume that cost stickiness is likely affected by economic motives in organisations with high long-term growth expectations than low long-term growth expectations. The managers with a higher expectation of companies' future growth are more likely to undertake more significant investments and lower idle capacity risk. Thus, such companies are likely to have a higher degree of cost stickiness when the probability of rising sales is high (low), and the risk of idle capacity is low (high). In addition, the optimistic managers with positive expectations of business development in the long-term and short-term future are more reluctant to cut resources when temporary sales decrease to avoid taking adjustment costs. On the other side, managers who are pessimistic about the long-term and short-term future growth are more likely to cut resources when sales decline. The managers are more likely to cut than add resources (Dickinson 2011) leading to a lower degree of cost stickiness.

Finally, Venieris, Naoum, and Vlismas (2015) investigate the relationship between the SG&A cost stickiness and intangible investments in section 2.3.1. They use organisation capital is the primary variable of a company's intangible investment intensity. The authors argue that companies with a high level of intangible assets increase the slack of their unutilised resources more than low intangible assets because the adjustment costs are higher when sales decline. Thus, the managers have optimistic expectations that future sales growth will absorb the slack of utilised resources. The evidence suggests that companies viewing deliverable resource commitments in the development of intangible assets as investments contributing to long-term growth are reluctant to reduce these investments in response to a decline in sales volume, resulting in cost stickiness. Moreover, the empirical findings suggest that companies with high organisation capital have SG&A cost stickiness behaviour. The results also indicate that relatively significant economic activity changes (over 10%) motivate managerial behaviour more than relatively small ones.

This section discusses the prior literature examining managers' future expectations determinants in cost stickiness. Managers' future expectations of the company affect managerial decisions in maintaining or adjusting resources when the company's sales activity changes. As

a result, readers can better understand how managers' future expectations play a significant role in cost stickiness.

2.3.2.3 Managers' Incentives

This section summarises the studies of the third major determinant of cost stickiness, managers' incentives. The third major determinant is the impact of different managers' incentives on managerial deliberation in adjusting company resources to change the degree of cost stickiness.

Management decisions play a critical role that can affect the degree of cost stickiness. This section expands the cost stickiness literature to give valuable insights into management and financial accounting literature, looking at the managers' decisions in changing costs and the motivations underlying managers' decisions that shape companies' cost structure. The current emerging research stream helps readers understand that organisations should form their cost structure based on the managers' motivations, particularly in agency-driven incentives underlying resource adjustment decisions.

Managers' decisions in maintaining unutilised resources can be based on personal considerations and result in agency costs. Agency costs are incurred by self-interested managers who make decisions to maximise personal utility instead of optimal the benefits from the perspective of the companies' shareholders (Jensen and Meckling 1976). Anderson, Banker, and Janakiraman (2003) suggest that in addition to adjustment costs and managers' future expectations, part of costs stickiness in SG&A might be attributable to agency costs.

Banker and Byzalov (2014) find the degree of cost stickiness is lower when managers' incentives to report higher earnings using a sample from 1988 to 2008 across 20 countries. Mangers are more likely to engage in earnings management when managers have strong incentives to meet an earnings target. The authors measure the managers' incentives using an avoid loss dummy as a proxy. They argue that when sales decrease, managers cut clack resources excessively. Conversely, when sales increase, managers delay the acquisition of needed resources which leads to a lower degree of cost stickiness.

Using a 1996 to 2005 US sample, Chen, Lu, and Sougiannis (2012) They predict due to agency problems that, cost stickiness is positively associated with managers' incentive for empire-building. Furthermore, the study reveals that cost stickiness is positively related to agency problems due to managers' empire-building incentives measured by free cash flow, chief executive officer (CEO) horizons, tenure, and compensation structure.

First, Chen, Lu, and Sougiannis (2012) conjecture that when free cash flow is high, managers have greater opportunity to overinvest in operational costs, such as SG&A, when output demand increases. Managers delay SG&A cost-cutting when output demand decreases, which leads to a greater degree of SG&A cost stickiness. However, managers have less opportunity to empire build when free cash flow is low and reduce SG&A costs when output demand decreases to avoid negative career consequences. Second, managers have the motivation to empire build to increase company size to increase their prestige and compensation. Therefore, the authors argue CEOs with longer tenure terms have higher empire-building incentives because they are more likely to have higher compensation when their organisations' size increases. Third, CEOs in the final years of service are approaching retirement or expecting to leave their companies within a short time, so they are less likely to empire build and more likely to cut costs. The expected benefits for the CEOs are more likely to accrue to the CEOs' successors, so the current CEOs who are in the final years of the term are less likely to have empire-build incentives. Finally, the authors predict that CEO compensation is one of the empire-building factors. CEOs have more significant empire-building incentives when their percentage of at-risk (non-fixed) pay in total compensation increases, which leads to a higher degree of SG&A cost stickiness. On the other hand, when a manager's fixed percentage compensation decreases, they have more significant managerial incentives to overinvest due to the uncertainty of creating resources for personal benefit, which leads to the reduction in SG&A cost stickiness.

In addition, Chen, Lu, and Sougiannis (2012) examine the empire-building agency problem and cost stickiness under strong and weak corporate governance. The results show agency problems are positively associated with SG&A cost stickiness under weak corporate governance is more pronounced.

The study of Kama and Weiss (2013) is also part of the emerging research stream focusing on understanding how managerial choices influence cost structure in adjusting resources. They study the impact of managers' incentives in meeting earnings targets on resource adjustments and, thereby, cost structures, using a US sample from 1979 to 2006. If the managers' motivation is to boost earnings on the companies' financial statements, the managers will most likely cut more adjustment costs in expenses. Their findings suggest that the degree of cost stickiness diminished by agency-driven incentives in meeting earnings and deliberate decisions based on managers' motivations affect cost behaviour.

Aboody, Levi, and Weiss (2018) explain how managers adjust their companies' cost structures and explore the relationship between companies' cost structure adjustments and changes in managerial risk-taking incentives, notably operating leverage (fixed-to-variable cost ratio). Their sample is US data from 2000 to 2007. The findings suggest that managers substitute fixed costs with variable costs in the SG&A and R&D cost components to reduce operating leverage in response to reductions in option-based compensation. These show that managers adjust their companies' cost structure to a decline in risk-taking incentives.

In section 2.3.2.2, Silge and Wöhrmann (2019) find that the expected cost of idle capacity and cost stickiness are likely to be affected by managers' different long-term growth expectations. They also find that managers with low long-term growth expectations are more likely to have higher cost stickiness when considering agency motives.

Li et al. (2021) find the management control mechanistic of risk-taking incentives is also an essential determinant of managers' decisions to adjust costs in periods of demand decline relative to demand growth, using a US sample from 1992 to 2015. The risk-taking incentives (compensation vega) are from the managerial expectation of a payoff with the company's stock price volatility. These incentives increase as the managers invest in risky projects, investment, financing, and reporting (Smith and Stulz 1985; Shaw 2012; Chang et al. 2015; Glover and Levine 2017; Hu and Jiang 2019). Cost stickiness at the organisational level is impacted by, product market competition (Li and Zheng 2017), long-term institutional investors (Chung, Hur, and Liu 2019) and the proportion of equity-based compensation in CEOs' total compensation (Brüggen and Zehnder 2014). The results show that risk-taking incentives induce managers to make operational decisions, leading to a lower degree of cost stickiness and higher cost elasticity.

Other studies examine the impact of managers' earnings management on cost stickiness. For example, Xue and Hong (2016) investigate the influences of earnings management and corporate governance on cost stickiness and their relationship with managers' earnings management incentives in a Chinese 2003 to 2010 sample. This research examines the effects of earnings management on cost stickiness and shows that cost stickiness reduction is different between earnings management and non-earnings management. The authors define managers' incentives in avoiding losses or earnings decreases as upward earnings management. First, the research compares non-earnings management with earnings management samples. The research documents that when managers are under pressure to report solid earnings, they reduce costs in response to the sales decline. Then, the authors further divide the expenses into advertising, research and development, and other general costs and find that stickiness in other general expenses is more significant than in research and development or advertising expenses.

Next, Xue and Hong (2016) investigate the effects of earnings management and corporate governance on cost stickiness. The results indicate that the impact is more significant for reducing the cost stickiness of other general expenses than research and development or advertising expenses. In addition, the earnings management mechanism only works in the sub-sample of research and development expenses in poor corporate governance. However, the earnings management mechanism works in sub-samples of other general costs for good and poor corporate governance. Therefore, this research shows that good corporate governance restricts management opportunism and benefits companies by constructing a disciplined environment.

Yang (2019) suggests that accruals earnings management constrains cost stickiness behaviour. This study shows that intellectual capital (IC) efficiency affects cost stickiness. The data sample is from 1990 to 2016 companies listed on the Australian Securities Exchange. The results indicate when companies have limited ability to manage earnings manipulation from accrual earnings, the cost of anti-stickiness occurs. When managers' incentive is to avoid unfavourable earnings but the ability to use accruals to manipulate earnings is limited, they cut slack resources more rapidly to prevent unfavourable earnings, which leads to cost anti-stickiness. The author also finds that the degree of cost stickiness is greater after International

Financial Reporting Standards (IFRS) reporting than before. The post-IFRS period derives from higher IC efficiency relate to the pre-IFRS period increased the degree of cost stickiness.

Marzieh and Dariush (2017) investigate the influences of earnings management and corporate governance on cost stickiness using a Tehran sample from 2010 to 2016. First, they divide the costs into advertising, research and development, and other general expenses. The results suggest that earnings management significantly affects expense stickiness, advertising, research and development, and other general expenses. The results also indicate that with the increase in earnings management, expense stickiness, advertising, research and development, and other general expenses also increase. Second, this study further investigates whether corporate governance significantly affects cost stickiness based on the Xue and Hong (2016) idea. They use external corporate governance proxy by the amount of institutional shareholders' ownership and concentration. The authors predict that upward earning management and good corporate governance may reduce the degree of cost stickiness. However, the study's result does not support their prediction.

Li and Zheng (2017) argue that managers' incentives on company market competition impact cost stickiness for financially strong organisations relative to financially weak ones. This study extracted the product market competition measure using company-level text-based management disclosures in companies' 10-K filings (Hoberg and Phillips 2010; Li, Lundholm, and Minnis 2013). A 10-K is a required comprehensive report filed annually by public companies about their financial performance by the US Securities and Exchange Commission. The effect of product market competition on cost stickiness is due to company investment and cost retention decisions. First, the authors argue that managers take advantage of new investment opportunities for those who make frequent investments. As a result, these companies invest in sales increases and decreases, resulting in lower association between sales activities and operating costs when sales decrease. Also, managers are usually required to make expenditures after a project commences to continue, such as maintaining or enhancing the project and strengthening their competitive position. Therefore, a fall in sales may not immediately trigger cost reductions in the short term. Finally, the authors suggest that a decrease in companies' sales may imply that the businesses are losing their competition positions, so managers may expedite investment in additional research and development, customer satisfaction or marketing, and quality control to regain their market share. Therefore, the authors argue managers in companies

facing competition are unlikely to scale down committed resources when sales decreases, leading to increased cost stickiness.

Moreover, Li and Zheng (2017) argue that companies' financial constraints can impact the association between product market competition factor and costly management investment decisions. They predict that the ongoing investment projects and strategic investments can be funded by financially robust companies when sales decreases. Conversely, financially weak firms cannot make or maintain the desired investments when sales decrease because of a lack of financial resources, diminishing cost stickiness.

In another study similar to Li and Zheng (2017), Cheung et al. (2018) conjecture that competition factors are associated with the SG&A cost stickiness. In a 1990 to 2012 sample of 38 countries, Cheung et al. (2018) argue that SG&A costs are stickier in companies from different competition environments, proxied by high entry costs, high product differentiation, and large market size. Managers choose from two business strategies: reducing company size by cutting investment or enlarging company size by maintaining or increasing investment when sales decreases. Managers may choose to increase company size because the market size reflects future sales or potential market demand. Therefore, managers have an optimistic expectation about future growth and investment returns in larger market sizes companies when sales decreases. In addition, the degree of cost stickiness is greater for companies in industries with high product differentiation. The results suggest that high agency and adjustment costs in an industry with high product differentiation may lead to a greater degree of cost stickiness. In addition, the degree of SG&A cost stickiness is greater for companies in industries with high entry costs. This finding indicates that managers consider adjustment costs will occur when future sales increase in organisations with high entry costs. Overall, both Li and Zheng (2017) and Cheung et al. (2018) findings show that cost stickiness is affected by external and internal factors.

Furthermore, as described in section 2.3.1, Calleja, Steliaros, and Thomas (2006) find cost stickiness in France, Germany, the United States, and the United Kingdom. Therefore, they suggest it is attributable to differences in corporate governance systems and managerial oversight based on different regulations and cultures. They also argue that the degree of cost stickiness is higher in German and France companies subject to code-law governance systems

and historically less subject to a corporate control market pressure. This acknowledgement of a broader range of stakeholders carries over to an increased role of co-determination between management, workers, and finance providers in the allocation of resources in France and Germany. In addition, France and Germany provide more social protection for their workers than in the US (labour) case. Thus, UK and US company management teams have external pressure to make decisions in the interests of companies' shareholders, so the degree of cost stickiness is lower.

Prabowo, Hooghiemstra, and Van Veen-Dirks (2018) find that state-owned enterprises (SOEs) have higher degree cost stickiness than private organisations due to stronger socio-political influences. They use the sample from 22 European countries from 1993 to 2012. The findings indicate socio-political factors affect the degree of cost stickiness which show that labour cost stickiness is stronger during election years in SOEs than in private companies. In addition, labour cost stickiness decreases in the year before privatisation, possibly due to pre-privatisation labour restructuring. States are more likely to interfere in the decision-making processes of SOEs to avoid layoffs to minimise unemployment rates and win political support from a socio-political perspective. The SOEs objectives make it more challenging to control managers' behaviour, which gives more opportunities to managerial discretion and pursuit of their self-interest through empire-building behaviour. When sales decrease, managerial self-interest and state government intervention constrain managers to lay off employees or reduce employee wages, leading to greater labour cost stickiness.

Finally, Hartlieb, Loy, and Eierle (2020) find a significantly lower degree of cost stickiness in the organisations that are headquartered in US counties with high social capital. Community social capital is often considered a social, cooperative norm that obliges society to behave ethically and morally (Hartlieb, Loy, and Eierle 2020). Hartlieb, Loy, and Eierle (2020) argue that community social capital companies are less involved in earnings management (Jha 2017) and tax avoidance activities (Hasan et al. 2017) but are more inclined to engage in corporate social responsibility (Jha and Cox 2015; Hoi, Wu, and Zhang 2018). The community social capital proxy measures include the voter turnout in presidential elections, response rates in US Census Bureau surveys, non-profit organisations, and various social organisations, such as business associations, sporting clubs, religious organisations, and political parties.

Jha and Yu (2015) further suggest fewer agency conflicts and relatively lower audit fees for clients headquartered in high social capital counties. Hartlieb, Loy, and Eierle (2020) argue that community social capital is a socio-economic construct identified as a significant factor in corporate and managerial behaviour. The cooperative norms of acting ethically are the dominant channel for their settings. Thus, community social capital affects cost behaviour.

This section discusses the manager incentive determinant in cost stickiness. The different opportunities and incentives for managers to adjust resources affect managerial decisions in altering resources when the company's sales activity changes. Managers' opportunities and incentives are affected by the company's characteristics, such as the ambition of managers, culture, background, and market environment. Readers should now better understand how managerial incentives play a significant role in cost stickiness.

2.3.2.4 Consequences and Further Research on Cost Stickiness

I categorised research studies of cost stickiness into three major determinants that impact cost stickiness, section 2.3.2.1 resource adjustment costs, section 2.3.2.2 managers' future expectations, and section 2.3.2.3 managerial incentives. This section summarises further research of the other determinants that impact cost stickiness behaviour not previously discussed in the above sections and summarises the impact of cost stickiness on research externally.

One of the other factors that impact the cost stickiness behaviour is that using 1988 to 2011 US data, Shust and Weiss (2014) predict that financial reporting choices affect the stickiness of reported costs by utilising costs paid in cash as their proxy for economical costs. Thus, more expenses shown on financial statements cause a more significant cost stickiness for the company. Moreover, the study tests whether depreciation impacts cost stickiness, as depreciation exceeds the level of cost stickiness paid in cash, a significant expense. After depreciation, operating expenses are significantly stickier than reported operating expenses before depreciation. The findings show the degree of cost stickiness level of reporting expenses can be influenced by reporting choices. In addition, the results show that depreciation can be a factor that boosts the level of cost stickiness, and operating expenses after depreciation are significantly stickier than reported operating expenses before depreciation.

In addition, Riegler and Weiskirchner-Merten (2020) propose market decisions (output quantity and pricing) as another source of measured cost stickiness. The authors find that in imperfect markets, total company costs and sales are affected by the changing market conditions by adapting output prices and quantities. However, only the sales are directly affected by changing output prices, not the costs. This prior research shows that these market decisions also affect the measured cost stickiness in an economic model.

Several studies examine the effect of the cost stickiness theory on financial accounting research, such as accounting conservatism, earnings forecast, and dividend policy. Banker and Chen (2006) find that cost stickiness has predictive power and generates few forecasting errors using a US sample from 1988 to 2002. They propose a forecasting model for earnings to recognise cost variability with sales changes and cost stickiness when sales decline. The model explicitly incorporates the relationship between cost changes and sales changes and improves forecasting accuracy better than other models using the line items in financial statements. This research puts forward the new idea that cost stickiness is related to earnings forecasts.

Another extended confounding effect of cost stickiness combines the theory of conservatism from financial accounting using US samples from 1987 to 2007 (Banker et al. 2016). The authors identify the extension of new standard conservatism models to control sticky costs' confounding effect. Several research papers examine and use the data from previous standard conservatism studies in the Basu (1997), Khan and Watts (2009), and Collins, Hribar, and Tian (2014) models. Banker et al. (2016) propose a new concept that conservatism should also consider cost stickiness.

In related literature, Weiss (2010) uses a US sample from 1986 to 2005 to examine how companies' cost stickiness impact analysts' earnings forecasts, mainly their accuracy in consensus earnings forecasts. This study suggests that analysts should consider cost stickiness in their forecasts and investigate the relationship between earnings forecasts' accuracy and the extent of analyst coverage. The author further investigates whether investors understand cost stickiness in response to earnings announcements. The findings reveal that companies with greater cost stickiness have less accurate analysts' earnings forecasts than those with lower cost stickiness. The results also show that businesses with more sticky cost behaviour have lower

analyst coverage. Finally, the study documents that companies have greater cost stickiness with a weaker market response to earnings surprises in companies. This research indicates that cost behaviour matters in forming investors' beliefs about the companies' value. The study also shows that it is essential for financial analysts to understand cost behaviour.

Ibrahim and Ezat (2017) further investigate the cost stickiness using Egypt context from 2004 to 2011. This study compares the cost stickiness before and after the corporate governance code in Egypt in 2007. The findings indicate SG&A stickiness before and anti-stickiness after the application of the corporate governance code. Ibrahim (2018) investigates how the board structure's governance mechanism impacts cost stickiness in Egypt from 2008 to 2013. The author tests whether cost stickiness is affected by board characteristics using board size, role duality-board chairman/CEO, and non-executives' directors. The findings show board characteristics affect the degree of cost stickiness. The degree of cost of goods sold cost stickiness is diminished by smaller boards and chairman/CEO separation. The degree of cost of goods sold cost stickiness increases with the ratio of non-executives on board.

Banker et al. (2018) investigate how cost stickiness theory impacts the managers' operating decisions on accruals when sales decrease in a 1988 to 2013 US sample. The findings reveal the original modified Jones accrual model is mis-specified. Jones accrual model ignores a linear relationship between accruals and changes in sales when the operating decisions by managers affecting accruals are asymmetric concerning the direction of sales change. Thus, the study documents the asymmetric behaviour of accruals concerning the direction of sales changes.

Habib and Hasan (2019) investigate the effects on cost stickiness of organisations' involvement in corporate social responsibility activities using US data from 1991 to 2013. The authors argue that corporate social responsibility activities need to continue to spend costs for ongoing investments, so it is difficult to immediately scale down the committed resources, leading to greater cost stickiness. This research further looks into the corporate social responsibility to strategic and tactical corporate social responsibility. Strategic corporate social responsibility is a long-term strategy, costly, and often irreversible. On the other hand, tactical corporate social responsibility needs fewer resources and is usually reversible. The findings indicate the degree of cost stickiness is greater for the involvement in strategic corporate social responsibility.

Ma, Wang, and Zhang (2019) examine whether religion can affect the cost stickiness using a sample from Chinese listed firms from 2009 to 2016. The authors find that areas with a stronger religious atmosphere lead to a lower degree of cost stickiness. Furthermore, the negative relationship between religious influence and cost stickiness is more pronounced for organisations with lower risk aversion, higher agency costs, and a higher probability of corruption.

Sun et al. (2019) examine how companies' cost stickiness behaviour influences their research and development investment, with 2007 to 2015 data from Chinese listed manufacturing firms. The risks organisations encounter in difficulties in cutting costs in response to demand decline increase by cost stickiness. Therefore, the authors hypothesise that companies become more cautious about investing in research and development. Only research and development exhibits cost stickiness, whereas the cost of goods sold, and total costs show no significant effects.

He et al. (2020) investigate the effect of the cost stickiness on company dividend policy in US 1977 to 2012 National Labour Relations Board (NLRB) union elections data. They show that cost stickiness is an essential determinant of companies' dividend policy and that stickier costs pay lower dividends than less sticky costs. Furthermore, the study finds that companies with greater resource adjustment costs and stickier costs pay lower dividends. The authors suggest that companies with higher adjustment costs strategically choose a lower level of dividend payment, as a negative shock in the future would result in a more significant decline in free cash flows for them than it would for their peers. Thus, the study proposes that resource adjustment costs likely drive a negative relationship between cost stickiness and dividend payments. In addition, given that investors are particularly averse to dividend cuts, companies' current dividend payments depend on budget constraints and the expectation regarding their ability to maintain the same level of pay-outs in the future when facing adverse shocks.

Furthermore, He et al. (2020) show that unionisation has significantly negative effect on companies' dividend payments, explained by their cost behaviour. The negative effect of unionisation on dividend payments is concentrated in companies with a high ex-ante degree of

cost stickiness, as organised labour, such as unions, makes wages stickier and layoffs more costly. Thereby, increasing the adjustment cost of company labour stock.

This section discusses the prior literature about how cost stickiness literature can impact other research areas. As a result, readers should now better understand the importance of cost stickiness and how determinants internally impact the cost structure and externally impact businesses and literature. The reader can also have the background of cost stickiness to take in future research.

In Section 2.5, I summarise the findings according to the above literature review, including the following views: the key findings on cost stickiness, resource adjustment costs, managers' future expectations, managers' incentives, and consequences, and further research on cost stickiness.

2.3.2.5 Suggestions for Future research

In future research, several interesting avenues can be explored to increase the understanding of the motivation for underlying managers' decision-making about firms' cost structure or change. The scholars can investigate other possible managers' incentives that could alter their decision-making in adjusting resources in the different backgrounds, such as company characteristics, manager characteristics, various sectors, industries, markets, and countries.

Future research can also examine whether cost stickiness is still exhibited during the hit of the COVID-19 pandemic. This unexpected event impacted the economy globally, the economy dropped significantly, and most companies could not operate by cutting more resources. Therefore, scholars can investigate the cost stickiness phenomenon during and after COVID-19 in different sectors and countries.

In addition, the effect of earning persistence on cost stickiness could be investigated. It can also contribute to the literature on accounting earnings quality by emphasizing that the moderating role of earnings persistence is critical in managers' cost decision-making. Furthermore, future research could examine the effect of auditors on cost stickiness by looking

at the auditors' reports, the conference calls with companies' managers, and the incentives of the auditors.

Lastly, the researchers can also consider and discuss how the managers should account for these adjustment costs and whether the managers should include the resource adjustment costs as part of the costs in their budgeting process. In addition, how much or what percentage of the costs the companies can take into their budgeting.

2.4 Conclusion

This chapter introduces cost stickiness with the prior studies and discusses its importance in companies. Previous literature suggests that costs fall less when sales decrease than comparable sales increase on average. This cost asymmetric behaviour, also called cost stickiness, arises from differential managerial responses to declines in sales. This chapter then discusses the three major determinants that impact cost stickiness. First, when sales increase and decrease, the resource adjustment costs impact cost stickiness. Managers tend to retain slack resources and do not cut costs proportionally in reducing sales.

Second, a key determinant affecting the degree of cost stickiness is managers' expectations of companies' future sales. When managers are optimistic about companies' future sales, they are more likely to retain resources when sales decline, generating a greater cost stickiness. Third, managers' incentives are a significant key determinant altering managerial decision-making in resource adjustments when sales change. When managers' incentives are to meet earning targets, empire build or make their products competitive in the markets, that alters their decisions in adjusting resources. Managers and companies' characteristics can affect cost stickiness. By the end of this chapter, readers should better understand of cost stickiness and the factors that impact it.

In Chapters 3 and 4, this thesis examines cost stickiness behaviour in companies with family business background characteristics. Family businesses have different agency problems from non-family companies. Therefore, the managers' incentives might be different in family businesses. It is fascinating to investigate the impact of varying business organisation backgrounds and cultures that alter managers' decisions, which change cost stickiness behaviour.

Therefore, this thesis examines family management empire-building incentives in Chapter 3 and family management risk aversion in Chapter 4.

2.5 Literature Summary Tables

This section summarises the findings according to the literature review in section 2.3 with tables. Table 2.3 shows the key findings of the reviewed literature on cost stickiness. Table 2.4 summarises the first major determinant of the reviewed literature on cost stickiness – resource adjustment costs. Table 2.5 summarises the second major determinant of reviewed literature on cost stickiness – managers' future expectations. Table 2.6 summarises the third major determinant of the reviewed literature on cost stickiness – managers' incentives. Finally, Table 2.7 summarises the consequences and further research of reviewed literature on cost stickiness.

Table 2. 3 Reviewed literature – Key findings of cost stickiness

Author	Source	Findings
Cooper and Kaplan (1992)	Accounting Horizons	Cost stickiness behaviour exists in Hewlett Packard. Costs do not change in equivalent amount when sales increase and decrease.
Noreen and Soderstrom (1997)	Journal of Management Accounting Research	They find that the activity-based costing, which has the assumption that costs are proportional to activity, grossly overstates the impact of changes in activity on the cost by using hospitals data. The costs change more readily in response to increases than decreases in activities.
Anderson, Banker, and Janakiraman (2003)	Journal of Accounting Research	They labelled cost asymmetric behaviour as "Cost Stickiness". Costs are sticky if the increase in costs in response to the increase in total sales is greater than the magnitude of the decrease in costs with an equivalent reduction in volume.
Calleja, Steliaros, and Thomas (2006)	Management Accounting Research	Draw an international comparison between UK, US, France, and Germany, and they find that firms' costs from the four countries exhibit the common characteristic of cost stickiness.
Ibrahim (2015)	Journal of Financial Reporting and Accounting	The study shows cost stickiness in SG&A and COGs expenses in Egypt. The results indicate that SG&A costs are sticky during the prosperity period but anti-stickiness during the recession period.
Xu and Sim (2017)	Applied Economics	Using China's manufacturing listed companies, they find that cost stickiness is a prevalent phenomenon and is overestimated in the manufacturing industry. Cost stickiness varies significantly across industries and in different regions.

Table 2.3 Reviewed literature – Key findings of cost stickiness – Continued

Author	Source	Findings
Stimolo and Porporato (2019)	Journal of Accounting in Emerging Economies	They find costs stickiness exhibit in Argentina. Cost stickiness is not affected by protective employment laws but is by social and cultural factors such as labour inflexibility driven by powerful unions.
Dalla Via and Perego (2014)	Accounting & Finance	They find that cost stickiness does not exhibit for SG&A, COGs and operating costs and only exhibit for total costs of labour.
Nagasawa (2018)	Journal of Management Control	Using Japanese data, find cost stickiness in CEs and cost anti-stickiness in LPEs.
Subramaniam and Weidenmier (2016)	Advances in Management Accounting	They find manufacturing is the stickiest industry due to high fixed assets and inventory levels, making it harder to adjust the costs when revenue decreases. The higher fixed asset intensity leads the asset depreciation to increase in SG&A.
Balakrishnan, Petersen, and Soderstrom (2004)	Journal of Accounting, Auditing & Finance	Using employee data of physical therapy clinics, find the responses to large and small changes in activity levels have no significant difference in the degree of cost stickiness.
Cannon (2014)	Accounting Review	They use US airline sample, proxy capacity expense as cost, passenger revenue as cost generating activity, and direction of change in passenger revenue as demand growth or decline.
Venieris, Naoum, and Vlismas (2015)	Management Accounting Research	They find SG&A cost behaviour relating to firms' intangible investments in organisation capital in the US.
Loy and Hartlieb (2018)	Journal of Management Control	The new listing cohort firms invest more in intangible capital through SG&A and R&D costs which exhibits a higher cost stickiness.

Table 2. 4 Reviewed literature cost stickiness major determinant – Resource adjustment costs

Author	Source	Findings
Anderson, Banker, and Janakiraman (2003)	Journal of Accounting Research	They state that the resource adjustment costs are related to labour as employee intensity and fixed assets cost as asset intensity.
Banker and Byzalov (2014)	Journal of Management Accounting Research	They argue that the resource adjustment costs of cost behaviour are based on the term “sticky” and “anti-sticky” costs along with traditional fixed and variable costs.
Banker, Byzalov, and Plehn-Dujowich (2014)	The Accounting Review	They refer to the adjustment costs as congestion costs. Congestion costs are the cost that cannot decrease in the short run when sales decrease.
Banker, Byzalov, and Chen (2013)	Journal of Accounting and Economics	They use employment protection legislation (EPL) provision as labour adjustment cost to find OCED countries with stricter EPL provisions are associated with greater cost stickiness.
Prabowo, Hooghiemstra, and Van Veen-Dirks (2018)	European Accounting Review	They find that organisations in strategic industries like mining, defence, electricity, and utilities have greater labour cost stickiness.
Golden, Mashruwala, and Pevzner (2020)	Management Accounting Research	They find that a higher reliance on skilled labour is related to more significant cost stickiness.
Loy and Hartlieb (2018)	Journal of Management Control	They point out that temporary labour is typically associated with relatively low adjustment costs.

Table 2.4 Reviewed literature cost stickiness major determinant – Resource adjustment costs – Continued

Author	Source	Findings
Lee, Pittman, and Saffar (2020)	Contemporary Accounting Research	They find labour adjustment costs are higher in election years than non-election years, which leads to a more significant cost stickiness.
Cannon (2014)	Accounting Review	It shows that sticky costs arise in the US air transportation industry because managers lower selling prices to utilise existing capacity when demand falls but add capacity when demand grows.
Xu and Zheng (2018)	Journal of Accounting, Auditing & Finance	Tax avoidance is associated with cost stickiness because tax avoidance can reduce the organisations' tax liability to improve its financing funds(cash).
Li and Zheng (2020)	Accounting & Finance	The rollover risk lowers the degree of cost stickiness. The resource adjustment costs mitigate the rollover risk. Therefore, managers are likely to cut operating costs more rapidly and aggressively when sales decline if organisations have a higher rollover risk.
Nagasawa (2018)	Journal of Management Control	They find higher resource adjustment costs, such as assets intensity, the more vital anti-sticky cost.
Sun et al. (2019)	Sustainability	They indicate that when organisations face difficulties in lowering the costs in response to a decrease in demand, the cost stickiness amplifies the risks firms encounter.

Table 2. 5 Reviewed literature cost stickiness major determinant – Mangers' future expectations

Author	Source	Findings
Banker et al. (2014)	Journal of Management Accounting Research	They find that costs in the current period are sticky when prior sales increase, and costs in the current period are anti-sticky when prior period sales decrease. When prior period sale increases but current sales decrease, managers will think that the sales in the next period might increase.
Banker and Byzalov (2014)	Journal of Management Accounting Research	They suggest managers' optimism and pessimism about future growth increase (reduce) the degree of cost stickiness. Optimistic managers are more likely not to take the adjustment costs when sales decrease.
Silge and Wöhrmann (2019)	Review of Managerial Science	In firms with expected higher future sales, the managers tend to undertake more significant investments and lower idle capacity risk. Thus, these organisations exhibit a higher degree of cost stickiness.
Venieris, Naoum, and Vlismas (2015)	Management Accounting Research	Firms that view deliverable resource commitments to develop intangible assets as investments contributing to long-term growth are reluctant to reduce these investments in response to a sales decline, resulting in cost stickiness.

Table 2. 6 Reviewed literature cost stickiness major determinant – Managers' incentives

Author	Source	Findings
Banker and Byzalov (2014)	Journal of Management Accounting Research	The degree of cost stickiness decreases when managers' incentives are to contain costs or report higher earnings.
Chen, Lu, and Sougiannis (2012)	Contemporary Accounting Research	Cost stickiness is positively related to agency problems due to managers' empire-building incentives measured by free cash flow, the CEO's horizon, tenure, and compensation structure. Under weak corporate governance, the agency problem is significantly positively associated with SG&A cost stickiness.
Kama and Weiss (2013)	Journal of Accounting Research	The degree of cost stickiness is lower when managers' incentive is to meet an earning target. The deliberate decisions depending on manager motivations affect cost behaviour.
Aboody, Levi, and Weiss (2018)	Review of Accounting Studie	They argue managers adjust organisations' cost structures when they have lower risk-taking incentives.
Li et al. (2021)	Review of Quantitative Finance and Accounting	The degree of cost stickiness is lower and higher elasticity when managers make operational decisions induced by risk-taking incentives.
Xue and Hong (2016)	China Journal of Accounting Research	They study the cost stickiness between earnings management and non-earnings management. Moreover, they find good corporate governance can reduce the degree of cost stickiness, although its effect is less strong than earnings management.
Yang (2019)	Australian Accounting Review	Accruals earnings management constraints cost stickiness behaviour, and the intellectual capital efficiency affects cost behaviour.

Table 2.6 Reviewed literature cost stickiness major determinant – Managers' incentives – Continued

Author	Source	Findings
Marzieh and Dariush (2017)	International Journal of Accounting Research	Earnings management significantly affects cost stickiness for adverting, R&D, and other general expenses.
Li and Zheng (2017)	Review of Quantitative Finance and Accounting	They use text-based product market competition measures extracted from management disclosures in firms' 10-k filings and find association between competition and cost stickiness for financially strong firms relative to financially weak firms.
Cheng, Jiang, and Zeng (2018)	Asia-Pacific Journal of Accounting & Economics	They find SG&A cost stickiness is higher for organisations in different competition environments.
Calleja, Steliaros, and Thomas (2006)	Management Accounting Research	The company management in the UK and US have external pressure to make decisions in the interests of shareholders because of different social protection in the countries, which induces lower cost stickiness.
Prabowo, Hooghiemstra, and Van Veen-Dirks (2018)	European Accounting Review	The state-owned enterprises (SOEs) exhibit a greater degree of cost stickiness than private firms because of the stronger socio-political influences in SOEs.
Hartlieb, Loy, and Eierle (2020)	Management Accounting Research	They find a lower degree of cost stickiness in organisations that are headquartered in U.S counties with high social capital. Social capital constrains managers from making opportunistic resource adjustment decisions that increase cost stickiness.

Table 2. 7 Reviewed literature of consequences and further research on cost stickiness

Author	Source	Findings
Shust and Weiss (2014)	Journal of Management Accounting Research	They find reported operating expenses in financial reporting choices affect the operating costs stickiness more costs paid in cash. Also, operating expenses cost stickiness is greater after depreciation than reported operating expenses before depreciation.
Riegler and Weiskirchner-Merten (2020)	Review of Managerial Science	They find market decisions of an output quantity and pricing decisions are another way to measure cost stickiness. They argue that total firm costs and sales are affected by output prices and quantities.
Banker and Chen (2006)	The Accounting Review	They propose an earnings forecast model that recognises cost variability with sales changes and cost stickiness when sales decline, and find that cost stickiness has predictive power and minor forecasting error.
Banker et al. (2016)	Journal of Accounting and Economics	They propose an extension of standard conservatism models, which control the confounding effect of sticky cost.
Weiss (2010)	The Accounting Review	This study suggests that analysts should take cost stickiness into analysts' earnings forecast consideration. The findings show that organisations with greater cost stickiness have less accurate analysts' earnings forecasts than firms with lower cost stickiness.
Banker et al. (2018)	Fox School of Business Research Paper	They suggest the modified Jones model underestimates discretionary accruals when oragnisations experience an extreme sales change and overestimates them when organisations experience a moderate sales change.

Table 2.7 Reviewed literature of consequences and further research on cost stickiness – Continued

Author	Source	Findings
Ibrahim and Ezat (2017)	Journal of Accounting in Emerging Economies	The findings indicate that SG&A cost stickiness before and anti-stickiness after the application of the corporate governance code in Egypt.
Ibrahim (2018)	Accounting Research Journal	The author tests whether board characteristics affect cost stickiness using board size, role duality-board chairman/CEO, and non-executives directors.
Habib and Hasan (2019)	Business and Society	They investigate the effects on cost stickiness of organisations' involvement in corporate social responsibility activities.
Ma, Wang, and Zhang (2019)	Journal of Business Ethics	The authors find the area with a stronger religious atmosphere leads to a lower degree of cost stickiness.
Sun et al. (2019)	Sustainability	They examine how firms' cost stickiness influences their R&D investment. They find that firms become more careful about investing in R&D.
He et al. (2020)	Journal of Accounting Research	They suggest that cost stickiness is an essential determinant of firms' dividend policy. Firms with stickier costs pay lower dividends than those with less sticky costs. They also document that unionisation significantly affects a firm's dividend payment, explained by their cost behaviour.

Chapter Three: Cost Stickiness in Family Firms – Empire Building Incentives

3.1 Introduction

This chapter answers Questions 1, 2, 3, and 4. This chapter studies the cost stickiness in family firms. I explore how the characteristics of founding family firms affect asymmetric cost. I examine whether and how cost stickiness is related to family firm-specific characteristics, and whether the cost stickiness phenomenon exists in family firms with different incentives for accounting choices. This chapter has implications for management accountants, firm managements, and analysts who might be interested in understanding the behaviour of their expense activities (e.g., when generating financial forecasts) and gaining awareness of how managers make accounting decisions to adjust their costs in the family-type governance structure in the US.

Contemporary cost management studies have introduced managerial decisions into the fundamental drivers of costs. I find those cost management decisions are related to many factors from the literature review of cost stickiness in Section 2.3.2 of Chapter 2. For example, product sales demand characteristics, industry structure, strategic positioning, managers' incentives, managers' psychological biases, stakeholders' incentives and biases, the magnitude of earnings management, level of corporate governance, government regulations, national cultures, etc. However, to the best of my knowledge, no prior study has examined the influence of family ownership on cost management decisions as a potentially important determinant of cost stickiness. This chapter argues that family ownership is a potentially important factor influencing cost management decisions (and cost stickiness) in such firms.

Pérez-González (2006) highlights the pervasiveness and prominence of family ownership in publicly traded US firms. Founding family owners are the most dominant type of large and undiversified shareholders in the United States (Anderson, Duru, and Reeb 2009). Hence, family ownership is an important structure. Family firms have unique ownership structure, where founding families denote a unique type of shareholders who hold poorly

diversified portfolios. They are long-term investors (multiple generations) and often control senior management positions (Anderson and Reeb 2003b).[2]

Research on family firms has shown that founding family firms have lower agency problems between owners and managers than non-family firms do because of owner-manager incentives that are more aligned and higher accounting conservatism and because family firms are often risk-averse (Shleifer and Vishny 1997; Anderson and Reeb 2003b; Villalonga and Amit 2006; Chen et al. 2010). This context provides an interesting case for examining how managerial choices in family firms to adjust resources influence family firms' cost structure and cost stickiness. Existing cost stickiness research has not yet specifically examined cost stickiness behaviour in family firms in general, and the relationship between cost stickiness and the specific characteristics of such firms in particular.

Founding family firms are characterised by the founding family's concentrated ownership and their founding family members' active involvement with management, either as top executives or as directors. This study follows Villalonga and Amit (2006), Anderson, Mansi, and Reeb (2003), and Wu and Mazur (2018) to define family firms as firms in which the founder or descendant of the founder has a seat on the board and/or is the blockholder, and firms have that at least two board members are correlated with either by blood or marriage.

In this study, I assume that in family firms, agency problems involving managers' motivations, such as executive powers, statuses, and compensations, may reduce empire-building on day-to-day decisions regarding resource adjustments. Therefore, they are responsible to some extent for cost stickiness. Chen, Lu, and Sougiannis (2012) consider agency costs related to cost stickiness. They make the valid point that managers act as self-interested agents and might extract private benefits.

[2] Family firms constitute over 80% of all business organizations in the US (Anderson and Reeb 2003b). They point out that nearly one-third of the US Standard and Poor's (S&P) 500 companies are family businesses. Of the US firms listed in Fortune 500, 37% are founding family firms. Villalonga and Amit (2006) find that the organization form of family firms accounts for approximately 46% of firms in the Standard and Poor's (S&P) 1500 index.

In this chapter, I examine the roles of family firms in the impact of agency problems on SG&A cost stickiness. The agency problems measures are free cash flow (FCF), CEO first three years of tenure, CEO final year of tenure, and CEO fixed pay compensation ratio. As managers in family firms face different incentives, I conjecture that they are more likely to avoid rapidly increasing or slowly decreasing SG&A costs when sales increase or decline, respectively, compared with non-family firms. I theorise that the interests of managers in family firms align with those of the owners and that effective monitoring by the board lessens the managerial empire-building incentives. Therefore, the reduced agency problems of separation between ownership and control in family firms lessen the degree of cost stickiness.

In the additional analysis, I examine the moderating role of corporate governance—board size, gender ratio, and manager role duality on the cost stickiness of family and non-family firms. The board of directors has greater supervisory power (Yermack 1996) and some studies indicate that in a higher ratio of female directors, firm value is higher (Carter, Simkins, and Simpson 2003) and firm performance is better (Campbell and Mínguez-Vera 2008; Adams and Ferreira 2009; Nielsen and Huse 2010). Moreover, when the executive serves on the board, the board's independence is reduced (Core, Holthausen, and Larcker 1999) and the level of compensation for the executive is higher (Banghøj et al. 2010). Banghøj et al. (2010) indicate that in Denmark, the CEO is allowed to serve on the board, but not as a board chairperson, and they find that although the power of the CEO as a board member is not equivalent to the power of the board chairperson, the board’s independence reduces.

In the additional analysis, I also divide family firm samples into active and passive family firm subsamples to compare the degree of cost stickiness. Active family firms are defined as family firms run by family members' CEOs. Passive family firms are family firms run by professional CEOs. I examine the difference in cost stickiness behaviour between active and passive family firms.

In the empirical tests, I adopt the sample from the S&P 500 index, and it comprises 8623 observations, including 2915 family firms and 5708 non-family firms over the period 1996 to 2018. I examine the cost stickiness using the SG&A expenses. The study classifies the sample

into three groups: active family firms (measured by family member CEOs), passive family firms (measured by outside professional CEOs), and non-family firms. I adopt four variables to proxy for managers' empire-building incentives, which arise from the agency problem: FCF, CEO's first year of tenure, CEO's last year of tenure, and compensation structure.

The results first show both family and non-family firms exhibit cost stickiness behaviour, separately. The results show that both family and non-family firms exhibit cost stickiness behaviour. SG&A costs in family and non-family firms increased by 0.71% per 1% increase in sales revenue, but SG&A decreased by 0.63% in family firms and 0.47% in non-family firms per 1% decrease in sales revenue. Therefore, the degree of cost stickiness is higher in non-family firms than in family firms before including the agency problems measures.

Then, the results indicate that, first, the pooled sample, namely, the family and non-family subsamples exhibit SG&A cost stickiness behaviour. In family firms, CEOs in the first three years of tenure tend to have a long-term earnings goal, rather than an empire building incentive or the incentive to reduce expenses to overstate earnings. Second, the results show that, compared with non-family firms, higher FCF in family firms exhibits a higher degree of cost stickiness. Third, compared with non-family firms, family firms with CEOs in the first three years of tenure exhibit a greater SG&A cost stickiness. Moreover, while family firms show cost anti-stickiness when CEOs are in their last year of tenure, the degree of cost stickiness increases in non-family firms. In general, ownership and decision-making authority in family firms are concentrated in key family members, and most directors of these firms are family members. When CEOs in family firms leave in the short term, they have less power to affect decisions such as cost or resource adjustment or are less likely to have empire-building incentives. Lastly, when the percentage of CEO fixed pay in the total compensation is higher, the degree of SG&A cost stickiness increases more in non-family firms than in family firms.

Additional analysis shows that, first, in terms of firms with smaller boards, SG&A cost stickiness increases more in family firms than in non-family firms. The degree of cost stickiness increases more in family firms than in non-family firms. Moreover, relative to non-family firms, family firms are more likely to exhibit cost stickiness when the CEO's fixed pay is higher.

Second, in the subgroup with a higher ratio of females on the board, SG&A cost stickiness is more likely to occur when CEOs work for tenure in the first three years relative to non-family firms. Compared to non-family firms, family firms whose percentage of the CEO's fixed pay in the total compensation is higher are more likely to show SG&A cost stickiness.

Third, in the subgroup where the CEO serves as a director, the cost stickiness of family firms increases more than that in non-family firms when CEOs are in their first years of tenure. SG&A cost stickiness also decreases more in family firms than non-family firms when CEOs work in their last year of tenure and have a dual role as a director.

Lastly, the findings on the degree of cost stickiness in further analysis between active, passive, and non-family firms show that compared to passive family firms or non-family firms, there is no SG&A stickiness cost behaviour in the active family firms by FCF. Compared with active family firms and non-family firms, SG&A cost stickiness in passive family firms is more pronounced when CEOs are in the first three years of tenure. Relative to non-family, active family firms have stronger cost stickiness when CEOs are in the first three years of their tenure. Compared to non-family firms, active family firms have greater cost stickiness when CEOs have a higher fixed pay ratio. In addition, compared to passive family firms, active family firms have greater cost stickiness with a higher fixed pay ratio.

This chapter contributes to cost stickiness literature as well as literature on family firms. This study extends the dimensions of cost behaviour by investigating the cost stickiness phenomenon in family firms based on family firms' intrinsic and unique characteristics. Second, this chapter also contributes to corporate governance literature. I use family characteristics as a factor, as new set-ups for different corporate governance involving family firm management incentives lead to different decision-making. I study cost behaviour by family firm characteristics, as closely aligned interests between the owner and the manager affect managerial decisions and cost structure.

The remainder of this chapter is organised as follows. In Section 3.2, I review the related literature and develop the hypothesis. Section 3.3 describes the research methodology. Section 3.4 analyses the empirical results. Section 3.5 performs and explains additional analysis. Finally, Section 3.6 presents the conclusions.

3.2 Related Literature and Hypothesis Development

The existing literature on the topic of cost asymmetry has examined the existence of cost stickiness behaviour in different countries and in both public and private firms. Scholars have explained cost stickiness through various economic factors, like employee intensity, asset intensity, demand uncertainty, stock performance, and life cycle (Anderson, Banker, and Janakiraman 2003; Dierynck, Landsman, and Renders 2012; Zhu and Xu 2011), capacity utilisation (Balakrishnan, Petersen, and Soderstrom 2004), employment protection legislation (Banker, Byzalov, and Chen 2013), pattern of sales changes (Banker et al. 2014), national culture (Kitching, Mashruwala, and Pevzner 2016), and management expectations (Bozanic, Roulstone, and Van Buskirk 2018).

Prior research has highlighted one significant factor of cost stickiness: managerial incentives and their interactions with corporate governance, ownership, and regulation. Brüggen and Zehnder (2014) find that cost stickiness increases with the ratio of equity-based compensation to total compensation. Managerial incentives are based on performance compensation. Liu, Liu, and Reid (2019) indicate that both employee-oriented and customer-oriented firms show higher cost stickiness. These results can reflect the costs of higher resource adjustment or more significant agency problems for firms with a higher stakeholder orientation.

Scholars find that agency problems are one of the considerations that alter managerial decision-making incentives (Chen, Lu, and Sougiannis 2012; Kama and Weiss 2013; Balakrishnan, Labro, and Soderstrom 2014). The interest misalignment between the manager and shareholder would induce agency problems. Managers conduct activities for their self-interests rather than the interests of the firm’s shareholders (Jensen and Meckling 1976). One of the critical agency problems is managerial ‘empire building’. It indicates that managers tend to

grow the firm scale beyond its optimal size or maintain unutilised resources to increase their utility from prestige, status, power, and compensation (Jensen 1986; Masulis, Wang, and Xie 2007; Hope and Thomas 2008).

Chen, Lu, and Sougiannis (2012) examine the effect of managers' empire-building incentives on their cost decision in response to the exogenous demand shock. They find that managers with empire-building raise SG&A cost so fast when sales increase, but they decrease SG&A costs slowly when sales decline. Thus, managers' empire-building incentives would induce a positive association between the agency problem and the level of SG&A cost stickiness. The choices of adjusting resources will cause high cost stickiness, compared to the firms' value maximising level of cost stickiness, because of agency problems between empire-building managers and shareholders (Anderson, Banker, and Janakiraman 2003; Chen, Lu, and Sougiannis 2012).

On the other hand, Kama and Weiss (2013) suggest that self-interest managers are more likely to accelerate moving the slack resources in response to the sales decline, even though the decline maybe is temporary. Therefore, cost reduction increases with the incentives to meet earnings targets. Hence, the incentives of managers that meet their firms' earnings targets reduce the degree of SG&A cost stickiness when sales decline.

Beyond the SG&A cost stickiness arising from incentives because of other economic determinants and agency problems, it is reasonable to expect that idiosyncratic characteristics of founding family firms have additional influences on SG&A cost stickiness. The founding family firms often have a lower agency conflict between managers and owners than non-family firms. (Fama and Jensen 1983; Shleifer and Vishny 1997; Anderson and Reeb 2003a, b; Chen et al. 2010). This is because family firms have consistent interests between management and owners.

The incentives for businesses with the family-type ownership organisational structure also include passing the firms to subsequent generations of the family and protecting the firm's reputation. In addition, founding families are concerned about their reputations because of the

family's sustained presence in the firms and reputation effect on third parties. Family firms have a substantial incentive to decrease the conflicts of agency and maximise firm value because they often have undiversified holdings in their firm, and because their family's welfare depends on the firm's survival and is closely linked to its performance (Shleifer and Vishny 1997; Anderson and Reeb 2003b; Villalonga and Amit 2006; Chen et al. 2010). Due to the characteristics of family firms reducing agency problems, I predict it would result in a different association between agency problems and cost stickiness. I expect that FCF, CEO tenure, and CEO compensation can be the proxy for managerial empire-building incentives.

3.2.1 The Impact of Free Cash Flow on Cost Stickiness

Agency theory suggests that managers tend to perform the activities for self-benefits but not activities for the benefit of shareholders (Jensen and Meckling 1976). Chen, Lu, and Sougiannis (2012) find that the level of SG&A cost stickiness is positively related to the firm's FCF. FCF is often used to measure the agency problems and resulting empire-building motivations (Jensen 1986; Masulis, Wang, and Xie 2007; Richardson 2006; Shleifer and Vishny 1997; Titman, Wei, and Xie 2004). Jensen (1986) indicates that managers are likely to invest in operations or projects of negative net present value in firms with high FCF instead of paying them to shareholders to raise perquisite consumption.

The related empirical studies in empire-building literature focused on more salient or infrequent activities, like mergers and acquisitions (Titman, Wei, and Xie 2004; Dittmar and Jan 2007; Masulis, Wang, and Xie 2007), but ignored less salient or ongoing activities, like SG&A expenditures (Chen, Lu, and Sougiannis 2012). Prior studies also support managers tend to overspend on SG&A costs, which do not need legitimate economic reasons (White and Dieckman 2005; Wilson 2000). Research also points out that SG&A costs capture most of the overhead costs occurring in the offices, such as salaries and commissions of salespersons, office payroll, office supply expenses, equipment disposal, accounting fees, legal fees, and travel and entertainment. Consider companies that had targeted significant growth through acquisitions. Whenever the companies conducted a deal, management would temporarily move people from their day-to-day jobs and divert them towards integrating IT, HR, Finance, and other operations.

Managers with empire-building incentives are likely to raise SG&A costs so fast (e.g., adding office payroll and expenses rapidly) when sales increase or reduce SG&A costs very slowly (e.g., delaying the decrease of office payroll and related expenses) when sales decline (Chen, Lu, and Sougiannis 2012). Thus, managers can extract private benefits by deliberately delaying or forgoing the decrease in commitment resources, such as existing employees and fixed assets, even if it may be in the firms' interest to adjust or reduce these resources.

However, the aligned interests between owners and managers in family firms reduce managers' empire-building incentives compared to non-family firms. When the majority of shareholders in the firms are family members (Anderson and Reeb 2003a, b; Villalonga and Amit 2006), management decisions and behaviour are more likely to align with the majority shareholders' interests. The founding family firms are more likely to concentrate on the long-term survival of the firms to maximise firm value instead of personal wealth maximisation (Anderson, Mansi, and Reeb 2003; Anderson and Reeb 2003b; Chen, Chen, and Cheng 2008). Managers are less likely to have myopic behaviour to forgo good investments to boost current earnings (Stein 1989). Therefore, family firms are less likely to maximise their current profits and are more likely to maximise the firm's value for the long term when making decisions on the investment and adjustment of resources.

Family firms are also monitored more closely than non-family firms are (Chen, Chen, and Cheng 2008; Villalonga and Amit 2006). Hence, managers' spending on costs is overseen. Family owners are typically actively involved at their firm's top management level by serving as executives and/or directors. Hence, family owners have better access to information and can better monitor and reduce agency problems between management and shareholders (Chen, Chen, and Cheng 2008).

Jensen (1986) agency cost theory indicates that firms with surplus free cash flows generally tend to have a conflict of interest between managers and shareholders. However, when firms with high internal funds, the family businesses are less likely to occur the first type of agency problem. There is less possibility of traditional agency problems with separation of management and ownership in family businesses because the concentration of ownership,

family, and company interests are usually closely linked. Hence, according to the free cash flow hypothesis in Jensen (1986), family over-investment problems arising from excess capital should be less severe.

Therefore, I predict that the effective monitoring and aligned interests in family firms discourage managers with higher empire-building incentives. Even if family firms have higher free cash flows, their managers are less likely to increase or maintain SG&A costs to respond to the decrease in output demands. However, managers in non-family firms are more likely to delay reducing SG&A costs if sales demand declines when they have higher free cash flows. The following hypothesis is proposed:

Hypothesis 1: Higher free cash flow increases the degree of SG&A cost stickiness more in non-family firms than in family firms.

3.2.2 The Impact of CEO Tenure on Cost Stickiness

CEO tenure (first three years)

Existing corporate governance literature shows that CEO entrenchment increases over time (Shen 2003). During the early years of their career, CEOs are under pressure to show good performance because the market is uncertain about their ability (Ali and Zhang 2015; McClelland, Barker, and Oh 2012; Walters, Kroll, and Wright 2007). This taking charge process should incur in the watchful eyes of different stakeholders. Further, their relatively weak power position and vulnerability deter new CEOs from pursuing their self-interests at the expense of the shareholders. After CEOs gain the required task knowledge and enhance their understanding of the firm's situation, they generally start to undertake significant actions on different fronts in the second or third year of the CEOs' work (Gabarro 1987; Hermalin and Weisbach 1998). In addition, CEOs have a longer horizon during the early stage of their tenure. Hence, they have considerable incentives to undertake the long-term investment plans because they can reap these investment benefits from the later stages of their CEO tenure. (Ali and Zhang 2015). CEOs with higher operating performance in their early tenure are more likely to enjoy benefits in the future,

including more significant future compensation, greater autonomy, and reappointments (Fama 1980). Therefore, CEOs have two different incentives at the early stage of their CEO tenure: to mitigate their career concerns and invest in gaining future benefits later in their tenure (Mitra et al. 2020).

Hence, CEOs tend to work harder as the market assesses their ability, and they have a high incentive to overstate earnings to take credit for their performance (Mitra et al. 2020). Financial reports clearly show CEOs' ability, which further influences their compensation (Hermalin and Weisbach 1998; Bochkay, Chychyla, and Nanda 2019). Shen (2003), Ali and Zhang (2015) and Pan, Wang, and Weisbach (2016) find that financial reporting risk increases in the initial years of CEOs' service because of earnings overstatements caused by significantly higher discretionary accruals and lower discretionary expenses during the early years of their CEO service (the first three years) than in their later years. Pan, Wang, and Weisbach (2016) also show that CEOs are more likely to disinvest poorly performing assets and conduct overstated earnings through accruals and discretionary expenses (advertising, SG&A, or R&D expenses) and subsequently increase investment in the first two years of their tenure than in the later years. Therefore, the findings of significantly lower discretionary expenses are likely to reduce cost stickiness during the early years of the CEOs' tenure.

The uncertainty of managerial ability causes career concerns for CEOs. Therefore, I expect that CEOs in the first three years of their tenure are likely to decrease SG&A costs when sales decline in order to increase current earnings. In other words, there is less sticky cost behaviour during the first three years of a CEO's tenure. Ali and Zhang (2015) justify the implication of this expectation. They examine early three-year and final one-year of CEOs' careers and conclude that CEOs manipulate earnings upward in both periods.

The agency theory assumes managers' goals differ from the shareholders' and the firms, but the stewardship theory assumes executive officers are like stewards of a firm. However, the interests of CEOs in family firms align the most with those of shareholders in terms of the maximisation of a firm's value and focus on the firm's long-term survival (Chen, Chen, and Cheng 2008). When family members hold executive positions, it can reduce the agency problem

of conflicts of interest between the owner and managers (Anderson and Reeb 2003a, b; Villalonga and Amit 2006). Therefore, I expect that, just as the stewardship theory, the CEOs in family firms will aim at the long-term profit of the firm. Hence, their CEOs in the first three years of their tenure are unlikely to make SG&A costs decrease when current sales decline. The above arguments lead to the following hypothesis:

Hypothesis 2: Family firms whose CEOs are in their first three years of tenure are more likely to exhibit a greater degree of SG&A cost stickiness than non-family firms whose CEOs are in their first three years of tenure.

CEO tenure (final year)

CEOs in their late career have short tenure and horizon problems; therefore, they have an incentive to overstate earnings to mitigate future employment risk and increase post retirement income and benefits (Mitra et al. 2020). CEOs spend less on R&D expenses in their final years of office tenure (Dechow and Sloan 1991). Chen, Lu, and Sougiannis (2012) document that when managers approach retirement or the end of their tenure, they believe that the future benefits of their empire-building activities will be enjoyed by their successors rather than them. Hence, their empire-building incentives decrease. Ali and Zhang (2015) find that the overstatement of earnings is significantly greater in the final year of CEOs' service, which, they argue, is consistent with the horizon problem of departing CEOs. Their results suggest that firms are likely to have an elevated risk of financial misreporting in the early years and the final year of CEOs' tenure.

Shareholder theory suggests that firms' sole motivation should be to advance shareholders' interests, and stakeholder theory suggests that managers should consider all stakeholders' interests. However, CEOs are possible to have different incentives for self-interests when they are in the last year of their CEO tenures. Especially, CEOs in their final year of service are less likely to engage in empire-building activities and prefer to reduce SG&A costs when necessary, resulting in a lower degree of cost stickiness.

Stewardship theory, in family firms, ownership and decision-making authority are concentrated in the key family members, and most of the directors of these firms are family members. I argue that CEOs in family firms who are family members due to leave office shortly are not usually empowered to make decisions because of higher monitoring and aligned interests between owners and managers. Hence, they are less likely to be affected by their cost decisions from empire-building incentives or increasing retained earnings to increase their compensation. The above discussion leads to the following hypothesis:

Hypothesis 3: Family firms whose CEOs are in their last year of tenure are more likely to exhibit a greater degree of SG&A cost stickiness than non-family firms whose CEOs are in their last year of tenure.

3.2.3 The Impact of Fixed CEO Compensation Ratio on Cost Stickiness

Although managers' empire-building incentives result in sticky cost behaviour (Chen, Lu, and Sougiannis 2012), Aboody, Levi, and Weiss (2018) find that managers reduce their cost stickiness behaviour in response to a decrease in their risk-taking incentives. Kanniainen (2000) further indicates that under the assumptions of decreasing preference for prudence and absolute risk aversion, managers' empire-building incentives are attenuated when a fixed income hedges their compensation.

Chen, Lu, and Sougiannis (2012) find that the degree of cost stickiness decreases with an increase in the CEO's fixed pay percentage in their total compensation. As the proportion of the CEO's fixed pay in the CEO's total compensation decreases, the CEOs have more significant incentives to overinvest in SG&A under uncertainty because investment increases can provide CEOs with opportunities to receive rewards in terms of bonuses, reputation, and reappointments. However, a higher ratio of fixed income in managers' total compensation may decrease the CEO's empire-building incentives to overinvest during uncertainty about the future.

Qiang and Warfield (2005) find that managers with higher equity incentives tend to report their firms' earnings to meet or beat analysts' forecasts. Bergstresser and Philippon (2006)

also find that firms whose CEOs' total compensations are more closely tied to the values of stocks and the holdings of options have higher use of discretionary accruals to manipulate reported earnings.

However, according to stewardship theory, managers and shareholders in family firms have more aligned interests, usually have long-term tenure, and are family members or harder to replace (Gomez-Mejia, Larraza-Kintana, and Makri 2003; Villalonga and Amit 2006). Family firms are also monitored more by their owners (family members) (Anderson and Reeb 2003b; Villalonga and Amit 2006). Hence, I argue that managers and owners in family firms prefer to make decisions together, such as long-term planning and profitability, relative to managers in non-family firms. Therefore, I expect that SG&A cost stickiness is lower in non-family firms than in family firms, even though CEOs have a higher fixed pay ratio. From the above discussion, I form the following hypothesis:

Hypothesis 4: A higher fixed pay ratio reduces the degree of SG&A cost stickiness more in non-family firms than family firms.

3.3 Methodology

3.3.1 Sample and Data

The S&P 500 is an index of the stock market that includes the top 500 largest publicly listed firms in the United States. Chen, Dasgupta, and Yu (2014) find that, on average, information transparency is better for family firms within the S&P 500 index than for firms within the S&P MidCap 400 and SmallCap 600 indices. Using the Standard & Poor's 500 firms, Anderson and Reeb (2003b) find that family firms are in one-third of the S&P 500 from 1992 to 1999 in US. Because firms in the S&P 500 have higher transparency and account for a more significant proportion of families in the S&P 500 firms, this thesis adopts data from the S&P 500 in the US to examine my hypotheses. I exclude banks and public utility industries because government regulations potentially affect firm performance.

I obtain the corporate governance variables from ExecuComp and RiskMetrics. The RiskMetrics data starts from 1996; therefore, my sample starts with 1996. The sample for this study is from S&P 500, and it covers the period from 1996 to 2018. I obtain data on SG&A costs, sales revenue, and other financial variables from COMPUSTAT annual industrial files. I obtain the corporate governance variables from ExecuComp (CEO/Director) and BoardEx (director gender ratio/board size). I further exclude observations with missing data on SG&A costs and sales revenue for the current year and the previous year and observations in which sales revenue was smaller than the SG&A costs.

To identify family firms, I manually check proxy statements on US Securities and Exchange Commission (SEC)'s Electronic Data Gathering (EDGAR) website for each company in S&P 500 along with other sources such as the company's website or FundingUniverse. They provide this thesis with the following information: family ownership and whether the CEO is a family member. Following Anderson, Mansi, and Reeb (2003), Villalonga and Amit (2006) and Wu and Mazur (2018), I classify a firm with family control as long as one of the following two criteria is met: (1) the founder or a descendant of the founder sits on the board and/or is a blockholder, and (2) at least two board members are related which is either by blood or marriage. I chose this way of defining a firm with family control because if a firm met either of the two criteria, then the majority of the firm's shares are held by family members or two members on the board are more likely to have aligned interests make decisions together. Hence, the defined family firms are more likely to be controlled and owned by the family members.

3.3.2 Agency Variables

I adopt four variables to proxy managers' empire-building incentives from the agency problem: FCF, CEO in the first three years of tenure, CEO in the last year of tenure, and CEO fixed pay. For more details on how I calculate each variable, refer to Table 3.1.

3.3.3 Economic Variables

In the empirical tests, I control the economic determinants of cost stickiness. First, I control asset intensity and employee intensity (Anderson, Banker, and Janakiraman 2003; Chen, Lu,

and Sougiannis 2012). Second, I control successive decreases in sales revenue because managers will be more likely to refer to a negative demand shock and be permanent when sales revenue declines during two consecutive years. Successive Decrease is an indicator variable, where it is set to one when the sales revenue in year t-1 is smaller than that in year t-2, and otherwise zero (Anderson, Banker, and Janakiraman 2003; Chen, Lu, and Sougiannis 2012). I also control for stock performance. Better stock performance can signal positive expectations regarding firms' future earnings, leading managers to deliberately retain some unnecessary SG&A costs and further cause a greater cost stickiness (Chen, Lu, and Sougiannis 2012). For more details on how I calculate each variable, refer to Table 3.1.

3.3.4 Empirical Models

SG&A costs account for a higher proportion of the costs of business operations. Banker, Huang, and Natarajan (2011) indicate that the average ratio of SG&A costs to total assets is 27%. Chen, Lu, and Sougiannis (2012) indicate that SG&A costs can extract most slack resources into overhead and staff expenses. SG&A is the expense that managers are able to adjust rapidly and easily in the short term. Because of the significant importance of SG&A costs, most researchers pay more attention to SG&A inputs. Therefore, in this thesis, I also focus on and analyse the SG&A's cost stickiness.

Ibrahim, Ali, and Aboelkheir (2022) review the empirical models used to detect cost stickiness. This study follows follow the Anderson, Banker, and Janakiraman (2003) and Chen, Lu, and Sougiannis (2012) to conduct and extend empirical test for cost stickiness behaviour. I would like to investigate whether using different corporate governance indicators leads to different conclusions than (Chen, Lu, and Sougiannis 2012).

The models have been estimated using ordinary least squares (OLS) regression. As a baseline regression for testing SG&A stickiness in the sample, I follow Anderson, Banker, and Janakiraman (2003), and I have also controlled for industry and year fixed effects:

$$\Delta lnSGA_{i,t} = \beta_0 + \beta_1 \Delta lnSALES_{i,t} + \beta_2 * D_{i,t} * \Delta lnSALES_{i,t} + \epsilon_{i,t} \quad (1)$$

The definitions of the variables used in the models in this chapter are provided in Table 3.1. The coefficient β_1 captures the percentage change in SG&A expenses for a 1% sales increase. The coefficient β_2 captures the degree of stickiness in the cost response to sales decreases versus increases. Cost stickiness implies that β_2 is negative, which means that the reduction in costs for a 1% sales decrease is smaller than the rise in costs for an equivalent sales increase (i.e. $\beta_1 + \beta_2 < \beta_1$).

Second, I follow an extended Anderson, Banker, and Janakiraman (2003) model by Chen, Lu, and Sougiannis (2012) which incorporates adjustment costs and managers' future expectations to estimate the change in cost stickiness:

$$\begin{aligned}\Delta lnSGA_{i,t} = {} & \beta_0 + \beta_1 * \Delta lnSALES_{i,t} + \beta_2 * D_{i,t} * \Delta lnSALES_{i,t} + \beta_3 * D_{i,t} * \Delta lnSALES_{i,t} \\ & * \ln(EMPINT) + \beta_4 * D_{i,t} * \Delta lnSALES_{i,t} * \ln(ASSINT) + \beta_5 * D_{i,t} * \Delta lnSALES_{i,t} \\ & * Successiv_{Decrease_{i,t}} + \beta_6 * D_{i,t} * \Delta lnSALE_{i,t} * Stock\ Performance_{i,t} + \beta_7 \\ & * \ln(EMPINT) + \beta_8 * \ln(ASSINT) + \beta_9 * Successiv_{Decrease_{i,t}} \\ & + \beta_{10} * Stock\ Performance_{i,t} + \epsilon_{i,t}\end{aligned} \quad (2)$$

where $Successiv\_Decrease_{i,t}$ and Stock Performance serve as signals of managers' expectations. β_5 is positive (ie., successive sales decreases diminish stickiness) and β_6 is negative (i.e., strong stock performance increases stickiness). Employee intensity and Asset intensity are to proxy for the degree of resource adjustment costs; β_3 and β_4 are negative, implying cost stickiness is higher in the employee-and asset-intensive firms.

I then first replicate the extended model by Anderson, Banker, and Janakiraman (2003), and Chen, Lu, and Sougiannis (2012) for equations (3) and (4) which incorporate managers' future expectations and adjustments costs with the agency problem's measures in my hypotheses, separately to estimate the change in cost stickiness.

$$\begin{aligned}\Delta lnSGA_{i,t} = {} & \beta_0 + \beta_1 * \Delta lnSALES_{i,t} + \beta_2 * D_{i,t} * \Delta lnSALES_{i,t} + \beta_3 * D_{i,t} * \Delta lnSALES_{i,t} * lnFCF_{i,t} \\ & + \beta_4 * D_{i,t} * \Delta lnSALES_{i,t} * \ln(EMPINT) + \beta_5 * D_{i,t} * \Delta lnSALES_{i,t} * \ln(ASSINT) \\ & + \beta_6 * D_{i,t} * \Delta lnSALES_{i,t} * Successiv_{Decrease_{i,t}} + \beta_7 * D_{i,t} \\ & * \Delta lnSALE_{i,t} * StockPerformance_{i,t} + \beta_8 * \ln(EMPINT) + \beta_9 * \ln(ASSINT) + \beta_{10} \\ & * Successiv_{Decrease_{i,t}} + \beta_{11} * StockPerformance_{i,t} + \beta_{12} * lnFCF_{i,t} + \epsilon_{i,t}\end{aligned} \quad (3)$$

$$\begin{aligned}\Delta lnSGA_{i,t} = {} & \beta_0 + \beta_1 * \Delta lnSALES_{i,t} + \beta_2 * D_{i,t} * \Delta lnSALES_{i,t} + \beta_3 * D_{i,t} * \Delta lnSALES_{i,t} \\ & * lnFCF_{i,t} + \beta_4 * D_{i,t} * \Delta lnSALES_{i,t} * lnFCF_{i,t} * FamilyD_{i,t} + \beta_5 * D_{i,t} \\ & * \Delta lnSALES_{i,t} * \ln(EMPINT) + \beta_6 * D_{i,t} * \Delta lnSALES_{i,t} * \ln(ASSINT) + \beta_7 \\ & * D_{i,t} * \Delta lnSALES_{i,t} * Successiv_{Decrease_{i,t}} + \beta_8 \\ & * \Delta lnSALE_{i,t} * StockPerformance_{i,t} + \beta_9 * \ln(EMPINT) + \beta_{10} \\ & * \ln(ASSINT) + \beta_{11} * Successiv_{Decrease_{i,t}} + \beta_{12} * StockPerformance_{i,t} \\ & + \beta_{13} * lnFCF_{i,t} + \beta_{14} * FamilyD_{i,t} + \epsilon_{i,t}\end{aligned} \tag{4}$$

In equation (3), the negative value of β_2 implies that the firms exhibit the cost stickiness, and the magnitude of the negative (or positive) values of β_3 implies the moderating effect of free cash flow. A larger negative coefficient of β_3 indicates a greater degree of cost stickiness. I expect the coefficient of the free cash flow interaction term to be negative when cost stickiness increases with free cash flow. In Equation (4), the degree of cost stickiness increases with the magnitude of negative value of β_2, the degree of cost stickiness increases (or decreases) with the magnitude of negative (or positive) values of β_3 through the moderating of free cash flow. Coefficient of β_4 is used to test the Hypothesis 1. A negative coefficient of β_4 indicates a greater degree of cost stickiness; compared to nonfamily firms, a higher free cash flow triggers the degree of SG&A cost stickiness in family firms.

Moreover, to test Hypotheses 2, 3, and 4, the manager's empire-building incentive is measured by the CEO's first three years of tenure, the CEO's final year of tenure, and the CEO's fixed pay in compensation, respectively. Therefore, I change *FCF* variable in Equations (3) and (4) to the CEO first three years of tenure, the CEO last year of tenure, or the CEO Fixed pay to test the hypotheses.

$$\begin{aligned}\Delta lnSGA_{i,t} = {} & \beta_0 + \beta_1 * \Delta lnSALES_{i,t} + \beta_2 * D_{i,t} * \Delta lnSALES_{i,t} + \beta_3 * D_{i,t} * \Delta lnSALES_{i,t} \\ & * \ln(EMPINT) + \beta_4 * D_{i,t} * \Delta lnSALES_{i,t} * \ln(ASSINT) + \beta_5 * D_{i,t} * \Delta lnSALES_{i,t} \\ & * Successiv_{Decrease_{i,t}} + \beta_6 * \Delta lnSALE_{i,t} * Stock\ Performance_{i,t} + \beta_7 * D_{i,t} \\ & * \Delta lnSALES_{i,t} * \ln(FCF) + \beta_8 * D_{i,t} * \Delta lnSALES_{i,t} * Firstyears + \beta_9 * D_{i,t} \\ & * \Delta lnSALES_{i,t} * \text{Lastyear} + \beta_{10} * D_{i,t} * \Delta lnSALES_{i,t} * \ln(fixedpay\ ratio) + \beta_{11} \\ & * \ln(ASSINT) + \beta_{12} * \ln(EMPINT) + \beta_{13} * Successiv_{Decrease_{i,t}} \\ & + \beta_{14} * Stock\ Performance_{i,t} + \beta_{15} * \ln(FCF) + \beta_{16} * Firstyears + \beta_{17} \\ & * Lastyear + \beta_{18} * \ln(fixedpay\ ratio) + \epsilon_{i,t}\end{aligned} \tag{5}$$

Lastly, I also follow and extended the model by Anderson, Banker, and Janakiraman (2003), and Chen, Lu, and Sougiannis (2012) for Equation (5) that incorporates managers' future expectations and adjustments costs, with four corporate governance measures to estimate the cost stickiness.

As in Equation (5), wherein the degree of cost stickiness increases (or decreases) with the degree of negative (or positive) values of β_2. A negative coefficient of β_7, free cash flow, indicates a greater cost stickiness, so I expect the coefficient of the free cash flow interaction term to be negative. A positive coefficient of β_8, first three years of CEO tenure, indicates a lower cost stickiness, so I expect the coefficient of CEO first years interaction term to be positive. A positive coefficient of β_9, last year of CEO tenure, indicates lower degree of cost stickiness, so I expect the coefficient of the last year interaction term to be positive. A negative coefficient of β_{10}, CEO fixed compensation percentage indicates a greater cost stickiness, so I expect the coefficient of the CEO fixed pay ratio term to be positive.

Table 3. 1 Variable definitions

Variable	Definition	Source
$\Delta lnSGA_{i,t}$	The logarithm of change in selling, general, and administrative expenses (SG&A) for firm i in year t relative to year t-1, winsorised at 1 percent and 99 percent.	Compustat
$\Delta \ln SALES_{i,t}$	The logarithm of change in sales revenue for firm i in year t relative to year $t-1$, winsorised at 1 percent and 99 percent.	Compustat
$Successiv\_Decrease_{i,t}$	Sales successive decrease, a dummy variable takes value 1 for that sales revenue in year $t-1$ is less than those in year $t-2$, and 0 otherwise.	Compustat
$\ln(ASSINT)$	Asset intensity, which is the log-ratio of total assets to net sales, ln (AT/SALE), winsorised at 1 percent and 99 percent.	Compustat
ln $(EMPINT)$	Employee intensity, which is the log-ratio of the number of employees to net sales, ln (EMPT/SALE), winsorised at 1 percent and 99 percent.	Compustat
D	Sales decrease. It takes a value of 1 when sales revenue for firm *i* in year *t* is less than that in the preceding period.	Compustat
Free cash flow	Free cash flow. It is measured by a log of cash flow from operating activities (data item 308) minus common and preferred dividends (data items 21 and 19) deflated by total assets (data item 6), winsorised at 1 percent and 99 percent.	Compustat
CEO first years	CEO first tenure. An indicator variable equals one when the CEO is in the first three years of CEO's tenure and zero otherwise.	Execucomp
CEO final year	CEO last tenure. An indicator variable is one if it is a year of CEO change or a year immediately preceding a CEO change and zero otherwise.	Execucomp
CEO fixed pay	The ratio of a CEO's fixed salary to total compensation for firm *i* in year *t*. Total compensation includes base salary, bonus, restricted stocks and options values, and all other annual pays, winsorised at 1 percent and 99 percent.	BoardEx Execucomp
Stock Performance	Log-change in stock returns of firm i in year t, winsorised at 1 percent and 99 percent.	CRSP
Gender ratio	Director gender. It is the number of male directors on the board divided by the total number of directors on the board.	BoardEx
Board Size	The total number of director members on the board of directors.	BoardEx
CEO/director	An indicator variable that equals one when the CEO is also the director on the board and otherwise zero.	MSCI EDGAR

3.4 Empirical Results

3.4.1 Sample Analysis and Descriptive Statistics

Table 3.2 shows the sample distribution for pooled sample, family firms subsample, and non-family firms subsample from 1996 to 2018.

Table 3. 2 Sample analysis

		Pooled sample	Family firms	Non-family firms
(1)	Observations after excluding financial and utility industries and firms	9,666	3,431	6,235
(2)	Observations after excluding the sample that missing data on SG&A, sales, and sales are smaller than SG&A	8,623	2,915	5,708
(3)	Observations after excluding sample missing economic variables	8,577	2,899	5,678
(4)	Observations after excluding sample missing free cash flows variable	8,568	2,896	5,672
(5)	Observations after excluding sample missing CEO tenure variable	8,459	2,862	5,597
(6)	Observations after excluding sample missing fixed pay variable	8,463	2,849	5,614

Table 3.3 presents the descriptive statistics of related variables in the testing sample. On average, sample firms have $11,215 million in annual sales revenue (median = $3,150 million) and have $2,001 million in SG&A costs (median = $597 million). These statistics can compare to those reported by (Anderson, Mansi, and Reeb 2003; Chen, Lu, and Sougiannis 2012). Table 3.2 also presents the variables for future expectations and adjustment costs. On average, the firms have 5.00 (median = 3.92) employees and $1.24 (median = $1.02) of assets to support every million dollars in sales revenue.

In addition, the median of the sample has not experienced two consecutive years of decreases in sales in the past two years (median = 0, mean = 0.30), and average stock return is 3.52% (median = 3.57). Table 3.3 presents the descriptive statistics on the agency variables. On average, free cash flow accounts for approximately 10% of the total assets (median = 9%). In 37% of the sample, the CEO is in the first three years of his or her tenure, and in 16% of the sample, the CEOs are in the last year of their tenure. On average, salary accounts for 28% of the total CEO compensation in the sample (median = 21%). The corporate governance variables, on average, the gender ratio of the board of directors is 86% (median = 86%), which is the ratio of the number of male directors to the total number of directors. The average board size is 10.21 (median = 10). In the sample, the average number of CEOs who are also on the board is 0.311 (median = 0.311). The average CEO shareholdings is 0.25 (median = 0).

Furthermore, I use the Jarque-Bera test to examine whether explanatory variables exhibit normality. The Jarque–Bera test is a test of the fitness of sample variables for the skewness and kurtosis of a normal distribution. The test results show that JB statistics are close to zero, indicating that they conform to a normal distribution.

In Chapters 3 and 4, I adopt the F test to identify the significance test of regression models, and the regression results' tables will show F statistics. I adopt the variance inflation factor (VIF) to test whether the independent variables have collinearity. Moreover, the error terms should be independent of each other; otherwise, the statistical test power will be reduced. I adopt the Durbin-Watson test to examine residual values independence. I also show the coefficients of determination, that is, adjusted R^2, in the tables, to show how well a model explains results. The higher coefficient often implies a better fit for the regression model.

Table 3. 3 Descriptive statistics

	N	Mean	Std. Dev.	min	p25	Median	p75	max
Sales ($mil)	9620	11214.525	22423.479	130.912	1281.679	3149.715	10387.128	146277
SG&A ($mil)	9068	2001.482	3933.449	20.799	211.655	596.629	1765.35	24180
Change in sales	9173	0.054	0.163	-0.551	-0.009	0.057	0.126	0.569
Change in SGA	8623	0.052	0.144	-0.459	-0.012	0.052	0.117	0.552
Employee intensity	9571	5.001	4.673	0.339	2.43	3.917	5.88	29.78
Asset intensity	9620	1.239	0.827	0.257	0.7	1.018	1.506	4.727
Successive decrease	9666	0.303	0.459	0	0	0	1	1
Stock performance	9190	3.52	0.713	1.423	3.091	3.568	3.996	5.201
Free Cash Flow	9594	0.092	0.063	-0.092	0.054	0.087	0.127	0.279
CEO First years	9456	0.365	0.482	0	0	0	1	1
CEO Last year	9456	0.163	0.369	0	0	0	0	1
CEO fixed pay ratio	9522	0.276	0.218	-0.264	0.127	0.209	0.351	1
Gender ratio	6949	0.856	0.1	0	0.8	0.857	0.909	1
Board size	6949	10.214	2.311	1	9	10	12	20
CEO /director	9391	0.311	0.463	0	0	0	1	1

Note:
This table presents the descriptive statistics about related variables in the empirical models.
The definitions of all variables are shown in Table 3.1.

Table 3. 4 Family and non-family firms descriptive statistics and variable difference

	Family						Non - family						t-Test	Wilcoxon
	N	Mean	Std. Dev.	min	max	Median	N	Mean	Std. Dev.	min	max	Median	t value	z value
Sales ($mil)	3424	8467.589	20224.928	130.912	146277	2236.55	6196	12732.522	23414.255	130.912	146277	4113.237	-8.95***	-18.02***
SG&A ($mil)	3120	1486.354	3320.039	20.799	24180	409.446	5948	2271.691	4194.75	20.799	24180	707.250	-9.05***	-15.92***
Change in Sales	3213	0.069	0.069	-0.551	0.569	0.068	5960	0.046	0.162	-0.551	0.569	0.052	6.20***	7.24***
Change in SGA	2915	0.067	0.067	-0.459	0.552	0.062	5708	0.044	0.145	-0.459	0.552	0.047	6.70***	7.60***
Employee Intensity	3407	5.884	5.325	0.338	29.780	4.471	6164	4.513	4.191	0.339	29.78	3.613	13.90***	15.37***
Asset Intensity	3424	1.177	0.853	0.257	4.727	0.957	6196	1.272	0.811	0.257	4.727	1.057	-5.40***	-9.90***
Successive Decrease	3431	0.283	0.451	0	1	0	6235	0.313	0.464	0	1	0	-3.10***	-3.10***
Stock Performance	3216	3.412	0.698	1.423	5.201	3.446	5974	3.597	0.714	1.423	5.201	3.628	-10.75***	-11.60***
Free Cash Flow	3421	0.097	0.069	-0.922	0.278	0.094	6173	0.090	0.059	-0.092	0.279	0.084	5.80***	6.81***
First Years	3368	0.294	0.455	0	1	0	6088	0.405	0.491	0	1	0	-10.75***	-10.70***
Last Year	3368	0.138	0.345	0	1	0	6088	0.177	0.382	0	1	0	-4.90***	-4.90***
CEO fixed pay ratio	3363	0.346	0.261	0	1	0.262	6159	0.238	0.180	-0.264	1	0.186	23.70***	19.49***
Gender ratio	2206	0.878	0.097	0	1	0.889	4743	0.845	0.100	0	1	0.846	13***	13.72***
Board size	2206	9.947	2.370	1	17	10	4743	10.338	2.273	1	20	10	-6.6***	-6.107***
CEO/director	3325	0.338	0.473	0	1	0	6066	0.296	0.456	0	1	0	7.8***	

Note:
Refer to the variable definitions in Table 3.1.

3.4.2 Family and Non-Family Firms — Descriptive Statistics

The variables of the subsample for future expectation and adjustment costs are shown in Table 3.4 for family and nonfamily firms. On average, the subsample of family firms has $8,468 million in annual sales revenue (median = $2,237 million) and $1,486 million in SG&A costs (median = $409 million). The subsample of nonfamily firms has $12,733 million in annual sales revenue (median = $4,113) and $2,272 million in SG&A costs (median = $707 million). This shows on average the subsample of nonfamily firms has higher annual sales revenue and SG&A costs than family firms.

On average, the subsample of family firms uses 5.88 (median = 4.47) employees and $1.18 (median = $0.96) of assets to support every million dollars in sales revenue. In addition, the median shows that it has not experienced two consecutive years of sales declines in the post two years (median = 0, mean =0.28), and the average stock return is 3.41 (median = 3.45). On the other hand, the subsample of non-family firms uses 4.51 (median = 3.61) employees and $0.81 (median = $1.06) assets to support every million dollars in sales revenue. The summary statistics show, on average, that family firms have more employees and assets to support their sales activities than non-family firms do.

Table 3.4 also presents the descriptive statistics on the agency variables of the subsample. On average, FCF accounts for approximately 10% of the total assets (median = 10%) in the family subsample. This is similar to statistics of the non-family subsample, which is approximately 10% of the total assets (median = 8%).

Moreover, on average, 49% of the CEOs in family firms are in the first three years of their tenure. This is higher than the subsample in non-family firms (30%). However, on average, the number of CEOs in their last year of tenure is less in family firms (14%) than in non-family firms (38%). This might be because CEOs in family firms usually have longer tenures. In addition, on average, the CEO’s fixed pay in family firms (44%) is higher than that in non-family firms (29%).

Finally, Table 3.4 presents the descriptive statistics about the corporate governance subsample. On average, the gender ratio, namely, the ratio of male directors to total directors is

88% (median = 89%) in the family subsample, which is slightly higher than the 85% ratio (median = 85%) in the non-family subsample. The board size in both the family and non-family subsamples is 10 (median = 10). The average number of CEOs who are also directors on the board in the family subsample is 0.34 (median = 0). This is similar to the average number of CEOs who are also directors in the non-family subsample, which is 0.30 (median = 0).

Table 3.5 shows the relevant data test results to form the data type that conforms to panel data characteristics and OLS conditions. Panel A shows the Fisher Augmented Dickey-Fuller test (ADF test). It indicates that in the unit-root test of all variables, the p-values are less than 0.00; therefore, the null hypothesis Ho: All panels contain unit roots, is rejected. These results show no unit root of variables data; data that meets the time series is the stationarity requirement of panel data and OLS. The Jarque-Bera test can examine whether the sample of variables shows normality. Panel B shows that sample variables conform to normality. In Pane C, it shows that the independent variables have no collinearity problem based on VIF.

The regression analysis in this chapter uses the ordinary least square (OLS) model. I adopt the variance inflation factor (VIF) to detect multicollinearity in the OLS regression analysis. Untabulated results indicate that variables have no collinearity because VIF values of all variables are below 10. I also adopt the Durbin Watson (DW) statistic to test the presence of autocorrelation in the residuals from regression analysis. After performing regression analysis, I use the DW test to detect autocorrelation in residuals. The untabluated results show that DW values in OLS regressions are less than 2, meaning that there is no autocorrelation of residuals from regression analysis.

Table 3. 5 The test of variables

Panel A: Unit-root test

Fisher Augmented Dickey-Fuller unit-root test

Ho: All panels contain unit roots
Ha: At least one panel is stationary

variables		Change in SGA	Change in sale	Employee intensity	Asset intensity	Successive decrease	Stock performance
		p-value	p-value	p-value	p-value	p-value	p-value
Inverse $\chi 2$	P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Inverse normal	Z	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Inverse logit t	L*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Modified $\chi 2$	Pm	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

variables		Free Cash Flow	CEO first years	CEO last year	CEO fixed pay	Board Size	Gender ratio
		p-value	p-value	p-value	p-value	p-value	p-value
Inverse $\chi 2$	P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Inverse normal	Z	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Inverse logit t	L*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Modified $\chi 2$	Pm	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

variables		CEO Director	family2type	familytype
		p-value	p-value	p-value
Inverse $\chi 2$	P	0.0000	0.0000	0.0000
Inverse normal	Z	0.0000	0.0000	0.0000
Inverse logit t	L*	0.0000	0.0000	0.0000
Modified $\chi 2$ $\chi 2$squared	Pm	0.0000	0.0000	0.0000

Panel B: Jarque-Bera normality test

I adopt the Jarque-Bera (JB) test to conform whether variables' data follow normality. JB test for Ho: normality: including Change in SGA, Change in sale, Employee intensity, Asset intensity, Successive decrease, Stock performance, Free Cash Flow, CEO first years, CEO last year, CEO fixed pay, Board Size, Gender ratio, CEO Director, family2type, familytyp. The test results of above variables are that p values are close to 0 and higher than 0.05, that is, the results accept "Ho: normality". Hence, variables data follow normal distribution.

variable	Change in sale	Employee intensity	Asset intensity	Successive decrease	Stock performance	Free Cash Flow
P value	0	0	0	0	0	0
variable	CEO first years	CEO last year	CEO fixed pay	Board Size	Gender ratio	CEO Director
P value	0	0	0	0	0	0

Panel C: Collinearity diagnostics

VIF values of Change in sale, Employee intensity, Asset intensity, Successive decrease, Stock performance, Free Cash Flow, CEO first years, CEO last year, CEO fixed pay, and Board Size are less than 10, indicating that independent variables have no collinearity problem. About the test of regression with variable of Gender ratio or CEO Director, I also obtain the consistent results.

variable	Change in sale	Employee intensity	Asset intensity	Successive decrease	Stock performance	
VIF	1.06	1.07	1.07	1.08	1.05	
variable	Free Cash Flow	CEO first years	CEO last year	CEO fixed pay	Board Size	family2type
VIF	1.08	1.04	1.01	1.14	1.08	1.08

3.4.3 Family and Non-Family Firms — Variable Correlation

This study divides the sample into family and non-family businesses. A t-test is a statistical test that can be used to compare the difference in the means of the two groups. In Table 3.4, I analyse the mean differences in variables between family and non-family firms. Using a t-test to compare the difference between the two samples, I find a significant difference between the means of all the variables of the two groups, as shown in Table 3.4. I also use the Wilcoxon rank-sum test to compare the difference in the median between family and non-family firms. The z values in Table 3.4 show that all variables have significant differences between family and non-family firms. Therefore, the analysis of differences between groups to confirm the rationality of the grouping method for family and non-family firms is robust.

Tables 3.6 and 3.7 present the Pearson correlations between our main variables for the total sample and subsamples of family and non-family. The correlations are significant but small in magnitude.

Table 3. 6 Correlation matrix

Variable	Sale	Employee intensity	Asset intensity	Successive decrease	Stock performance	Free Cash Flow	CEO First Years	CEO Last year	CEO Fixed pay ratio
Sales	1								
Employee intensity	-0.0157	1							
Asset intensity	-0.0547***	-0.1610***	1						
Successive decrease	-0.1350***	0.0146	0.0583***	1					
Stock performance	0.1030***	-0.1560***	0.0651***	-0.1560***	1				
Free Cash Flow	0.1360***	0.0721	-0.1500***	-0.1430***	0.0986***	1			
First years	-0.0793***	-0.0152	-0.0089	0.0649***	-0.0378***	-0.0581***	1		
Last year	-0.0259*	-0.0046	0.0038	0.0278**	-0.0146	-0.0500***	0.0809	1	
CEO fixed pay ratio	-0.0627***	0.1440***	-0.1350***	0.0532***	-0.1940***	-0.0480***	0.0497	-0.0056	1

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

This table shows the Pearson correlation coefficients between two variables.

Refer to the variable definitions in Table 3.1.

Table 3. 7 Family and non-family correlation matrix

Panel A: Family

	(1) Sale	(2) Employee Intensity	(3) Asset Intensity	(4) Successive Decrease	(5) Stock Performance	(6) Free Cash Flow	(7) First Years	(8) Last Year	(9) CEO fixed pay ratio
Change in Sale	1								
Employee Intensity	-0.0190	1							
Asset Intensity	-0.0669	-0.1530	1						
Successive Decrease	-0.1190	0.0165	0.0575	1					
Stock Performance	0.0990	-0.1210	0.0699	-0.1410	1				
Free Cash Flow	0.1310	0.0858	-0.1420	-0.1490	0.0776	1			
First Years	-0.0592	0.0134	-0.0155	0.0579	-0.0489	-0.0617	1		
Last year	-0.0281	0.0140	0.0043	0.0434	-0.0218	-0.0532	0.0411	1	
CEO fixed pay ratio	-0.0713	0.0853	-0.1160	0.0627	-0.2000	-0.0787	0.0915	0.0075	1

Panel B: Non-Family

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Change in Sale	1								
Employee Intensity	-0.0367	1							
Asset Intensity	-0.0234	-0.1600	1						
Successive Decrease	-0.1590	0.0238	0.0553	1					
Stock Performance	0.1390	-0.1860	0.0401	-0.2030	1				
Free Cash Flow	0.1350	0.0360	-0.1540	-0.1300	0.1620	1			
First Years	-0.0977	-0.0194	-0.0141	0.0700	-0.0534	-0.0341	1		
Last year	-0.0104	-0.0147	-0.0056	-0.0102	-0.0171	-0.0363	0.1520	1	
CEO fixed pay ratio	-0.0968	0.1470	-0.1430	0.0641	-0.1520	-0.0509	0.0634	0.0061	1

Note:

This table presents the Pearson correlation coefficients between the variables.

Refer to the variable definitions in Table 3.1.

3.4.4 Cost Stickiness – Adjustment Costs and Future Expectations

I first test for evidence of cost stickiness behaviour in family and non-family firms using the baseline model, Equation (1), without including adjustment costs, managers' future expectations and agency problems. The results in columns (2) and (3) of Table 3.8 indicate that both family and non-family firms separately exhibit cost stickiness. The coefficient β_2 captures the degree of cost stickiness in the cost response to sales declines versus increases. A negative β_2 can show that the reduction in costs for a 1% sales decrease is less than the rise in costs based on an equivalent sales increase (i.e. $\beta_1 + \beta_2 < \beta_1$). In this case, β_2 is negative for both types of firms.

As shown in column (2) of Table 3.8, family firms, the estimated value of β_1, 0.686 (t-statistic = 36.73), suggests that SG&A costs increased by 0.69% per 1% increase in sales revenues. The significant and negative coefficient β_2 = -0.214 (t-statistic = - 6.19) strongly supports family firms' sticky cost behaviour. The combined value of $\beta_1 + \beta_2$ (0.686 + (-0.214)) represents that SG&A costs decrease by only 0.47% per 1% decrease in sales revenue in family firms.

For non-family firms, as shown in column (3) of Table 3.8, the estimated value of β_1, 0.709 (t-statistic = 51.81), represents that SG&A costs increased by 0.71% per 1% increase in sales revenues. The significant and negative coefficient β_2, -0.164 (t-statistic = - 7.07), strongly supports sticky cost behaviour. The combined value of $\beta_1 + \beta_2$ (0.709 + (-0.164)) shows that SG&A costs decreased by only 0.55% per 1% decrease in sales revenue in non-family firms.

Second, I test the cost stickiness by adding the determinants of resource adjustment costs and managers' future expectations in columns (4), (5), and (6) of Table 3.8 using Equation (2). If the results show a significantly negative coefficient on employee intensity and asset intensity, firms' greater degree of SG&A stickiness requires more or maintain assets and employees to support their activities. If the coefficient on Successive Decrease is significantly positive, representing a lower degree of SG&A stickiness in firms experiencing negative demand shocks in two consecutive years. If the results show a significantly positive coefficient on Stock Performance, indicating that the degree of SG&A cost stickiness is lower in firms with better stock performance in the market.

The results in column (4) of Table 3.8 are of the pooled sample. Here, the estimated coefficient of β_1= 0.698 is significant and positive (t-statistic = 62.72) and similar to that in Equation (1). The significant and positive coefficient β_3, 0.0926 (t-statistic = 7.16), indicates that costs are anti-sticky in firms that require more employees to support the firms' sales. The significant and negative coefficient β_4, -0.0825 (t-statistic = -4.24) on the term that includes asset intensity (asset to sales revenue), shows that costs are stickier in firms that require more assets to support activities. Stickiness increases with adjustment costs incur to reduce the commitment resources. The significant and positive coefficient β_5, 0.0597 (t-statistic = 2.45), indicates that the degree of stickiness is lower in a period of declining revenue that are preceded by a period of declining revenue, which is consistent with my assumption that managers will consider a reduction in demand occurring over successive years to be permanent. The insignificant negative coefficient of stock performance, β_6 = -0.0122 (t-statistic =-0.76), represents that the degree of SG&A is unaffected by stock performance, and it shows cost anti-stickiness with better stock performance. The above determinants of cost stickiness results of the pool (total) testing sample shown in column (4) of Table 3.8 are consistent with the results of (Chen, Lu, and Sougiannis 2012).

The pooled sample is further divided into family and non-family subsamples. For the family subsample shown in column (5) of Table 3.8, the estimated coefficient of β_1= 0.668 is significant and positive (t-statistic = 35.45) and similar magnitude as its value in equation (1). In column (5) of Table 3.8 also indicates the significant and positive coefficient β_3, 0.0564 (t-statistic = 2.30), suggests that costs for employee intensity are anti-sticky and insignificant, and the negative coefficient β_4, -0.0424 (t-statistic = -1.18) on the term that includes asset intensity, represents that firms do not require more assets to support activities. The significant and positive coefficient β_5, 0.133 (t-statistic = 2.91), shows that the degree of stickiness is lower in a period of declining sales that is preceded by a period of declining sales. It is consistent with my assumption that managers should consider a reduction in demand occurring over successive years to be permanent. The coefficient of stock performance is insignificant and negative (-0.0238, t=-0.66). This represents that the degree of SG&A stickiness is unaffected by better stock performance and indicates the presence of cost anti-stickiness in firms with good stock performance in the market.

In the non-family subsample, shown in column (6) of Table 3.8, the estimated coefficient of β_1= 0.709 is significant and positive (t-statistic = 51.09) and similar degree as its value in model (1). The significant and positive coefficient β_3, 0.116 (t-statistic = 7.46), suggests that costs are anti-sticky and that firms are not required more employees to support their activities. Employee intensity lowers the degree of cost stickiness in nonfamily firms. The significant and negative coefficient β_4, -0.0945 (t-statistic = -4.40) on the term that includes asset intensity, suggests that costs are stickier at firms that require more assets to support activities. Stickiness increases with adjustment costs incurred to decrease the firms' commitment resources. The insignificant and positive coefficient β_5, 0.0405 (t-statistic = 1.39), shows that the degree of stickiness is unaffected in the period of declining revenue that is preceded by declining revenue. The insignificant negative coefficient on stock performance, β_6 = -0.0132 (t-statistic =-0.73), indicates that the degree of SG&A costs is unaffected by stock performance.

In Panel B of Table 3.8, I further examine the difference in the degree of cost stickiness between family and non-family firms using baseline Equation (1). The results show that both family and non-family firms exhibit cost stickiness behaviour. SG&A costs in both family and non-family firms increased by 0.71% per 1% increase in sales revenue, but SG&A decreased by 0.63% in family firms and 0.47% in non-family firms per 1% decrease in sales revenue. Therefore, the degree of cost stickiness is higher in non-family firms than in family firms. This is consistent with my assumption when this study does not yet include agency problem variables.

Table 3. 8 SG&A cost stickiness adjustment costs and future expectations

Panel A: SG&A cost stickiness

	Predicted sign	Pooled sample (1)	Family firms (2)	Non-family firms (3)	Pooled sample (4)	Family firms (5)	Non-family firms (6)
		Change in SGA	Change in SGA	Change in SGA	Change in SGA	Change in SGA	Change in SGA
Change in sale	+	0.704*** (64.02)	0.686*** (36.73)	0.709*** (51.81)	0.698*** (62.72)	0.668*** (35.45)	0.709*** (51.09)
D*Change in sale	-	-0.180*** (-9.36)	-0.214*** (-6.19)	-0.164*** (-7.07)	-0.235*** (-3.61)	-0.250* (-1.72)	-0.225*** (-3.05)
D*Change in sale *Employee intensity	-				0.0926*** (7.16)	0.0564** (2.30)	0.116*** (7.46)
D*Change in sale *Asset intensity	-				-0.0825*** (-4.24)	-0.0424 (-1.18)	-0.0945*** (-4.04)
D*Change in sale *Successive decrease	+				0.0597** (2.45)	0.133*** (2.91)	0.0405 (1.39)
D*Change in sale *Stock performance	-				-0.0122 (-0.76)	-0.0238 (-0.66)	-0.0132 (-0.73)
Employee intensity					0.00883*** (5.50)	0.00779*** (2.79)	0.0102*** (5.06)
Asset intensity					0.00427* (1.81)	0.00545 (1.40)	0.00349 (1.15)
Success decrease					-0.0119*** (-4.04)	-0.0161*** (-3.07)	-0.00889** (-2.51)
Stock performance					0.0114*** (6.35)	0.0182*** (5.66)	0.00802*** (3.64)
Constant / Year and Industry indicators		Yes	Yes	Yes	Yes	Yes	Yes
Observations		8623	2915	5708	8577	2899	5678
Adj. R^2		0.521	0.506	0.526	0.533	0.525	0.535

Panel B: The difference of SG&A cost stickiness for family and nonfamily firms

Extended Pool (1) model	Predicted sign	Coefficient	t value
Change in sale	+	0.7076	52.40***
D*Change in sale	-	-0.1624	-7.06***
D*Change in sale*FamilyD	-	-0.0729	-2.72***
FamilyD		0.0046	1.37
Constant / Year and Industry indicators		Yes	
Observations (Adj. R^2)		8623 (0.5217)	

Note:

t statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable is the change in SGA. *FamilyD* is an indicator variable, which set to 1 if the firm is the type of family firm, and otherwise 0. Refer to the variable definitions in Table 3.1.

3.4.5 Cost Stickiness and Agency Problems

3.4.5.1 Agency Problems – Free Cash Flow

I examine the free cash flow of agency costs and measure its impact on the degree of cost stickiness. In this section, I test the sticky behaviour in the pooled sample, and the family and non-family subsamples separately.

Then, in Section 3.4.5.2, I compare the impact of free cash flow on cost stickiness between the family and non-family subsamples. I extend the regression in Table 3.8, which includes the economic variables of adjustment costs (asset intensity and employee intensity), managers' future expectations, and the agency variable of free cash flow to test the sticky costs.

In Table 3.9, the pooled sample in column (1) shows that for *Change in Sale*, the estimated coefficient $\beta_1 = 0.607$ is significant and positive (t-statistic = 20.48) and similar in magnitude to its value in Equation (1). In columns (1), (2), and (3), which show the pooled sample, the family subsample, and the non-family subsample, respectively, *D*Change in sale* is negative and significant in relation to the change in SG&A; the t- statistic = -2.43, -3.29, and -0.97, respectively. These results support the presence of SG&A cost stickiness behaviour. In other words, the change in SG&A exhibits cost stickiness when sales decrease.

In Pooled column (1) of Table 3.9, *D*Change in sale*Employee intensity*, the significant and positive coefficient $\beta_4 = 0.0539$ (t-statistic = 3.91) indicate that costs are anti-sticky at firms that do not require more employees to support the firms' sales. For *D*Change in sale*Asset intensity*, the significant and negative coefficients of $\beta_5 = -0.101$ (t-statistic = -4.96) on the term that includes asset intensity show that costs are stickier at firms that require relatively more assets to support the firms' sales. Stickiness increases with the adjustment costs of resource that would be incurred to decrease committed resources. For *D*Change in sale*Successive Decrease*, the significant and positive coefficient $\beta_6 = 0.116$ (t-statistic = 4.66) shows that the stickiness is lower in revenue declining periods that are preceded by revenue declining periods, which is consistent with the expectation that managers may consider a reduction in sales that occur in successive years to be more permanent. For *D*Change in sale*stock performance*, the

significant and negative coefficient on stock performance β_7 = -0.0009 (t-statistic = -1.77) indicates the degree of SG&A is affected by stock performance.

In columns (1) and (3) (pooled sample and non-family subsample, respectively) of Table 3.9, *D*Change in Sale*Free Cash Flow* exhibits insignificant association with the change in SG&A; the coefficients of the interaction term are β_3 = 0.148 (t-statistic =0.85) and β_3 = 0.130 (t-statistic = 0.62), respectively. These results indicate that SG&A costs are anti-sticky, and that the degree of SG&A costs is unaffected by free cash flow in the full sample and in non-family firms. However, in column (2) of Table 3.9, which shows the family subsample, *D*Change in Sale*Free Cash Flow* exhibits a significant and positive coefficient, β_3 = 0.644 (t-statistic = 1.97), which indicates that SG&A cost stickiness decreases in family firms because of the effect of free cash flow.

3.4.5.2 Family vs. Non-Family – Agency Problems – Free Cash flow

In Hypothesis 1, I predict that higher free cash flow increases the degree of SG&A cost stickiness more in non-family firms than in family firms. Therefore, I further use a family dummy interaction with the moderating effect of free cash flow on SG&A cost stickiness when sales decrease, wherein *FamilyD* equals 1 for family firms and 0 otherwise. The results are shown in Table 3.10.

In Table 3.10, I further divide free cash flow into high and low free cash flow subgroups to compare the impact of free cash flow on the degree of SG&A cost stickiness between family and non-family firms. This investigates whether the degree of cost stickiness changes mainly in one of these two specific subgroups. In Table 3.10, the FCF column (1) shows the result of pooled sample and FamilyD. Low FCF in column (2) of Table 3.10 shows the result of pooled sample, FamilyD and FCFLowD. High FCF in column (3) of Table 3.10 shows the result of pooled sample, FamilyD and FCFHighD. FCFLowD (or FCFHighD) represents the low (or high) FCF subsample and set to 1 if the firm's free cash flow is lower (or higher) than the industry median of free cash flow in the same year and same industry classification, and otherwise 0.

First, the pooled FCF sample in column (1) and High FCF in column (3) of Table 3.10, *D*Change in sale* is negative and significant related to the change of SG&A, t value= -3.54 and t value= -2.86, respectively. These results indicate that SG&A exhibit cost stickiness behaviour when sales decrease.

In FCF column (1) of Table 3.10, *D*Change in sale*FCF* is positive and insignificant related to the change of SG&A cost, t value= 1.59. *D*Change in sale*FCF*FamilyD* is negative and significant related to the change of SG&A cost, t value= -1.68, representing that compared with non-family firms, firms have higher free cash flow increases the degree of SG&A cost stickiness in family firm. The results shown that the significant coefficient -0.403 in family firms and 0.307+(-0.403) = -0.096 in non-family firms. It could be explained that relative to non-family firms, family firms exhibit a higher degree of cost stickiness when considering the empire-building incentive of free cash flow, which does not support Hypothesis 1. This result only supports the viewpoints that for family firms, agency driven incentives of empire building induce cost stickiness when sales decrease, that owners-managers have aligned interests and focus on long-term operation strategy.

The results show in column (2) of Table 3.10, low free cash flow subgroup, a significant negative coefficient of -0.121 for family firms and 0.001 + (-0.121) = -0.12 for non-family firms. This could be explained by the fact that compared to non-family firms, family firms increase a similar degree of cost stickiness when considering the empire-building incentive of free cash flow in the low free cash flow subgroup.

Table 3. 9 SG&A cost stickiness and agency problems – Free cash flow

Dependent variable = *Change in SG&A*	Predicted sign	Pooled (1) Change in SGA	Family firms (2) Change in SGA	Non-family firms (3) Change in SGA
Change in sale	+	0.6072 ***	0.7003 ***	0.5725 ***
		(20.48)	(13.34)	(15.79)
*D*Change in sale*	-	-0.1313 **	-0.3666 ***	-0.0615
		(-2.43)	(-3.29)	(-0.97)
D*Change in sale*Free Cash Flow	-	**0.1475**	**0.6438 ****	**0.1297**
		(0.85)	**(1.97)**	**(0.62)**
*D*Change in sale*Employee intensity*	-	0.0539 ***	0.0391	0.0674 ***
		(3.91)	(1.45)	(4.10)
*D*Change in sale*Asset intensity*	-	-0.1013 ***	-0.0735*	-0.1000 ***
		(-4.96)	(-1.96)	(-4.05)
*D*Change in sale*Successive decrease*	+	0.1161 ***	0.2313 ***	0.0825 ***
		(4.66)	(4.94)	(2.77)
*D*Change in sale*Stock performance*	-	-0.0009 *	-0.0016	-0.0010 *
		(-1.77)	(-1.27)	(-1.82)
Employee intensity		-0.0044 **	0.0001	-0.0057 **
		(-2.12)	(0.02)	(-2.24)
Asset intensity		-0.0014	-0.0038	0.0013
		(-0.46)	(-0.76)	(0.34)
Success decrease		0.0017	0.0050	0.0017**
		(0.49)	(0.80)	(0.40)
Stock performance		0.0000	0.0003 **	0.00816***
		(0.05)	(2.36)	(3.54)
Free cash flow		0.0775 ***	0.0516	-0.0001
		(2.85)	(1.18)	(-1.23)
Constant		0.0365 ***	0.0255 *	0.0368 ***
		(4.47)	(1.85)	(3.54)
Year and Industry indicators		Yes	Yes	Yes
Observations		8568	2896	5672
F value		210.97	71.55	142.52
Adj. R^2		0.5405	0.5339	0.545

Note:
t statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Refer to the variable definitions in Table 3.1.

Table 3. 10 Family and non-family SG&A cost stickiness and agency problems – FCF

Dependent variable = Change in SGA	FCF (1) Coeff. / t value	Low FCF (2) Coeff. / t value	High FCF (3) Coeff. / t value
Change in sale	0.6212 ***	0.5082 ***	0.6196 ***
	(21.96)	(17.28)	(22.11)
*D*Change in sale*	-0.1773 ***	-0.0272	-0.1375 ***
	(-3.54)	(-0.54)	(-2.86)
*D*Change in sale*FCF*	**0.3072**		
	(1.59)		
*D*Change in sale*FCF*FamilyD*	**-0.4027** *		
	(-1.68)		
*D*Change in sale*FCFLowD*		**0.0008**	
		(0.03)	
*D*Change in sale*FCFLowD*FamilyD*		**-0.1211 *****	
		(-3.72)	
*D*Change in sale*FCFHighD*			**-0.0011**
			(-0.04)
*D*Change in sale*FCFHighD*FamilyD*			**-0.0617**
			(-1.52)
*D*Change in sale*Employee intensity*	0.0596 ***	0.0630 ***	0.0629 ***
	(4.40)	(4.69)	(4.68)
*D*Change in sale*Asset intensity*	-0.0980 ***	-0.0972 ***	-0.0972 ***
	(-4.78)	(-4.77)	(-4.77)
*D*Change in sale*Successive decrease*	0.1257 ***	0.1295 ***	0.1294 ***
	(5.05)	(5.22)	(5.22)
*D*Change in sale*Stock performance*	-0.0003	-0.0004	-0.0004
	(-0.94)	(-1.16)	(-1.16)
Employee intensity	-0.0046 **	-0.0049 **	-0.0049 **
	(-2.24)	(-2.36)	(-2.37)
Asset intensity	-0.0008	-0.0010	-0.0010
	(-0.27)	(-0.34)	(-0.34)
Successive decrease	0.0019	0.0014	0.0014
	(0.54)	(0.42)	(0.42)
Stock performance	-0.0000	-0.0000	-0.0000
	(-0.46)	(-0.48)	(-0.49)
Free Cash Flow	0.0809 ***		
	(2.99)		
FamilyD	0.0052 *	0.0036	0.0036
	(1.87)	(1.07)	(1.07)
FCFLowD		-0.0099 ***	
		(-3.20)	
FCFHighD			0.0099 ***
			(3.18)
Constant	0.0350 ***	0.0485 ***	0.0386 ***
	(4.33)	(6.15)	(4.95)
Year and Industry indicators	Yes	Yes	Yes
Observations	8568	8577	8577
F value	198.57	192.17	192.13
Adj. R^2	0.5405	0.5416	0.5415

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

This table uses the industry median of free cash flow variable to divide sample into high FCF subsample and low FCF subsample. *FCFLowD* (*FCFHighD*) set to 1 if the firm's free cash flow is lower (higher) than the industry median of free cash flow in the same year and same industry classification, and otherwise 0.

FCF (1) column presents the results of free cash flow variable, Low FCF (2) column presents the results of *FCFLowD*, and High FCF (3) presents the results of *FCFHighD*. *FamilyD* equals 1 if the type of firm is family firm, and otherwise 0. When I adopt the sum of salary plus cash bonus to measure CEO's fixed pay, the empirical results are consistent with those in this table.

3.4.5.3 Agency Problems – CEO Tenure and CEO Fixed Compensation

Table 3.11 shows the cost stickiness results in the pooled, family, and non-family samples separately, by the effect of corporate governance related measures, namely, the first years of the CEO's tenure, the final year of the CEO's tenure, and CEO compensation. In Table 3.11, panel A, B, and C show the results of the effect of the first three years of the CEO's tenure, the final year of the CEO's tenure, and CEO fixed pay compensation, respectively, on SG&A cost stickiness when current sales decrease. The results for the pooled sample, the family subsample, and the non-family subsample are shown in columns (1), (2), and (3), respectively.

CEO's first years of tenure

First, in Panel A of Table 3.11, the evidence shows that when considering CEOs first three years of their tenure, *D*Change in sale* is negative and is significant related to the change of SG&A, meaning that there is a SG&A sticky cost behaviour in pooled sample firms (column 1) and family firms subsample (column 2).

Panel A in Table 3.11 shows that *D*Change in sale*CEO first years* is positively and significantly related to the change in SG&A in both pooled sample column (1) and non-family column (3), their coefficients are $\beta_3 = 0.101$ (t-value = 4.10) and $\beta_3 = 0.145$ (t-value = 5.06), respectively. The results indicate that for the pooled sample and non-family firms, when the CEOs are in the first three years of their tenure, they have cost anti-stickiness. However, column (2) of Panel A in Table 3.11 shows that there is no SG&A cost stickiness and no anti-stickiness in the first three years of the CEO's tenure for family firms.

Uncertainty over managerial ability causes career concerns of market participation for CEOs in the early years of their careers, so the incentive to affect the market's beliefs about their ability favourably is higher in the early stage of their tenure. Managers could have the incentives to engage in empire-building activities to meet earnings targets, which reduces the degree of cost stickiness. However, the family owner-managers are more aligned interests, so they are unlikely to decrease SG&A expenses dramatically in family firms. That is, CEOs in the

first three years of tenure have less incentive to rapidly reduce expenses to meet earnings in family firms than in non-family firms.

CEO's final year of tenure

In column (2) of Panel B of Table 3.11, family firms, the evidence show that when considering CEOs last year in their tenure, *D*Change in sale* is negative and significant related to the change of SG&A (β_2 = -0.238, t value = -2.30). Family firms exhibit a SG&A sticky cost behaviour when CEO is in the final year of tenure.

In Panel B column (2) of Table 3.11, which shows the family subsample, *D*Change in sale*CEO last year* is positively and significantly related to the change in SG&A (β_3 = 0.121, t-value = 1.80). This indicates that when CEOs are in the last year of his or her tenure, the degree of SG&A cost stickiness decreases in family firms. However, in the non-family column (3), *D*Change in sale*CEO last year* is negatively and significantly related to the change in SG&A (β3 = -0.113, t-value = -3.14). This indicates that in non-family firms, the degree of SG&A cost stickiness increases when their CEOs are in their final year of tenure.

CEO's fixed pay compensation

In column (2) of Panel C of Table 3.11, the evidence shows that *D*Change in sale* is negative and significant related to the change of SG&A cost (β_2 = -0.235, t value = -2.09), meaning that family firms exhibit cost stickiness when considering the CEO's fixed compensation ratio.

Panel C of Table 3.11 shows the results for pooled sample in column (1) and non-family subsample in column (3); the t-value = -3.08 (β_3 = -0.169) and -1.93 (β_3 = -0.137), respectively. This means the degree of SG&A stickiness increases with the percentage of fixed pay in a CEO's total compensation when sales decrease in the current period. However, in column (2), which shows the family subsample, *D*Change in sale*CEO fixed pay* is negative and insignificant, which means that CEO fixed ratio compensation does not affect the degree of SG&A stickiness when sales decrease in family firms.

3.4.5.4 Family and Non-Family – Agency problems – CEO Tenure and CEO Fixed Pay

Table 3.12 shows the comparison results of the degree of cost stickiness between family and non-family firms by the moderating effect of corporate governance related measures, namely, the first years of the CEO's tenure, the final year of the CEO's tenure, and CEO compensation. I also use a family dummy interaction variable with three measures of agency problems to examine the moderating effect of free cash flow on SG&A cost stickiness when sales decrease, where *FamilyD* equals 1 for family firms and 0 otherwise.

In Hypothesis 2, I predict that family firms whose CEOs are in their first three years of tenure are more likely than non-family firms whose CEOs are in their first three years of tenure to exhibit a greater degree of cost stickiness. Hypothesis 3 suggests that family firms whose CEOs are in their last year of tenure are more likely than non-family firms whose CEOs are in their last year of tenure to exhibit a greater degree of cost stickiness. Lastly, in Hypothesis 4, I expect that the negative relationship between percentage of fixed pay in a CEO's total compensation and the change in SG&A cost would be less pronounced in family firms, compared with non-family firms.

CEO's first years of tenure

Column (1) of Table 3.12 shows the moderating effects corporate governance of CEO tenure on the SG&A cost stickiness. CEO first three years, *D*Change in sale* is negative and significant related to the change in SGA, t value = -3.51, showing a SG&A cost stickiness during CEO's first three years of tenure. *D*Change in sale*CEO first years* is positive and significant related to the change in SG&A, t value= 5.15. For *D*Change in sale*CEO first years*FamilyD*, it is negative and significant related to the change in SGA, t value = -5.20. It shows a significant coefficient of -0.212 for family firms and 0.144+ (-0.212) = -0.068 for non-family firms. Hence, when CEOs in the first three years of their tenure, SG&A cost stickiness in family firms is higher than in non-family firms. The results support Hypothesis 2. CEOs in the first three years of their tenure have a higher incentive to reduce expenses to meet earnings in non-family firms than in family firms.

CEO's final year of tenure

In column (2) of Table 3.12, CEO last year, *D*Change in sale*CEO last year* is negative and significant related to the change of SG&A, and t value = -3.15. *D*Change in sale*CEO last year*FamilyD* is positively and insignificantly related to the change in SG&A, and the t-value = 1.45. The results show a coefficient of 0.094 for family firms and -0.109 + (0.094) = -0.015 for non-family firms. Compared non-family firms, family firms' CEOs in their final year of tenure do not exhibit SG&A cost stickiness. Therefore, CEOs in their last year of tenure in family firms are less likely to have SG&A cost stickiness behaviour than in non-family firms, which does not support Hypothesis 3.

CEO fixed pay compensation

In Hypothesis 4, I predict that, compared to family firms, the degree of cost stickiness is less pronounced in non-family firms when considering the CEO fixed pay ratio. In the CEO fixed pay column (3) of Table 3.12, *D*Change in sale*CEO fixed pay*FamilyD* is negatively and significantly related to the change in SG&A, the coefficient = -0.111 + (-0.120) = -0.231, t-value = -1.84 for family firms and -0.111, t-value = -1.78 for non-family firms. The coefficient = -0.111 + (-0.120) = -0.231 for non-family firms and -0.120 for family firms. The findings show that a higher fixed pay ratio reduces SG&A cost stickiness more in family firms than in non-family firms, which contradicts my prediction.

Table 3. 11 SG&A cost stickiness and agency problems - CEO's tenure and fixed pay

Dependent variable = *Change in SGA*	Pooled (1) Coeff. (t value)	Family (2) Coeff. (t value)	Non-family (3) Coeff. (t value)
Panel A: CEO first years			
Change in sale	0.5466 ***	0.6182 ***	0.5159 ***
	(19.66)	(12.52)	(15.07)
*D*Change in sale*	-0.1157 **	-0.1997 *	-0.0861
	(-2.24)	(-1.90)	(-1.42)
D*Change in sale* CEO first years	0.1007 ***	-0.0514	0.1469 ***
	(4.10)	(-1.08)	(5.06)
*D*Change in sale*Employee intensity*	0.0624 ***	0.0254	0.0817 ***
	(4.55)	(0.95)	(5.01)
*D*Change in sale*Asset intensity*	-0.0931 ***	-0.0853 **	-0.0876 ***
	(-4.53)	(-2.28)	(-3.54)
*D*Change in sale*Successive decrease*	0.1165 ***	0.2260 ***	0.0789 ***
	(4.68)	(4.84)	(2.65)
*D*Change in sale*Stock performance*	-0.0008	-0.0013	-0.0008
	(-1.52)	(-1.00)	(-1.40)
CEO first years	-0.0028	-0.0028	-0.0030
	(-0.89)	(-0.47)	(-0.80)
Constant / *Other Controls*	Yes	Yes	Yes
Year and Industry indicators	Yes	Yes	Yes
F value	206.68	70.02	140.19
Observations (Adj. R^2)	8459 (0.5386)	2862 (0.5314)	5597 (0.5442)
Panel B: CEO last year			
Change in sale	0.5459 ***	0.6225 ***	0.5146 ***
	(20.32)	(12.84)	(15.75)
*D*Change in sale*	-0.0521	-0.2377 **	0.0166
	(-1.06)	(-2.30)	(0.29)
D*Change in sale* CEO last year	-0.0427	0.1211 *	-0.1128 ***
	(-1.36)	(1.80)	(-3.14)
*D*Change in sale*Employee intensity*	0.0563 ***	0.0290	0.0778 ***
	(4.12)	(1.09)	(4.75)
*D*Change in sale*Asset intensity*	-0.0984 ***	-0.0882 **	-0.0922 ***
	(-4.79)	(-2.35)	(-3.72)
*D*Change in sale*Successive decrease*	0.1204 ***	0.2256 ***	0.0927 ***
	(4.83)	(4.83)	(3.11)
*D*Change in sale*Stock performance*	-0.0008	-0.0013	-0.0008
	(-1.58)	(-1.02)	(-1.49)
CEO last year	-0.0042	-0.0036	-0.0038
	(-1.04)	(-0.47)	(-0.80)
Constant / *Other Controls*	Yes	Yes	Yes
Year and Industry indicators	Yes	Yes	Yes
F value	205.59	70.21	138.94
Observations (Adj. R^2)	8459 (0.5373)	2862 (0.532)	5597 (0.542)
Panel C: CEO fixed pay			
Change in sale	0.5888 ***	0.6643 ***	0.5506 ***
	(19.82)	(12.85)	(14.80)
*D*Change in sale*	-0.0508	-0.2352 **	0.0047

	(-0.95)	(-2.09)	(0.07)
D*Change in sale*CEO fixed pay	-0.1689 ***	-0.0882	-0.1370 *
	(-3.08)	(-0.94)	(-1.93)
*D*Change in sale*Employee intensity*	0.0633 ***	0.0350	0.0741 ***
	(4.55)	(1.27)	(4.53)
*D*Change in sale*Asset intensity*	-0.1016 ***	-0.0776 **	-0.0962 ***
	(-4.89)	(-1.97)	(-3.86)
*D*Change in sale*Successive decrease*	0.1162 ***	0.2115 ***	0.0920 ***
	(4.67)	(4.47)	(3.10)
*D*Change in sale*Stock performance*	-0.0011 **	-0.0016	-0.0011 *
	(-2.11)	(-1.20)	(-1.85)
CEO fixed pay	0.0162 **	0.0015	0.0281 ***
	(2.16)	(0.14)	(2.58)
Constant / *Other Controls*	Yes	Yes	Yes
Year and Industry indicators	Yes	Yes	Yes
F value	207.34	69.07	140.78
Observations (Adj. R^2)	8463 (0.5393)	2849 (0.529)	5614 (0.5445)

Note:

Other Controls variables include Employee intensity, Asset intensity, Successive decrease, Stock performance.

* p < 0.1, ** p < 0.05, *** p < 0.01. Refer to the variable definitions in Table 3.1.

Table 3. 12 Cost stickiness and agency problems – Tenure and fixed pay – Family dummy

Dependent variable = Change in SGA	CEO first years (1) Coefficient (t value)	CEO last year (2) Coefficient (t value)	CEO fixed pay (3) Coefficient (t value)
Change in sale	0.5750 ***	0.5714 ***	0.0277 ***
	(20.46)	(21.38)	(21.27)
*D*Change in sale*	-0.1721 ***	-0.0740 *	-0.0982 **
	(-3.51)	(-1.62)	(-2.05)
*D*Change in sale*CEO first years*	**0.1443** ***		
	(5.15)		
*D*Change in sale*CEO first years*FamilyD*	**-0.2118** ***		
	(-5.20)		
*D*Change in sale*CEO last year*		**-0.1094 *** **	
		(-3.15)	
*D*Change in sale*CEO last year*FamilyD*		**0.0944**	
		(1.45)	
*D*Change in sale*CEO fixed pay*			**-0.1111 ***
			(-1.78)
*D*Change in sale*CEO fixed pay*FamilyD*			**-0.1195 ***
			(-1.84)
*D*Change in sale*Employee intensity*	0.0707 ***	0.0696 ***	0.0721 ***
	(5.28)	(5.18)	(5.26)
*D*Change in sale*Asset intensity*	-0.0873 ***	-0.0922 ***	-0.1000 ***
	(-4.25)	(-4.48)	(-4.81)
*D*Change in sale*Successive decrease*	0.1278 ***	0.1376 ***	0.1255 ***
	(5.13)	(5.52)	(5.06)
*D*Change in sale*Stock performance*	-0.0003	-0.0003	-0.0003 **
	(-0.89)	(-0.83)	(-0.88)
Employee intensity	-0.0047 **	-0.0048 **	-0.0052 ***
	(-2.28)	(-2.29)	(-2.50)
Asset intensity	-0.0013	-0.0011	-0.0007
	(-0.44)	(-0.36)	(-0.23)
Successive decrease	0.0019	0.0018	0.0016
	(0.54)	(0.53)	(0.45)
Stock performance	-0.0000	-0.0000	-0.0000
	(-0.21)	(-0.17)	(-0.08)
FamilyD	0.0035	0.0034	0.0073 ***
	(1.03)	(1.03)	(2.55)
CEO first years	-0.0027		
	(-0.84)		
CEO last year		-0.0040	
		(-0.99)	
CEO fixed pay			0.0118
			(1.57)
Constant	0.0433 ***	0.0429 ***	0.0393 ***
	(5.48)	(5.46)	(4.99)
Year and Industry indicators	Yes	Yes	Yes
Observations	8459	8459	8463
F value	188.27	187.37	195.47
Adj. R^2	0.5399	0.5387	0.5396

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

FamilyD equals 1 if the type of firm is family firm, and otherwise 0. When I adopt the sum of salary plus cash bonus to measure CEO's fixed pay, I obtain the consistent results with those in this table.

3.4.5.5 Family and Non-Family – Agency Problems and Cost Stickiness

In this section, I follow Chen, Lu, and Sougiannis (2012) to include all four agency problem the determinants of the empire building incentive measure, namely, free cash flow, the CEO's first three years of tenure, the CEO's final year of tenure, and the CEO fixed pay ratio, to compare the effect on cost stickiness between the family and non-family subsamples using Equation (5).

In column (2) of Table 3.13, the evidence indicates that the degree of cost stickiness for both family and nonfamily firms are not affected by free cash flow. This can be explained that the CEO decision in adjusting the resources when sales decrease in family and nonfamily firms are not affected by the free cash flow. Therefore, the results do not support Hypothesis 1.

Second, the findings show a negative and significant *D*Change in sale*CEO first years*FamilyD* of relation to the change in SG&A for both the family and non-family subsamples. CEOs in the first three years of their tenure in family firms are more likely to promote the degree of SG&A cost stickiness than those in non-family firms, which is consistent with Hypothesis 2. The results in column (2) of Table 3.13 show a significant and negative coefficient for family firms, 0.167 + (-0.223) = -0.056 (t-value = -4.45), which is lower than the coefficient of 0.167 for non-family firms. CEOs in family firms have aligned interests with their firms, so they are less likely to have personal incentives to meet earnings or to reduce significant expenses in the early years of their tenure.

Third, column (2) of Table 3.13 shows that the coefficient for CEOs in the last year of their tenure in family firms is positive and significant at -0.125 + 0.224 = 0.099 (t-value = 3.24), which means that there is no SG&A stickiness. Non-family firms have significant and negative coefficient of -0.125 (t-value = -3.56). Hence, the evidence shows that the degree of SG&A cost stickiness in non-family firms is pronounced than it is in family firms when CEOs are in their last year of tenure, which contradicts Hypothesis 3.

Finally, in column (2) of Table 3.13, the results show that a high CEO fixed pay ratio decreases the degree of cost stickiness in family firms; the coefficient = -0.187 + 0.180 = -0.007 (t-value = 1.72). However, the coefficient is -0.187 (t value = -2.80) in non-family firms.

Therefore, a higher fixed pay ratio reduces the degree of SG&A cost stickiness more in family firms than in non-family firms, which does not support my hypothesis.

Table 3. 13 Family and non-family - Agency problems, adjustment costs and future expectations

Dependent variable = Change in SGA	(1) Coefficient (t value)	(2) Coefficient (t value)
Change in sale	0.6540 ***	0.6341 ***
	(17.80)	(16.45)
*D*Change in sale*	-0.2248 ***	-0.2046 ***
	(-3.62)	(-3.19)
*D*Change in sale*FamilyD*	-0.1152 **	-0.0764
	(-2.07)	(-0.81)
*D*Change in sale*Free Cash Flow*	0.2208	0.2349
	(1.10)	(1.16)
*D*Change in sale*Free Cash Flow*FamilyD*	0.4224	0.4315
	(1.26)	(1.23)
*D*Change in sale*CEO first years*	0.1623 ***	0.1668 ***
	(5.72)	(5.87)
*D*Change in sale*CEO first years*FamilyD*	-0.2110 ***	-0.2226 ***
	(-4.24)	(-4.45)
*D*Change in sale*CEO last year*	-0.1229 ***	-0.1245 ***
	(-3.52)	(-3.56)
*D*Change in sale*CEO last year*FamilyD*	0.2268 ***	0.2239 ***
	(3.28)	(3.24)
*D*Change in sale*CEO fixed pay*	-0.1825 ***	-0.1869 *
	(-2.73)	(-2.80)
*D*Change in sale*CEO fixed pay*FamilyD*	0.1183	0.1798 **
	(1.20)	(1.72)
*D*Change in sale*Employee intensity*	0.0872 ***	0.1019 ***
	(6.15)	(6.33)
*D*Change in sale*Asset intensity*	-0.0810 ***	-0.0859 ***
	(-3.80)	(-3.54)
*D*Change in sale*Successive decrease*	0.1331 ***	0.0943 ***
	(5.26)	(3.25)
*D*Change in sale*Stock performance*	-0.0003	-0.0003
	(-0.98)	(-0.75)
*D*Change in sale*Employee intensity*FamilyD*		-0.0641 **
		(-2.20)
*D*Change in sale*Asset intensity*FamilyD*		0.0159
		(0.37)
*D*Change in sale*Successive decrease*FamilyD*		0.1218 ***
		(2.46)
*D*Change in sale*Stock performance*FamilyD*		-0.0015
		(-1.36)
Employee intensity	-0.0046 **	-0.0048 **
	(-2.20)	(-2.27)
Asset intensity	0.0008	0.0014
	(0.27)	(0.44)
Successive decrease	0.0028	0.0027

	(0.79)	(0.77)
Stock performance	-0.0000	-0.0000
	(-0.54)	(-0.71)
FamilyD	0.0018	0.0028
	(0.53)	(0.78)
Free Cash Flow	0.0839 ***	0.0889 ***
	(3.03)	(3.21)
CEO first years	-0.0021	-0.0023
	(-0.67)	(-0.73)
CEO last year	-0.0032	-0.0031
	(-0.79)	(-0.77)
CEO fixed pay	0.0186 **	0.0198 ***
	(2.40)	(2.55)
Constant	0.0326 ***	0.0328 ***
	(3.80)	(3.81)
Year and Industry indicators	Yes	Yes
Observations	8360	8360
F value	146.64	132.18
Adj. R^2	0.5423	0.5439

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.
FamilyD equals 1 if the type of firm is family firm, and otherwise 0. When I use the sum of salary plus cash bonus to measure CEO's fixed pay, I still obtain the consistent results with those in this table.

3.5 Additional Analysis

3.5.1 Effect of Corporate Governance on Cost Stickiness – Board Size

Some scholars have found that firms' operating performance improves as the size of their board reduces (Hermalin and Weisbach 2003; De Andres, Azofra, and Lopez 2005). Yermack (1996) suggested that with a smaller board, managers' incentive to perform increases and the threat of dismissal becomes greater. The threat of dismissal becomes greater, the incentives to have better performance and empire build for the managers become greater. Hence, I expect that a smaller board size increases the empire building incentives in family firms than in family firms. The managers in non-family firms have higher threat to perform better because the interests of the board of directors and managers align more in family firms (Anderson and Reeb 2003b). In this subsection, I examine the effect of board size on the relationship between cost stickiness and empire building incentives. I define board size as the number of directors on the board and use the board size variable to divide the full sample into high- and low-board-size subsamples based on the industry median in the same industry-year.

First, I predict that with a small board, the impact of free cash flow on the degree of cost stickiness increases the empire building incentives to acquire in non-family firms. Therefore, the degree of cost stickiness should be higher in non-family firms than in family firms in the low-board-size subsample. Second, I predict that with a small board, the impact of the CEO's first years and final year on the degree of cost stickiness decreases more in non-family firms than in family firms. I argue that this is because managers in non-family firms with smaller boards are more likely to reduce resources to meet earnings targets when sales decrease. Lastly, I predict that in the low-board-size subsample, when sales decrease, a high fixed pay ratio will decrease the degree of cost stickiness more in non-family firms than in family firms. I argue that managers are more likely to have strong incentives to engage in empire-building activities in firms with smaller boards because they want to perform better.

In Table 3.14, the evidence in the low-board-size column (1) does not find a relationship between free cash flow and SG&A cost stickiness, which does not support my prediction. In Table 3.15, the degree of cost stickiness is compared between family and non-family firms in the board size subsamples by CEO's first three years, CEO's final year, and CEO fixed pay ratio. Panels A and B show the results for the high- and low-board-size subsamples, respectively.

In Panel A of Table 3.15, the high-board-size column (1) shows that the coefficient for family firms is 0.153 + (-0.159) = -0.006 (t-statistics = -2.16), while it is 0.153 for non-family firms. In Panel B of Table 3.14, the low-board-size column (1) shows that the coefficient for family firms is 0.123 + (-0.362) = -0.239 (t-statistics = -5.45), while it is 0.123 for non-family firms. Therefore, CEOs in their first three years of tenure increase the degree of cost stickiness more in family firms than in non-family firms for the high- and low-board-size subsample, which supports my prediction.

In addition, for the low-board-size subsample, the results in Panel B of Table 3.15 show that *D*Change in sale*CEO last year*FamilyD* is negatively and insignificantly related to the change in SG&A and t-value = -0.17 in family firms, but it is negatively and significantly related to the change in SG&A and t value =-2.98 in non-family firms. These results indicate that the degree of cost stickiness decreases more in family firms than in non-family firms when CEOs are in their last year, which does not support my prediction.

Lastly, the results for the low-board-size subsample in Panel B show that *D*Change in sale*CEO fixed pay*FamilyD* is negatively and significantly related to the change in SG&A, and t-value = -1.87 in family firms, but it is negatively and insignificantly related to the change in SG&A and t-value = -0.18. This indicates that for the low-board-size subsample, compared to non-family firms, family firms are more likely to exhibit cost stickiness when the CEO's fixed pay is higher, which supports my prediction.

Table 3. 14 Board size on the relation between SG&A stickiness and FCF

Dependent variable = Change in SGA	Low Board Size (1) Coefficient (t value)	High Board Size (2) Coefficient (t value)
Change in sale	0.5559 ***	0.7176 ***
	(12.87)	(14.17)
*D*Change in sale*	-0.0386	-0.3430 ***
	(-0.49)	(-3.93)
*D*Change in sale*Free Cash Flow*	**0.0365**	**0.5589**
	(0.13)	**(1.42)**
*D*Change in sale*Free Cash Flow*FamilyD*	**0.0405**	**-0.7409 ***
	(0.12)	**(-1.67)**
*D*Change in sale*Employee intensity*	0.0060	0.1606 ***
	(0.29)	(6.97)
*D*Change in sale*Asset intensity*	-0.0688 **	-0.1061 ***
	(-2.20)	(-3.06)
*D*Change in sale*Successive decrease*	0.1468 ***	0.1253 ***
	(3.83)	(2.85)
*D*Change in sale*Stock performance*	-0.0009	-0.0000
	(-1.33)	(-0.13)
Employee intensity	-0.0053 *	-0.0057 *
	(-1.66)	(-1.66)
Asset intensity	0.0017	-0.0061
	(0.34)	(-1.23)
Successive decrease	0.0029	0.0085
	(0.52)	(1.49)
Stock performance	0.0000	0.0001
	(0.00)	(0.78)
FamilyD	0.0018	0.0056
	(0.40)	(1.19)
Free Cash Flow	0.0657 *	0.1320 ***
	(1.61)	(2.52)
Constant	-0.0027	0.0544 **
	(-0.11)	(2.13)
Year and Industry indicators	Yes	Yes
Observations	3662	2834
F value	77.74	69.74
Adj. R^2	0.5067	0.5431

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.
FamilyD equals 1 if the type of firm is family firm, and otherwise 0.
I use the industry median of board size variable in the same year and same industry to divide sample into the high board size subsample and the low board size subsample. In column (1), I present the results of low board size subsample. Column (2) presents the results of high board size subsample.

Table 3. 15 Board size on the relation between cost stickiness and CEO tenure and fixed pay

Dependent variable = Change in SGA	CEO first years (1) Coeff. (t value)	CEO last year (2) Coeff. (t value)	CEO fixed pay (3) Coeff. (t value)
Panel A: High board size subsample			
Change in sale	0.6329 ***	0.6316 ***	0.6558 ***
	(13.37)	(14.17)	(13.94)
*D*Change in sale*	-0.3107 ***	-0.2233 ***	-0.2053 ***
	(-3.99)	(-3.07)	(-2.67)
*D*Change in sale*CEO first years*	**0.1533** ***		
	(3.18)		
*D*Change in sale*CEO first years*FamilyD*	**-0.1592** **		
	(-2.16)		
*D*Change in sale*CEO last year*		**-0.0464**	
		(-0.82)	
*D*Change in sale*CEO last year*FamilyD*		**0.2925 *** **	
		(2.51)	
*D*Change in sale*CEO fixed pay*			**-0.3709 *** **
			(-2.77)
*D*Change in sale*CEO fixed pay*FamilyD*			**0.2140**
			(1.26)
CEO first years	-0.0019		
	(-0.37)		
CEO last year		-0.0011	
		(-0.17)	
CEO fixed pay			0.0079
			(0.54)
Constant / *Other Controls*	Yes	Yes	Yes
Year and Industry indicators	Yes	Yes	Yes
Observations	2803	2803	2813
F value (Adj. R2)	66.71 (0.5446)	66.15 (0.5425)	69.08 (0.5426)
Panel B: Low board size subsample			
Change in sale	0.5152 ***	0.5384 ***	0.5503 ***
	(12.28)	(13.35)	(12.99)
*D*Change in sale*	-0.0623	0.0033	0.0019
	(-0.81)	(0.05)	(0.02)
*D*Change in sale*CEO first years*	**0.1226** ***		
	(2.95)		
*D*Change in sale*CEO first years*FamilyD*	**-0.3624** ***		
	(-5.45)		
*D*Change in sale*CEO last year*		**-0.1776 *** **	
		(-2.98)	
*D*Change in sale*CEO last year*FamilyD*		**-0.0178**	
		(-0.17)	
*D*Change in sale*CEO fixed pay*			**-0.0168**
			(-0.18)
*D*Change in sale*CEO fixed pay*FamilyD*			**-0.2094 ***
			(-1.87)
CEO first years	-0.0100 *		
	(-1.93)		
CEO last year		-0.0048	
		(-0.72)	
CEO fixed pay			0.0162
			(1.35)
Constant / *Other Controls*	Yes	Yes	Yes
Year and Industry indicators	Yes	Yes	Yes
Observations	3640	3640	3616
F value (Adj. R^2)	75.78 (0.5117)	75.24 (0.5099)	77.33 (0.5085)

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

FamilyD equals 1 if the type of firm is family firm, and otherwise 0.

Other Controls variables include the following variables: *Employee intensity, Asset intensity, Successive decrease, Stock performance, D*Change in sale*Employee intensity, D*Change in sale*Asset intensity, D*Change in sale*Successive decrease, D*Change in sale*Stock performance,* and *FamilyD.*

3.5.1.1 Corporate Governance and Cost Stickiness – Board Size – Family and Non-Family Subsamples

In Table 3.16 and 3.17, I divided the sample into two categories: family firms and non-family firms, and then I investigate the results of these subsamples separately. Panel A and Panel B of Table 3.16 show that results of family firms and non-family firms, respectively. In Panel A, family firms, *D*Change in sale* is negative and significant related to the change in SG&A, t value= -2.89, meaning that family firms with lower number of directors on board exhibit a SG&A cost stickiness behaviour. Next, *D*Change in sale*Free Cash Flow* is positive and significant related to the change in SG&A, t value= 3.37, meaning that when considering the effect of low board size, family firms decreased the degree of SG&A cost stickiness even though there is higher free cash flow. It can also interpret as that the degree of cost stickiness decreased by the free cash flow 1.667 (t-statistic = 3.37) in low board size subgroup in family subsample.

In Panel B of Table 3.16, non-family firms, low board size subgroup does not exhibit cost stickiness. Next, *D*Change in sale*Free Cash Flow* is negative and insignificant related to the change in SG&A, t value= -0.79, which represents that non-family firms with lower board of directors on board does not affect the degree of SG&A cost stickiness through moderating effect of higher free cash flow.

Moreover, Table 3.17 shows the separate results of cost stickiness in the high and low board size subgroups of the effect on CEO tenure and CEO fixed compensation ratio for family and non-family subsamples separately.

First, family firms in Panel A-1 of Table 3.17, the coefficient of *D*Change in sale*CEO first years* is -0.185 (t-statistics = -2.32) in lower board size subgroup. The degree of cost stickiness is increased by factor of CEO's first three years of his or her tenure in low board size subgroup in family firms. Non-family firms in Panel A-2 of Table 3.17, the coefficient of *D*Change in sale*CEO first years* is 0.117 (t value = 2.71) in low board size subgroup and this interaction coefficient is 0.158 (t value = 3.16) in high board size subgroup. This interpret as the degree of cost stickiness is decreased by factor of CEO's first three years in his or her career in low board size subgroup in non-family firm subsample.

Second, family firms, Panel B-1 of Table 3.17 shows the coefficient of *D*Change in sale*CEO last year* is insignificant in low board size subsample, which imply that family firms do not exhibit cost stickiness in lower number of board of directors' subgroup. Non-family firms in Panel B-2 of Table 3.17, the CEO final year of tenure is significant -0.179 (t-statistics = -2.89), implying that the degree of cost stickiness increased in non-family firms in lower number of directors' board subgroup.

Lastly, family firm in Panel C-1 of Table 3.17, the results show that coefficient of *D*Change in sale*CEO fixed pay* is insignificant in low number of directors' board subgroup. This can interpret as the effect of smaller board size did not affect the degree of cost stickiness by the CEO fixed pay in family firm subsample. Non-family firm subsample in Panel C-2 of Table 3.16, the results show the interaction term coefficient of CEO fixed pay is insignificant in low board size subgroup. This can also interpret as the effect of smaller board size did not affect the degree of cost stickiness by the CEO fixed pay in non-family firm subsample.

Table 3. 16 Board size on the relation between SG&A stickiness and FCF – Family and non-family firms

Dependent variable = Change in SGA	Low Board Size (1) Coeff. (t value)	High Board Size (2) Coeff. (t value)
Panel A: Family firms		
Change in sale	0.6873 ***	0.7108 ***
	(8.11)	(6.86)
*D*Change in sale*	-0.5196 ***	0.0555
	(-2.89)	(0.26)
*D*Change in sale*Free Cash Flow*	**1.6667 *** **	**-2.0911 *** **
	(3.37)	**(-2.70)**
*D*Change in sale*Employee intensity*	0.0817	0.0374
	(1.60)	(0.81)
*D*Change in sale*Asset intensity*	-0.0810	-0.0822
	(-1.25)	(-1.13)
*D*Change in sale*Successive Decrease*	0.2060 ***	0.0465
	(2.74)	(0.51)
*D*Change in sale*Stock performance*	-0.0019	-0.0018
	(-0.92)	(-0.95)
Free Cash Flow	0.0041	0.1164 **
	(0.06)	(1.31)
Constant / *Other Controls*	Yes	Yes
Year and Industry indicators	Yes	Yes
Observations	1180	820
F value (Adj. R^2)	26.17 (0.4844)	26.48 (0.5834)
Panel B: Non-family firms		
Change in sale	0.4818 ***	0.7268 ***
	(8.81)	(12.00)
*D*Change in sale*	0.1025	-0.3890 ***
	(1.10)	(-3.61)
*D*Change in sale*Free Cash Flow*	-0.2322	**0.8380 ***
	(-0.79)	**(1.97)**
*D*Change in sale*Employee intensity*	0.0006	0.2008 ***
	(0.03)	(6.98)
*D*Change in sale*Asset intensity*	-0.0406 ***	-0.1416 ***
	(-1.13)	(-3.44)
*D*Change in sale*Successive decrease*	0.1121 **	0.0708
	(2.52)	(1.33)
*D*Change in sale*Stock performance*	-0.0010	-0.0002
	(-1.20)	(-0.26)
Free Cash Flow	0.1071 **	0.1087 *
	(2.06)	(1.66)
Constant / *Other Controls*	Yes	Yes
Year and Industry indicators	Yes	YEs
Observations	2482	2014
F value (Adj. R^2)	60.53 (0.5246)	52.67 (0.5414)

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

This table uses the industry median of board size variable in the same year and same industry to divide sample into high board size subgroup and low board size subgroup. Column (1) presents the results of low board size subgroup. Column (2) presents the results of high board size subgroup. *Other Controls* variables include *Employee intensity*, *Asset intensity*, *Successive decrease*, and *Stock performance*.

Table 3. 17 Board size on the relation between SG&A stickiness and CEO tenure and fixed pay – Family and non-family firms

Dependent variable = Change in SGA	Low Board Size (1) Coefficient (t value)	High Board Size (2) Coefficient (t value)
Panel A-1: Family firms - CEO first years		
Change in sale	0.6889 ***	0.4887 ***
	(8.77)	(5.95)
*D*Change in sale*	**-0.3403 ***	0.0355
	(-1.97)	(0.22)
*D*Change in sale*CEO first years*	**-0.1851 ****	**-0.2197 *****
	(-2.32)	**(-2.69)**
CEO first years	-0.0089	-0.0132 **
	(-0.89)	(-1.39)
Constant / *Other Controls* / Year and Industry indicators	Yes	Yes
Observations	1175	815
F value (Adj. R^2)	25.69 (0.4806)	26.01 (0.5803)
Panel A-2: Non-family firms - CEO first years		
Change in sale	0.3974 ***	0.6605 ***
	(7.63)	(11.89)
*D*Change in sale*	0.0742	-0.3238 ***
	(0.82)	(-3.31)
*D*Change in sale*CEO first years*	**0.1174 *****	**0.1579 *****
	(2.71)	**(3.16)**
CEO first years	-0.0107 *	-0.0000 *
	(-1.74)	(0.00)
Constant / *Other Controls* / Year and Industry indicators	Yes	Yes
Observations	2465	1988
F value (Adj. R^2)	60.49 (0.5262)	52.32 (0.543)
Panel B-1: Family firms - CEO last year		
Change in sale	0.6908 ***	0.5488 ***
	(8.81)	(6.89)
*D*Change in sale*	-0.4066 **	-0.1054
	(-2.37)	(-0.65)
*D*Change in sale*CEO last year*	-0.0001	**0.2281 ***
	(0.00)	**(1.95)**
CEO last year	-0.0013	0.0000 **
	(-0.10)	(0.00)
Constant / *Other Controls* / Year and Industry indicators	Yes	Yes
Observations	1175	815
F value (Adj. R^2)	25.43 (0.4779)	25.66 (0.5769)
Panel B-2: Non-family firms - CEO last year		
Change in sale	0.4315 ***	0.6561 ***
	(8.68)	(12.52)
*D*Change in sale*	0.1218	-0.2278 **
	(1.45)	(-2.50)
*D*Change in sale*CEO last year*	**-0.1785 *****	-0.0642
	(-2.89)	(-1.07)

CEO last year	-0.0054 **	-0.0013 *
	(-0.68)	(-0.17)
Constant / *Other Controls* / Year and Industry indicators	Yes	Yes
Observations	2465	1988
F value (Adj. R^2)	60.19 (0.5249)	51.92 (0.541)
Panel C-1: Family firms - CEO fixed pay		
Change in sale	0.7602 ***	0.5718 ***
	(9.28)	(5.97)
*D*Change in sale*	-0.4397 **	-0.1322
	(-2.39)	(-0.66)
*D*Change in sale*CEO fixed pay*	-0.0458	0.1103
	(-0.26)	(0.38)
CEO fixed pay	0.0155	0.0125
	(0.89)	(0.54)
Constant / *Other Controls* / Year and Industry indicators	Yes	Yes
Observations	1161	808
F value (Adj. R^2)	24.78 (0.4743)	25.35 (0.5759)
Panel C-2: Non-family firms - CEO fixed pay		
Change in sale	0.4461 ***	0.7090 ***
	(7.76)	(12.40)
*D*Change in sale*	0.1329	-0.2255 **
	(1.37)	(-2.29)
*D*Change in sale*CEO fixed pay*	-0.0564	**-0.4113 *** **
	(-0.53)	**(-2.87)**
CEO fixed pay	0.0268 **	0.0102 *
	(1.54)	(0.53)
Constant / *Other Controls* / Year and Industry indicators	Yes	Yes
Observations	2455	2005
F value (Adj. R^2)	59.87 (0.5246)	52.58 (0.5421)

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer the variable definitions in the Table 3.1.

I use the industry median of board size variable in the same year and same industry to divide sample into high board size subgroup and low board size subgroup. Column (1) presents the results of low board size subgroup. Column (2) presents the results of high board size subgroup. *Other Controls* variables include *Employee intensity*, *Asset intensity*, *Successive decrease*, *Stock performance*, *D*Change in sale*Employee intensity*, *D*Change in sale*Asset intensity*, *D*Change in sale*Successive decrease*, and *D*Change in sale*Stock performance*.

3.5.2 Effect of Corporate Governance on Cost Stickiness – Gender Ratio

In corporate governance literature, studies have shown that female directors can improve corporate governance. Adams and Ferreira (2009) find that female directors have significant influence on board inputs and firm performance, have better attendance records, and are more likely to be in monitoring committees. Abbott, Parker, and Presley (2012) propose that female directors are more independent and that they enhance board monitoring in financial reporting, and found that when at least one female is on the board, the likelihood of restatement is lowered. Campbell and Mínguez-Vera (2008) and Nielsen and Huse (2010) find that when a firm has a higher ratio of female directors, it can effectively control board decisions and firm operations, enhance supervision efficiency, and improve firm performance. Gul, Srinidhi, and Ng (2011) showed that board gender diversity improves stock price informativeness. Therefore, I expect that boards with a higher ratio of females will enhance corporate governance between cost stickiness and agency problems in non-family firms.

In this section, I examine the moderating effect of gender ratio on the relationship between cost stickiness and agency costs. I use the gender ratio of a firm to divide the full sample into high gender ratio and low gender ratio subsamples based on the industry median in the same industry-year.

First, I predict that in the low gender ratio subsample (high ratio of female directors), the impact of free cash flow on the degree of cost stickiness decreases the empire-building incentives for acquisition in non-family firms. Therefore, the degree of cost stickiness decreases in non-family firms in the low gender ratio subsample. Second, I predict that in the low gender ratio subsample, the impact of the CEO's first years and final year on the degree of cost stickiness increases more in non-family firms than in family firms. I argue that managers in non-family firms with a higher female ratio on the board are less likely to reduce resources to meet earnings targets when sales decrease because of greater monitoring by female directors. Finally, I predict that in the low gender ratio subsample, the relationship between high fixed pay ratio and degree of cost stickiness might be less pronounced in non-family firms than in family firms. I argue that managers will have less opportunity to engage in empire-building activities because of greater monitoring by female directors.

In Table 3.18, for the low gender ratio (i.e., high ratio of female directors) subsample shown column (1), both *D*Change in sale*Free Cash Flow* and *D*Change in sale*Free Cash Flow*FamilyD* are unrelated to the change in SG&A. This implies that the effect of high ratio of female directors on free cash flow is unrelated to cost stickiness for family and non-family firms, which does not support my prediction.

In Table 3.19, for the low gender ratio subsample shown column (1), *D*Change in sale*CEO first years* is positively and significantly related to the change in SG&A, and the t-value = 3.88, and *D*Change in sale*CEO first years*FamilyD* is negatively and significantly related to the change in SG&A, and the t-value = -3.91. The results show that the effect of high ratio of female directors on CEOs are more likely to increase the degree of SG&A cost stickiness in their first three years of tenure in family firms than in non-family firms, which does not support my conjecture. In addition, family firms with CEOs in the last year of their tenure are more likely to increase the degree of SG&A cost stickiness than non-family firms are with the effect of high ratio of female directors in subgroup. This is similar to the result with CEOs in the first three years of their tenure.

Lastly, for the low gender ratio subsample, namely, the subsample with a high ratio of female directors, the results in column (3) of Table 3.19 show that *D*Change in sale*CEO fixed pay* is negatively and significantly related to the change in SG&A, and the t-value = -2.05, and *D*Change in sale*CEO fixed pay*FamilyD* is negatively and insignificantly related to the change in SG&A, and the t-value = -1.24. These results indicate that in the low gender ratio subsample, family firms with a higher fixed pay for the CEO are more likely to decrease the degree of SG&A cost stickiness than non-family firms are.

Table 3. 18 Gender ratio on the relation between SG&A stickiness and FCF

Dependent variable = Change in SGA	Low gender (1) Coefficient (t value)	High gender (2) Coefficient (t value)
Change in sale	0.5454 ***	0.6441 ***
	(11.65)	(13.85)
*D*Change in sale*	-0.1224 *	-0.1525 *
	(-1.60)	(-1.75)
*D*Change in sale*Free Cash Flow*	-0.1538	**0.7994 ****
	(-0.52)	**(2.42)**
*D*Change in sale*Free Cash Flow*FamilyD*	-0.2678	**-0.6778 ***
	(-0.62)	**(-1.91)**
*D*Change in sale*Employee intensity*	0.1188 ***	0.0181
	(5.68)	(0.81)
*D*Change in sale*Asset intensity*	-0.0762 **	-0.0865 ***
	(-2.35)	(-2.57)
*D*Change in sale*Successive decrease*	0.0955 **	0.1550 ***
	(2.42)	(3.71)
*D*Change in sale*Stock performance*	-0.0000	-0.0017 **
	(-0.11)	(-2.22)
Employee intensity	-0.0042	-0.0047
	(-1.35)	(-1.34)
Asset intensity	-0.0078 *	0.0036
	(-1.67)	(0.69)
Successive decrease	0.0034	0.0096
	(0.63)	(1.58)
Stock performance	0.0000	-0.0001
	(0.70)	(-0.90)
Free Cash Flow	0.0554	0.1187 ***
	(1.25)	(2.57)
FamilyD	0.0036	-0.0009
	(0.77)	(-0.19)
Constant	0.0123	0.0235
	(0.54)	(0.82)
Year and Industry indicators	Yes	Yes
Observations	3507	2989
F value	74.82	70.51
Adj. R^2	0.5078	0.5327

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

FamilyD equals 1 if the type of firm is family firm, and otherwise 0.

I use the industry median of gender ratio variable in the same year and same industry to divide full sample into high gender ratio subgroup and low gender ratio subgroup. In column (1), I present the results of low gender ratio subgroup. In column (2), I present the results of high gender ratio subgroup.

Table 3. 19 Gender on the relation between stickiness and CEO tenure and fixed pay

Dependent variable =	CEO first years (1)	CEO last year (2)	CEO fixed pay (3)
Change in SGA	Coeff. (t value)	Coeff. (t value)	Coeff. (t value)
Low gender ratio subsample			
Change in sale	0.5748 ***	0.5710 ***	0.5677 ***
	(13.77)	(14.06)	(13.70)
*D*Change in sale*	**-0.2296 *** **	**-0.1590 ** **	-0.1122 *
	(-3.27)	**(-2.38)**	(-1.61)
*D*Change in sale*CEO first years*	**0.1663** ***		
	(3.88)		
*D*Change in sale*CEO first years*FamilyD*	**-0.2385** ***		
	(-3.91)		
*D*Change in sale*CEO last year*		0.0387	
		(0.66)	
*D*Change in sale*CEO last year*FamilyD*		**-0.2146 ***	
		(-1.79)	
*D*Change in sale*CEO fixed pay*			**-0.2318 ** **
			(-2.05)
*D*Change in sale*CEO fixed pay*FamilyD*			**-0.1647**
			(-1.24)
CEO first years	-0.0022		
	(-0.44)		
CEO last year		-0.0016	
		(-0.25)	
CEO fixed pay			0.0134
			(1.01)
Constant / *Other Controls*	Yes	Yes	Yes
Year and Industry indicators	Yes	Yes	Yes
Observations	3461	3461	3477
F value (Adj. R^2)	71.84 (0.5108)	71.00 (0.5078)	74.82 (0.5100)

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.
FamilyD equals 1 if the type of firm is family firm, and otherwise 0. *Other Controls* include the following variables: *Employee intensity*, *Asset intensity*, *Successive decrease*, *Stock performance*, *D*Change in sale*Employee intensity*, *D*Change in sale*Asset intensity*, *D*Change in sale*Successive decrease*, *D*Change in sale*Stock performance*, and *FamilyD*.

3.5.2.1 Corporate Governance and Cost Stickiness – Gender Ratio – Family and Non-Family Subsamples

In Table 3.20 and 3.21, I also divided the sample into two categories: family firms and non-family firms, and then I investigate the results of these subsamples separately. Panel A and Panel B of Table 3.20 shows that results of family firms and non-family firms, respectively. In Panel A, the evidence shows that for family firms, SG&A sticky cost behaviour are not affected by the free cash flow in low gender ratio (high ratio of female directors) subgroup. In panel B, for non-family firms, the results also show the degree of cost stickiness is not affected by free cash flow in lower gender ratio (high ratio of female directors) subgroup.

Table 3.21 shows the separate results of cost stickiness in low gender ratio (high ratio of female directors) subgroup for family and non-family subsamples separately. First, Panel A-1 column (1) of Table 3.21, low gender ratio for family firms, the results show that *D*Change in sale*CEO first years* is negative and significant related to the change in SG&A, t value = -2.38. This means the degree of cost stickiness increased by factor of CEO first three years in low gender ratio subgroup for family subsample. Moreover, column (1) in Panel A-2 of Table 3.21, low gender ratio for non-family firms, the results show *D*Change in sale*CEO first years* is positive and significant related to the change in SG&A, t value = 4.21. This means the degree of cost stickiness decreased by factor of CEO first three years in low and high gender ratio subgroups for non-family firm subsample.

In low gender ratio (high ratio of female directors) column (1) of Panel B-1 of Table 3.21, for family firms, *D*Change in sale*CEO last year* is negative and insignificant related to the change in SG&A, t value = -0.63. For non-family firms, column (1) of Panel B-2 of Table 3.21, the results show *D*Change in sale*CEO last year* is positive and insignificant related to the change in SG&A, t value = 0.95. Therefore, the degree of cost stickiness is not affected by CEO final year of his or her tenure in low gender ratio subgroup for both family and non-family subsamples.

Lastly, in Panel C-1 of Table 3.21, the results show that for the family subsample in low gender ratio subgroup (high ratio of female directors), the coefficient of *D*Change in sale*CEO*

fixed pay is insignificant. The degree of cost stickiness is not affected by CEO fixed pay ratio in lower gender subgroup. Panel C-2 of Table 3.21, non-family firms, *D*Change in sale*CEO fixed pay* in non-family subsample is negative and significant related to the change in SG&A in low gender ratio subgroup. Therefore, the degree of cost stickiness increased by CEO fixed pay ratio in low gender ratio subgroup.

Table 3. 20 Gender ratio on the relation between SG&A stickiness and FCF – Family and non-family firms

Dependent variable = Change in SGA	Low gender ratio (1) Coefficient (t value)	High gender ratio (2) Coefficient (t value)
Panel A: Family firms		
Change in sale	0.5834 ***	0.6491 ***
	(5.54)	(7.68)
*D*Change in sale*	-0.3359	-0.2742
	(-1.59)	(-1.58)
*D*Change in sale*Free Cash Flow*	0.8003	0.3710
	(1.21)	(0.71)
*D*Change in sale*Employee intensity*	0.1227 **	-0.0082
	(2.52)	(-0.19)
*D*Change in sale*Asset intensity*	0.0726	-0.2319 ***
	(0.97)	(-3.63)
*D*Change in sale*Successive Decrease*	0.2478 ***	0.1221 *
	(2.73)	(1.64)
*D*Change in sale*Stock performance*	-0.0031	0.0026
	(-1.42)	(1.30)
Free Cash Flow	-0.0277	0.0982 **
	(-0.33)	(1.36)
Constant / *Other Controls*	Yes	Yes
Year and Industry indicators	Yes	Yes
Observations	883	1117
F value (Adj. R^2)	22.57 (0.5239)	26.76 (0.5095)
Panel B: Non-family firms		
Change in sale	0.5175 ***	0.6317 ***
	(8.99)	(10.76)
*D*Change in sale*	-0.0316	-0.1271
	(-0.34)	(-1.17)
*D*Change in sale*Free Cash Flow*	-0.2724	**0.7084 ***
	(-0.87)	**(1.88)**
*D*Change in sale*Employee intensity*	0.1082 ***	0.0262
	(4.47)	(0.96)
*D*Change in sale* Asset intensity*	-0.1114 ***	-0.0417
	(-3.00)	(-1.01)
*D*Change in sale*Successive decrease*	0.0258	0.1673 ***
	(0.57)	(3.18)
*D*Change in sale*Stock performance*	-0.0001	-0.0023 **
	(-0.17)	(-2.46)
Free Cash Flow	0.0973 *	0.1307 **
	(1.82)	(2.09)
Constant / *Other Controls*	Yes	Yes
Year and Industry indicators	Yes	Yes
Observations	2624	1872
F value (Adj. R^2)	60.21 (0.5094)	49.95 (0.5462)

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

I use the industry median of gender ratio variable in the same year and same industry to divide sample into high gender ratio subgroup and low gender ratio subgroup. Column (1) presents the results of low gender ratio subgroup. Column (2) presents the results of high gender ratio subgroup. *Other Controls* variables include *Employee intensity*, *Asset intensity*, *Successive decrease*, and *Stock performance*.

Table 3. 21 Gender ratio on the relation between SG&A stickiness and CEO tenure and fixed pay – Family and non-family firms

Dependent variable =	Low gender ratio (1)		High gender ratio (2)	
Change in SGA	Coefficient	t value	Coefficient	t value
Panel A-1: Family firms - CEO first years				
Change in sale	0.6145 ***		0.5514 ***	
	(7.19)		(6.91)	
*D*Change in sale*	-0.2371		-0.0822	
	(-1.25)		(-0.52)	
*D*Change in sale*CEO first years*	**-0.2009 ****		**-0.3007 *****	
	(-2.38)		**(-3.24)**	
CEO first years	-0.0090		-0.0133 **	
	(-0.87)		(-1.40)	
Constant / *Other Controls* / Year and industry indicators	Yes		Yes	
Observations	879		1111	
F value (Adj. R^2)	22.64 (0.5258)		27.25 (0.5156)	
Panel A-2: Non-family firms - CEO first years				
Change in sale	0.5100 ***	10.05	0.4674 ***	
	(10.05)		(8.01)	
*D*Change in sale*	-0.1384	-1.60	0.0397	
	(-1.60)		(0.38)	
*D*Change in sale*CEO first years*	**0.1852 *****	**4.21**	**0.1134 ****	
	(4.21)		**(2.26)**	
CEO first years	0.0010	0.18	-0.0143 *	
	(0.18)		(-2.10)	
Constant / *Other Controls* / Year and Industry indicators	Yes		Yes	
Observations	2582		1871	
F value (Adj. R^2)	59.77 (0.5116)		50.45 (0.5488)	
Panel B-1: Family firms - CEO last year				
Change in sale	0.6266 ***		0.5806 ***	
	(7.68)		(7.12)	
*D*Change in sale*	-0.3230 *		-0.1997	
	(-1.74)		(-1.25)	
*D*Change in sale*CEO last year*	-0.0818		**0.2823 *****	
	(-0.63)		**(2.76)**	
CEO last year	-0.0012		0.0027 **	
	(-0.10)		(0.21)	
Constant / *Other Controls* / Year and Industry indicators	Yes		Yes	
Observations	879		1111	
F value (Adj. R^2)	22.41 (0.5231)		27.02 (0.5133)	
Panel B-2: Non-family firms - CEO last year				
Change in sale	0.5052 ***		0.5316 ***	
	(10.05)		(10.12)	
*D*Change in sale*	-0.0445		0.0536	
	(-0.54)		(0.57)	
*D*Change in sale*CEO last year*	0.0574		**-0.2128 *****	
	(0.95)		**(-3.47)**	
CEO last year	0.0018		-0.0102	
	(0.25)		(-1.19)	

Constant / *Other Controls* / Year and Industry indicators	Yes	Yes
Observations	2582	1871
F value (Adj. R^2)	58.87 (0.5077)	84.72 (0.5473)
Panel C-1: Family firms - CEO fixed pay		
Change in sale	0.6915 ***	0.6183 ***
	(8.06)	(6.77)
*D*Change in sale*	-0.3419 *	-0.2184
	(-1.69)	(-1.20)
*D*Change in sale*CEO fixed pay*	-0.1432	0.0350
	(-0.63)	(0.18)
CEO fixed pay	0.0198	-0.0096
	(0.99)	(-0.52)
Constant / *Other Controls* / Year and Industry indicators	Yes	Yes
Observations	875	1094
F value (Adj. R^2)	22.47 (0.525)	25.38 (0.5009)
Panel C-2: Non-family firms - CEO fixed pay		
Change in sale	0.5039 ***	0.6075 ***
	(8.99)	(9.86)
*D*Change in sale*	0.0132	0.0011
	(0.14)	(0.01)
*D*Change in sale*CEO fixed pay*	**-0.2573 ****	-0.0968
	(-2.11)	(-0.81)
CEO fixed pay	0.0116 **	0.0232 *
	(0.63)	(1.23)
Constant / *Other Controls* / Year and Industry indicators	Yes	Yes
Observations	2602	1858
F value (Adj. R^2)	59.61 (0.509)	83.45 (0.5452)

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

I use the industry median of gender ratio variable in the same year and same industry to divide sample into high gender ratio subgroup and low gender ratio subgroup. In column (1), I present the results of low gender ratio subgroup. Column (2) presents the results of high gender ratio subgroup.

Other Controls variables include *Employee intensity*, *Asset intensity*, *Successive decrease*, *Stock performance*, *D*Change in sale*Employee intensity*, *D*Change in sale*Asset intensity*, *D*Change in sale*Successive decrease*, and *D*Change in sale*Stock performance*.

3.5.3 Effect of Corporate Governance on Cost Stickiness – CEO Director Duality

Finkelstein and D'Aveni (1994) indicated that a separate management structure can lead to greater independence from the board. Jensen (1993) indicated that boards are ineffective when the same person is the CEO and the board chair, and if the CEO determines the agenda and material presented at board meetings. Therefore, I expect that a CEO who serves as the director on the board diminishes corporate governance on the empire building incentives. *DirectorD* is an indicator variable that equals 1 if the CEO serves as the board director (hereafter, CEO-director) and zero otherwise.

In Table 3.22, the results indicate that when the CEO also serves as a director on the board, the coefficient of *D*Change in sale*Free Cash Flow* is positively and significantly related to the change in SG&A (t value = 1.66). This means that when firms with CEO-directors have a higher free cash flow, managers cut more resources when sales decrease, which leads to anti-stickiness in non-family firms. However, free cash flow does not increase the degree of cost stickiness in family firms. These results do not support my predictions. This might be because even though free cash flow is high, when the manager is also a director on the board, he or she is more likely to reduce resources when sales decrease to meet certain earnings targets.

In Table 3.23, the results show the comparison of the degree of cost stickiness between family and non-family firms, considering a CEO-director and the agency cost measures, namely, the CEO's first three years (column 1), the CEO's final year (column 2), and the CEO fixed pay ratio (column 3).

First, in column (1) of Table 3.23, the evidence shows that the coefficient of the 'CEO's first three years' measure is 0.237 + (-0.138) = 0.09 for family firms and 0.237 for non-family firms. This means that cost stickiness decreases more in non-family firms than in family firms when the CEO-director is in his or her first three years of tenure, which is consistent with my prediction. Corporate governance weakens in non-family firms, so managers are more likely to cut resources when sales decrease to meet their earnings targets.

Second, in column (2) of Table 3.23, the evidence shows that when the CEO has a dual role, the last year coefficient is -0.141 + (0.300) = 0.159 for family firms (t value = 2.80) and -0.141 for non-family firms (t value = -2.24). These results indicate that the degree of cost stickiness decreases more in family firms than in non-family firms when CEO-directors are in their final year of tenure, which does not support my hypothesis. Lastly, CEO fixed pay ratio in column 3 does not find a cost stickiness in both family and non-family firms.

Table 3. 22 CEO-director on the relation between SG&A stickiness and FCF

Dependent variable = Change in SGA	CEO–Director Coefficient (t value)
Change in sale	0.6132 ***
	(11.86)
*D*Change in sale*	**-0.2453 *****
	(-2.48)
*D*Change in sale*Free Cash Flow*	**0.5420 ***
	(1.66)
*D*Change in sale*Free Cash Flow*FamilyD*	0.1570
	(0.38)
*D*Change in sale*Employee intensity*	0.0568 **
	(2.34)
*D*Change in sale*Asset intensity*	0.0225
	(0.59)
*D*Change in sale*Successive decrease*	0.0996 **
	(2.22)
*D*Change in sale*Stock performance*	0.0002
	(0.24)
Employee intensity	-0.0016
	(-0.45)
Asset intensity	0.0024
	(0.44)
Successive decrease	0.0025
	(0.41)
Stock performance	-0.0001
	(-1.58)
Free Cash Flow	0.0902 *
	(1.90)
FamilyD	0.0038
	(0.78)
Constant	0.0480 ***
	(3.52)
Year and Industry indicators	Yes
Observations	2580
F value	64.28
Adj. R^2	0.5558

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.
FamilyD equals 1 if the type of firm is family firm, and otherwise 0.
In this table, I divide the full sample into two subsamples that CEO (does not) serves as a director, that is, CEO has a duality role.

Table 3. 23 CEO-director on the relation between stickiness and CEO tenure and fixed pay

Dependent variable =	CEO first years	CEO last year	CEO fixed pay
	(1)	(2)	(3)
Change in SGA	Coefficient t value	Coefficient t value	Coefficient t value
Change in sale	0.5852 ***	0.5861 ***	0.5984 ***
	(10.97)	**(11.43)**	**(11.51)**
*D*Change in sale*	**-0.2864 *** **	**-0.1505 * **	**-0.1892 ** **
	(-3.00)	**(-1.69)**	**(-1.98)**
*D*Change in sale*CEO first years*	**0.2369** ***		
	(4.54		
*D*Change in sale*CEO first years*FamilyD*	**-0.1382** *		
	(-1.82)		
*D*Change in sale*CEO last year*		**-0.1409 ** **	
		(-2.24)	
*D*Change in sale*CEO last year*FamilyD*		**0.2998 *** **	
		(2.80)	
*D*Change in sale*CEO fixed pay*			0.0711
			(0.62)
*D*Change in sale*CEO fixed pay *FamilyD*			0.1188
			(1.02)
CEO first years	0.0008		
	(0.15)		
CEO last year		-0.0001	
		(-0.01)	
CEO fixed pay			0.0217 *
			(1.65)
Constant / *Other Control*s	Yes	Yes	Yes
Year and Industry indicators	Yes	Yes	Yes
Observations	2553	2553	2556
F value	61.71	61.06	64.08
Adj. R^2	0.5577	0.5550	0.5573

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.
FamilyD equals 1 if the type of firm is family firm, and otherwise 0. This study divides the full sample into subgroup that CEO serves as a director (duality).
*Other Control*s variables include the following variables: *Employee intensity*, *Asset intensity*, *Successive decrease*, *Stock performance*, *D*Change in sale*Employee intensity*, *D*Change in sale*Asset intensity*, *D*Change in sale*Successive decrease*, *D*Change in sale*Stock performance*, and *FamilyD*.

3.5.3.1 Corporate Governance and Cost Stickiness – CEO Director Duality – Family and Non-Family Subsamples

In Tables 3.24 and 3.25, I divided the sample into two categories: family firms and non-family firms, and then I investigate the results of these subsamples separately. Columns (1) and (2) of Table 3.24 shows that results of family firms and non-family firms, respectively.

In Table 3.24, the coefficient of *D*Change in sale*Free Cash Flow* shows that when the CEO serves as a director, there is the difference of cost stickiness between family and non-family firms. The degree of cost stickiness significantly decreased by the free cash flow in non-family firms (0.6893; t value = 1.92) through the monitoring effect of CEO-director. Moreover, for the family firms (1.1583; t value = 1.60), the evidence indicate that they do not exhibit sticky cost behaviour. The factor that the CEO serves as a director has a moderating effect of corporate governance on the relation between free cash flow and cost stickiness.

Table 3.25 shows the separate results of cost stickiness CEO-director duality role subgroup for family and non-family subsamples separately. In column (1) of Panels A, B, and C of Table 3.24, family firms with CEO-director duality effect, the coefficients of *D*Change in sale* are insignificant, meaning they do not exhibit the SG&A cost stickiness when sales decrease. In column (2) of Panels A, B, and C of Table 3.25, the non-family firms with CEO-director duality, the coefficients of *D*Change in sale* are negative and significant, t value is -2.86, -1.82, and -2.98, respectively, meaning that firms exhibit sticky cost behaviour when sales decrease in non-family firms.

First, in column (1) of Table 3.25, for the family firms, the coefficient of *D*Change in sale*CEO first years* is insignificant when the CEO has duality role. For the non-family firm, the coefficient of *D*Change in sale*CEO first years* is 0.228 (t value = 4.12) in the CEO duality subgroup. This indicates that when sales decrease, the degree of cost stickiness decreased when the CEOs are in first three years of their tenure in CEO duality group in the non-family firms.

Second, in Panel B of Table 3.25, for CEO duality subgroup, the CEO last year is unrelated to the sticky cost behaviour in the family firms. However, the negative and significant

coefficient of *D*Change in sale*, t value = -2.37, shows the degree of cost stickiness increased when sales decrease in the non-family firms. Hence, the SG&A cost stickiness increased by the factors of CEO final year of tenure when CEO also serves as director in the non-family subsample.

Finally, in Panel C of Table 3.25, for CEO duality subgroup, the results show that both coefficients are insignificant of *D*Change in sale* and *D*Change in sale*CEO fixed pay* in family subsample. This means that there is no effect by the CEO duality role when considering CEO fixed pay ratio on the degree of cost stickiness in family firms. However, for non-family subsample, *D*Change in sale* is negative and significant related to the change in SG&A, t value = -2.98, representing that when sales decrease, non-family firms show the cost stickiness behaviour. *D*Change in sale*CEO fixed pay* in the non-family subsample are positive and significant, t value = 1.87, meaning that the degree of cost stickiness decreased by CEO fixed pay ratio when CEO also serve as director when sales decrease.

Table 3. 24 CEO-director on the relation between SG&A stickiness and FCF – Family and non-family firms

Dependent variable = Change in SGA	CEO-Director (1) Family firms Coefficient (t value)	CEO- Director (2) Non-family firms Coefficient (t value)
Change in sale	0.6442 ***	0.6449 ***
	(6.92)	**(9.69)**
*D*Change in sale*	-0.1809	**-0.3389 *****
	(-0.87)	**(-2.82)**
*D*Change in sale*Free Cash Flow*	**1.1583 ***	**0.6893 ***
	(1.60)	**(1.92)**
*D*Change in sale*Employee intensity*	0.0738	0.0509 *
	(1.59)	(1.67)
*D*Change in sale*Asset intensity*	0.0627	0.0107
	(0.87)	(0.23)
*D*Change in sale*Successive decrease*	0.1139	0.0933 *
	(1.43)	(1.66)
*D*Change in sale*Stock performance*	-0.0051 **	0.0017
	(-2.10)	(1.50)
Free Cash Flow	0.0215	0.1312 **
	(0.28)	(2.10)
Constant / *Other Controls*	Yes	Yes
Year and Industry indicators	Yes	Yes
Observations	952	1628
F value (Adj. R^2)	26.88 (0.5612)	43.13 (0.5541)

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

This table divides the full sample into subgroup of that CEO serves as a director (duality).

In column (1), I present the results of CEO duality subgroup for family firms. Column (2) presents the results of CEO duality subsample for non-family firms.

Other Controls variables include the following variables: *Employee intensity*, *Asset intensity*, *Successive decrease*, and *Stock performance*.

Table 3. 25 CEO-director on the relation between stickiness and CEO tenure and fixed pay – Family and non-family firms

Dependent variable = Change in SGA	CEO-Director (1) Family firms Coefficient (t value)		CEO-Director (2) Non-family firms Coefficient (t value)	
Panel A: CEO first years				
Change in sale	0.6231 ***		0.5759 ***	
	(6.81)		(9.10)	
*D*Change in sale*	-0.0054		**-0.3197 *** **	
	(-0.03)		**(-2.86)**	
*D*Change in sale*CEO first years*	-0.0310		**0.2280 *** **	
	(-0.37)		**(4.12)**	
CEO first years	0.0112		-0.0025	
	(1.13)		(-0.36)	
Constant / *Other Controls*	Yes		Yes	
Year and Industry indicators	Yes		Yes	
Observations	942		1611	
F value (Adj. R^2)	26.5 (0.5602)		43.06 (0.5563)	
Panel B: CEO last year				
Change in sale	0.6118 ***	6.89	0.5827 ***	
	(6.89)		(9.52)	
*D*Change in sale*	-0.0249	-0.14	**-0.1910 ***	
	(-0.14)		**(-1.82)**	
*D*Change in sale*CEO last year*	0.1513	1.37	**-0.1566 ****	
	(1.37)		**(-2.37)**	
CEO last year	0.0065	0.53	-0.0012	
	(0.53)		(-0.15)	
Constant / *Other Controls*	Yes		Yes	Yes
Year and Industry indicators	Yes		Yes	
Observations	942		1611	
F value (Adj. R^2)	26.55 (0.5606)		42.31 (0.5519)	
Panel C: CEO fixed pay				
Change in sale	0.5989 ***		0.6785 ***	
	(6.61)		**(9.61)**	
*D*Change in sale*	0.0358		**-0.3602 *** **	
	(0.18)		**(-2.98)**	
*D*Change in sale*CEO fixed pay*	-0.0420		**0.2539 ***	
	(-0.25)		**(1.87)**	
CEO fixed pay	-0.0178		0.0722 ***	
	(-0.97)		(3.59)	
Constant / *Other Controls*	Yes		Yes	Yes
Year and Industry indicators	Yes		Yes	
Observations	941		1615	
F value (Adj. R^2)	26.37 (0.5592)		43.49 (0.5582)	

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

This study divides the full sample into subgroup that CEO serves as a director (duality)

Other Controls variables include *Employee intensity, Asset intensity, Successive decrease, Stock performance, D*Change in sale*Employee intensity, D*Change in sale*Asset intensity, D*Change in sale*Successive decrease,* and *D*Change in sale*Stock performance*.

3.5.4 Active and Passive Family and Non-Family Firms – Cost Stickiness

Family shareholders have a control advantage over other shareholders because they play an active role in management (Anderson and Reeb 2004). Family firms with a founder CEO usually perform better than other firms (Barontini and Caprio 2006). Isakov and Weisskopf (2014) found that market performance is similar across all firms, but accounting performance is higher in active family firms. They indicated that a family member possessing managerial ability to affect corporate policies and strategies is essential. To test the influence of measures of creditor monitoring on family firms' leverage decisions, Schmid (2013) focus on family firms active because passive family firms do not significantly differ from non-family firms. Wu and Mazur (2018) found that passive family firms conduct greater research and development compared to active family firms and that they conduct more M&A deals, especially in low-risk firms. I investigate whether the degree of cost stickiness behaviour could vary depending on whether the CEO is a family member or an outside professional when compared with non-family firms.

Following Schmid (2013) and Wu and Mazur (2018), in this section, I classify the full sample firms into active family firms (family member CEOs), passive family firms (outside professional CEO), and non-family firms, to examine the moderating effect of agency cost on the SG&A sticky cost behaviour when sales decrease. *ActiveFamilyD* variable equals to 1 when sample firms are active family firms and set to 0 when sample firms are passive family firms and non-family firms. *PassiveFamilyD* variable equals to 1 when sample firms are passive family firms and set to 0 when sample firms are active family firms and non-family firms. In addition, *ActivePassiveD* equals 1 when sample firms are active family firms and equals 0 when sample firms are passive family firms. This excludes non-family firms. *ActiveNonfamilyD* equals 1 when sample firms are active family firms and equals 0 when sample firms are non-family firms. This excludes passive family firms.

In columns (1) and (2) of Panel A in Table 3.26, the results of *D*Change in sale*Free cash flow* show that, unlike passive family firms and non-family firms, active family firms have cost anti-stickiness, which is affected by free cash flow. Free cash flow significantly weakens the sticky cost behaviour. Also, compared to passive family firms or non-family firms, there is no obvious stickiness cost behaviour in the active family firms.

In Tables 3.26 and 3.27, column (1) and (2) show the results of *ActiveFamilyD* and *PassiveFamilyD,* respectively. The findings of column (1) *ActiveFamilyD* in Table 3.26 show that *D*Change in sale* is negative and significant related to the change of SG&A, t value = -3.38. This means that full sample exhibit a SG&A sticky cost behaviour. Next, *D*Change in sale*Free cash flow* and *D*Change in sale*Free cash flow*ActiveFamilyD* are unrelated to the change of SG&A, t value = 1.20 and t value = -1.20, respectively. Hence, free cash flow significantly decreases cost stickiness, and causes that compared to passive family and non-family firms, active family firms have no cost stickiness behaviour.

Column (2) of Panel A in Table 3.26 shows that *D*Change in sale* is negative and significant related to the change of SG&A, t value = -3.47, indicating that full sample firms exhibit the SG&A cost stickiness. The results of column (2) of Panel A in Table 3.26, both *D*Change in sale*Free cash flow* and *D*Change in sale*Free cash flow*PassiveFamilyD* are unrelated to the SG&A cost stickiness, t value = 1.17 and -0.93, respectively. Therefore, free cash flow significantly decreases SG&A cost stickiness and induces that compared to active family and non-family firms, passive family firms have no cost stickiness.

In Table 3.27, the results for the CEO's first three years of tenure, CEO's final year of tenure and CEO fixed pay are shown in Panel A, B and C, respectively. The effect of CEOs in the first three years of tenure, in Panel A of Table 3.27, the findings of *ActiveFamilyD* show that *D*Change in sale* is negative and significant related to the change of SG&A, t value = -3.27, indicating that there is a SG&A sticky cost behaviour. *D*Change in sale*CEO first years* is positive and significant related to the change in SG&A, t value = 3.77 and *D*Change in sale*CEO first years*ActiveFamilyD* is negative and significant related to the change of SG&A, t value = -2.24 (coefficient = -0.1698). These results show that compared with passive family and non-family firms, CEOs in the first three years of tenure are more likely to exhibit a SG&A cost stickiness in active family firms.

Next, column (2) of Panel A of Table 3.27, the result of *PassiveFamilyD* show that *D*Change in sale* is negative and significant related to the change of SG&A, t value = -3.41. This indicates that SG&A sticky cost behaviour exists. *D*Change in sale*CEO first years* is

positive and significant related to the change in SG&A, t value = 5.59 and *D*Change in sale*CEO first years*ActiveFamilyD* is negative and significant related to the change of SG&A, t value = -4.61 (coefficient = -0.2086). Therefore, compared with active family and non-family firms, the degree of SG&A cost stickiness in passive family firms is more pronounced when CEOs are in the first three years of tenure.

Next, the moderating effect of the CEO last year of tenure in Panel B of Table 3.27, the results in columns (1) and (2) show that *D*Change in sale*CEO last year* is negative and significant related to the change in SG&A, t value = -2.07 and t value = -2.21, respectively. These mean that there is a cost stickiness in the CEOs last year of tenure. However, *D*Change in sale*CEO last year*ActiveFamilyD* and *D*Change in sale*CEO last year*PassiveFamilyD* are unrelated to the change of SG&A in columns (1) and (2), t value = 0.26 and t value = 1.49, respectively. These indicate CEOs in the last year of tenure are less likely to exhibit the SG&A cost stickiness in active and passive family firms.

Furthermore, in Panel C of Table 3.27, the findings in columns (1) and (2) show that *D*Change in sale*CEO fixed pay* is negative and significant related to the change in SG&A, t value= -1.97 and t value= -3.15, respectively, meaning that the SG&A stick cost behaviour exists when the CEOs have a higher fixed pay ratio. However, the change in SG&A is negative and significant related to *D*Change in sale*CEO last year*ActiveFamilyD* (t value = -3.68; coefficient = -0.3148) in column (1) but is unrelated to *D*Change in sale*CEO last year*PassiveFamilyD* (t value = 1.13; coefficient = 0.0830) in column (2). Therefore, when the CEO's fixed pay ratio is higher, compared to passive family and non-family firms, the degree of SG&A cost stickiness is more pronounced in active family firms.

Finally, in column (1) of Table 3.28, *ActivePassiveD* equals to 1 when sample firms are active family firms and equals to 0 when sample firms are passive family firms. This excludes non-family firms. In column (2) of Table 3.28, *ActiveNonfamilyD* equals to 1 when sample firms are active family firms and equals to 0 when sample firms are non-family firms. This excludes passive family firms.

In Active-Nonfamily (2) column of Table 3.28, CEO's first three years of tenure in Panel A, the result of *D*Change in sale*CEO first years*ActiveNonfamilyD* shows that compared to non-family, active family firms have stronger cost stickiness when CEOs are in first three years of their tenure (t value = -2.79; coefficient = -0.2145). In Active-Passive (1) column of Panel C, the findings show that compare to passive family firms, active family firms have stronger degree of cost stickiness when considering CEO fixed pay ratio (t value = -3.24; coefficient = -0.3298). In Active-Nonfamily (2) column of Panel C, the results show that compare to non-family firms, active family firms have stronger degree of cost stickiness when considering CEO fixed pay ratio (t value = -3.39; coefficient = -0.3025). Overall, the findings about the factors in agency costs, free cash flow and CEO last year, support Schmid (2013) that passive family firms do not significantly differ from non-family firms.

Table 3. 26 SG&A cost stickiness and free cash flow- Active and passive family firms

Panel A

Dependent variable = Change in SGA	Active Family (1) Coefficient (t value)	Passive Family (2) Coefficient (t value)
Change in sale	0.6181 ***	0.6220 ***
	(21.82)	(21.99)
*D*Change in sale*	-0.1688 ***	-0.1739 ***
	(-3.38)	(-3.47)
*D*Change in sale*Free cash flow*	**0.2150**	**0.2146**
	(1.20)	**(1.17)**
*D*Change in sale*Free cash flow*ActiveFamilyD*	**-0.3857**	
	(-1.20)	
*D*Change in sale*Free cash flow*PassiveFamilyD*		**-0.2665**
		(-0.93)
*D*Change in sale*Employee intensity*	0.0576 ***	0.0589 ***
	(4.26)	(4.34)
*D*Change in sale*Asset intensity*	-0.0994 ***	-0.1017 ***
	(-4.86)	(-4.97)
*D*Change in sale*Successive decrease*	0.1238 ***	0.1215 ***
	(4.98)	(4.89)
*D*Change in sale*Stock performance*	-0.0003	-0.0003
	(-0.99)	(-0.95)
Employee intensity	-0.0047 **	-0.0045 **
	(-2.29)	(-2.17)
Asset intensity	-0.0010	-0.0012
	(-0.34)	(-0.39)
Success decrease	0.0020	0.0016
	(0.57)	(0.46)
Stock performance	-0.0000	-0.0000
	(-0.44)	(-0.52)
Free cash flow	0.0804 ***	0.0810 ***
	(2.97)	(2.99)
ActiveFamilyD	0.0080 **	
	(2.16)	
PassiveFamilyD		0.0005
		(0.31)
Constant	0.0360 ***	0.0374 ***
	(4.48)	(4.65)
Year and Industry indicators	Yes	Yes
Observations	8568	8568
F value (Adj. R^2)	198.55 (0.5404)	198.26 (0.5401)

Panel B

Dependent variable = Change in SGA	Active-Passive (3) Coefficient (t value)	Active-Nonfamily (4) Coefficient (t value)
Change in sale	0.7011 ***	0.5844 ***
	(14.26)	(18.55)
*D*Change in sale*	-0.3773 ***	-0.1166 **
	(-3.56)	(-2.12)
*D*Change in sale*Free cash flow*	**0.7052** **	**0.1590**
	(1.96)	**(0.78)**
*D*Change in sale*Free cash flow*ActivePassiveD*	**-0.1115**	
	(-0.28)	
*D*Change in sale*Free cash flow*ActiveNonfamilyD*		**-0.4994**
		(-1.52)
Constant / *Other Controls*	Yes	Yes
Year and Industry indicators	Yes	Yes
Observations	2896	6942
F value (Adj. R^2)	66.98 (0.5326)	161.73 (0.5415)

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

In column (1), *ActiveFamilyD* variable equals to 1 when sample firms are active family firms and equals to 0 when sample firms are passive family and nonf-amily firms. In column (2), *PassiveFamilyD* equals to 1 when sample firms are passive family firms and equal to 0 when sample are active family and non-family firms. In column (3), *ActivePassiveD* variable equals to 1 when sample firms are active family firms, and equals to 0 when firms are passive family firms, which exclude non-family firms. In column (4), *ActiveNonfamilyD* variable equals to 1 when sample firms are active family firms, and equals to 0 when sample are non-family firms, which exclude passive family firms.

Other Controls variables are the same as those in Panel A, but *ActivePassiveD* and *ActiveNonfamilyD* are included in columns (3) and (4), respectively.

Table 3. 27 SG&A cost stickiness and CEO tenure and fixed pay –Active and passive family firms

Dependent variable = Change in SGA	Active Family (1) Coefficient (t value)	Passive Family (2) Coefficient (t value)
Panel A: CEO first three years of tenure		
Change in sale	0.5731 ***	0.5606 ***
	(21.09)	(21.12)
*D*Change in sale*	-0.1572 ***	-0.1602 ***
	(-3.27)	(-3.41)
*D*Change in sale*CEO first years*	**0.0981** ***	**0.1465 *** **
	(3.77)	**(5.59)**
*D*Change in sale*CEO first years*ActiveFamilyD*	**-0.1698** **	
	(-2.24)	
*D*Change in sale*CEO first years*PassiveFamilyD*		**-0.2086 *** **
		(-4.61)
CEO first years	-0.0018	-0.0031
	(-0.57)	(-0.99)
Constant / *Other Controls*	Yes	Yes
Year and Industry indicators	Yes	Yes
Observations	8459	8459
F value (Adj. R^2)	187.59 (0.5390)	187.90 (0.5394)
Panel B: CEO last year of tenure		
Change in sale	0.5693 ***	0.5577 ***
	(21.94)	(21.71)
*D*Change in sale*	-0.0869 **	-0.0771 *
	(-1.94)	(-1.73)
*D*Change in sale*CEO last year*	**-0.0678** **	**-0.0732 ** **
	(-2.07)	**(-2.21)**
*D*Change in sale*CEO last year*ActiveFamilyD*	**0.0253**	
	(0.26)	
*D*Change in sale*CEO last year*PassiveFamilyD*		**0.1192**
		(1.49)
CEO last year	-0.0040	-0.0039
	(-0.99)	(-0.97)
Constant / *Other Controls*	Yes	Yes
Year and Industry indicators	Yes	Yes
Observations	8459	8459
F value (Adj. R^2)	186.94 (0.5381)	186.26 (0.5372)
Panel C: CEO fixed pay		
Change in sale	0.5951 ***	0.5990 ***
	(21.45)	(21.72)
*D*Change in sale*	-0.1012 **	-0.0981 **
	(-2.12)	(-2.06)
*D*Change in sale*CEO fixed pay*	**-0.1117** **	**-0.1845 *** **
	(-1.97)	**(-3.15)**
*D*Change in sale* CEO fixed pay*ActiveFamilyD*	**-0.3148** ***	
	(-3.68)	
*D*Change in sale* CEO fixed pay*PassiveFamilyD*		**0.0830**
		(1.13)
CEO fixed pay	0.0125 *	0.0148 **
	(1.66)	(1.98)
Constant / *Other Controls*	Yes	Yes
Year and Industry indicators	Yes	Yes
Observations	8463	8463
F value (Adj. R_2)	195.57 (0.5397)	195.02 (0.5390)

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.

In column (1), for *ActiveFamilyD* variable, I set to 1 when sample firms are active family firms and set to 0 when sample firms are passive family firms and non-family firms. In column (2), for *PassiveFamilyD* variable, I set to 1 when sample firms are passive family firms and set to 0 when sample firms are active family firms and non-family firms.

Other Controls variables include: *D*Change in sale*Employee intensity*, *D*Change in sale*Asset intensity*, *D*Change in sale*Successive decrease*, *D*Change in sale*Stock performance*, *Employee intensity*, *Asset intensity*, *Successive decrease*, and *Stock performance.* In addition, I include *ActiveFamilyD* and *PassiveFamilyD* in columns (1) and (2) of Panels A, B and C, respectively.

Table 3. 28 SG&A cost stickiness and CEO tenure and fixed pay – Active family, passive family, and non-family firms

Dependent variable = Change in SGA	Active-Passive (1) Coefficient (t value)	Active-Nonfamily (2) Coefficient (t value)
Panel A: CEO first three years of tenure		
Change in sale	0.6418 ***	0.5611 ***
	(12.76)	(18.11)
*D*Change in sale*	-0.1402	-0.1594 ***
	(-1.27)	(-2.99)
*D*Change in sale*CEO first years*	**-0.1148** **	**0.1492 *** **
	(-1.92)	**(5.19)**
*D*Change in sale*CEO first years*ActivePassiveD*	**-0.0198**	
	(-0.23)	
*D*Change in sale*CEO first years*ActiveNonfamilyD*		**-0.2145 *** **
		(-2.79)
CEO first years	-0.0010	-0.0011
	(-0.16)	(-0.30)
Constant / *Other Controls* / Year and Industry indictors	Yes	Yes
Observations	2862	6841
F value (Adj. R^2)	63.43 (0.5315)	153.76 (0.5420)
Panel B: CEO last year of tenure		
Change in sale	0.6438 ***	0.5529 ***
	(13.21)	(18.73)
*D*Change in sale*	-0.2303 **	-0.0534
	(-2.23)	(-1.08)
*D*Change in sale*CEO last year*	**0.1573** *	**-0.1112 *** **
	(1.85)	**(-3.13)**
*D*Change in sale*CEO last year*ActivePassiveD*	**-0.1513**	
	(-1.24)	
*D*Change in sale*CEO last year*ActiveNonfamilyD*		**0.0313**
		(0.32)
CEO last year	-0.0024	-0.0047
	(-0.31)	(-1.05)
Constant /*Other Controls* /Year and Industry indicators	Yes	Yes
Observations	2862	6841
F value (Adj. R^2)	63.44 (0.5316)	152.71 (0.5403)
Panel C: CEO fixed pay		
Change in sale	0.6644 ***	0.5634 ***
	(14.27)	(17.79)
*D*Change in sale*	-0.2407 **	-0.0552
	(-2.33)	(-1.04)
*D*Change in sale*CEO fixed pay*	**0.0352**	**-0.1486 ** **
	(0.35)	**(-2.24)**
*D*Change in sale* CEO fixed pay*ActivePassiveD*	**-0.3298** ***	
	(-3.24)	
*D*Change in sale* CEO fixed pay*ActiveNonfamilyD*		**-0.3025 *** **
		(-3.39)
CEO fixed pay	-0.0020	0.0145 *
	(-0.18)	(1.64)
Constant /*Other Controls* /Year and Industry indicators	Yes	Yes
Observations	2849	6870
F value (Adj. R^2)	65.20 (0.5299)	160.68 (0.5425)

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to the variable definitions in Table 3.1.
In column (1), *ActivePassiveD* variable equals to 1 when sample firms are active family firms and equals to 0 when sample firms are passive family firms, which exclude non-family firms. In column (2), *ActiveNonfamilyD* variable equals to 1 when sample firms are active family firms and equals to 0 when sample firms are non-family firms, which exclude passive family firms.
Other Controls variables include: *D*Change in sale*Employee intensity, D*Change in sale*Asset intensity, D*Change in sale*Successive decrease, D*Change in sale*Stock performance, Employee intensity, Asset intensity, Successive decrease, and Stock performance*. In addition, I include *ActivePassiveD* and *ActiveNonfamilyD* in columns (1) and (2) of Panels A, B and C, respectively.

3.6 Conclusion

In this chapter, I compare the effect of agency problems on sticky cost behaviour between family and non-family firms. This study explored the impact of agency problems, in the context of free cash flow, CEOs in the first three years of their tenure, CEOs in the final year of their tenure, and CEO fixed pay ratio.

This chapter first test for evidence of cost stickiness behaviour in family and non-family firms separately using baseline model in Equation (1). The results show that both family and non-family firms exhibit cost stickiness behaviour, separately. In addition, this chapter first compared the degree of cost stickiness using baseline model which does not including adjustment costs, mangers' future expectation and agency problem determinants. SG&A costs in both family and non-family firms increased by 0.71% per 1% increase in sales revenue, but SG&A decreased by 0.63% in family firms and 0.47% in non-family firms per 1% decrease in sales revenue. Therefore, the degree of cost stickiness is higher in non-family firms than in family firms.

Then, this chapter investigate the agency problem on cost stickiness by comparing between family and non-family firms using Equation (4). Equation (4) includes the variables that could alter managers' decision on adjusting costs which are adjustment costs, managers' future expectation and agency problems. The results indicate that unlike non-family firms, a higher free cash flow does not lessen the degree of SG&A cost stickiness in family firms. Therefore, the results do not support Hypothesis 1. This can explain by that family firms focus on long-term operation strategies to make investments, so it induces the SG&A costs in cost stickiness behaviour when sales decrease. I also further divide free cash flow into high and low free cash flow subgroup to test if the degree of cost stickiness only changes in one of these specific subgroups. The finding shows that compare to non-family firms, family firms increase a similar degree of cost stickiness when considering the empire building incentive of free cash flow in the low free cash flow subgroup.

Another agency measure is CEOs in the first three years of their tenure. The results first show the degree of cost stickiness decreased when CEOs are in their first three years of tenure

in pooled sample and non-family sample. Then, the results indicate that CEOs in their first three years of tenure are more likely to exhibit SG&A cost stickiness in family firms than in non-family firms, which supports Hypothesis 2. In family firms, CEOs in their first three years of tenure tend to have a long-term earnings goal, rather than an empire building incentive to reduce expenses to meet earnings target in a short term.

Next, the effect of CEOs in their final year of tenure, and the empirical results reveal when CEOs are in the last year of their tenure, the degree of SG&A cost stickiness decreases in family firms. However, in non-family firms, the degree of SG&A cost stickiness increases when their CEOs are in their final year of tenure. Moreover, when I compare the degree of cost stickiness between family and non-family firms, the results show CEOs in their last year of tenure are less likely to exhibit SG&A cost stickiness in family firms than in non-family firms which do not support Hypothesis 3.

Then, the effect of CEO fixed pay measure in agency problems indicate that SG&A cost stickiness increases with the percentage of fixed pay in a CEO's total compensation when sales decrease in the current period in pooled and non-family subsamples. In addition, the degree of cost stickiness increases is more pronounced in non-family firms than in family firms. Hence, the finding does not support Hypothesis 4 prediction.

Furthermore, I include the four agency problem measures: free cash flow, the CEO's first three years of tenure, and the CEO fixed pay ratio to compare the degree of cost stickiness between the family and non-family subsamples. The evidence indicates the CEO decision in adjusting the resources when sales decrease in family and non-family firms are not affected by the free cash flow. Thus, the results do not support Hypothesis 1. CEOs in the first three years of their tenure in family firms are more likely to increase the greater degree of SG&A cost stickiness than in non-family firms, which is consistent with Hypothesis 2. The evidence also shows that the degree of SG&A cost stickiness in family firms is less pronounced than it is in non-family firms when CEOs are in their last year of tenure, which does not support Hypothesis 3. The results do not support my prediction for Hypothesis 4 that a higher fixed pay ratio reduces the degree of SG&A cost stickiness more in non-family firms than in family firms. The empirical results by including all the agency problems variables with adjustment costs determinants and

managers' future expectation variables in one regression (Equation 5), showed the consistent and robust results of testing each agency measure individually with adjustment costs, and managers' future expectation for all my predictions in this chapter.

In the additional analysis, I examine the influence of corporate governance on the relationship between agency problems and SG&A cost stickiness. About corporate governance measure, I test are the board size, gender ratio of directors, and CEO-director duality. For the CEO's first three years of tenure, the results of the low board size subgroup are consistent with the expectation that the degree of cost stickiness increases more in family firms than in non-family firms. Moreover, the degree of cost stickiness increases more in family firms than in non-family firms, which also supports my prediction. For CEO fixed pay, I find that the results for the low-board-size subsample are consistent with the expectation that family firms exhibit cost stickiness than non-family firms are.

First, the effect of corporate governance- board size on SG&A cost stickiness. The evidence in low-board-size subgroup does not find a relationship between free cash flow and SG&A cost stickiness. CEOs in their first three years of tenure increase the greater degree of cost stickiness in family firms than in non-family firms in low-board-size subgroup. The degree of cost stickiness increases greater in family firms than in non-family firms when CEOs are in their last year. Compared to non-family firms, family firms are more likely to exhibit cost stickiness when the CEO's fixed pay is higher.

Second, the effect of corporate governance - gender ratio on SG&A cost stickiness. For the effect of greater ratio of female directors on board, the findings show that free cash flow is unrelated to cost stickiness for both family and non-family firms. The results show the effect of greater ratio of female directors increases the degree of cost stickiness in family firms than in non-family firms when CEOs are in their first three years of tenure. In addition, family firms with CEOs in the final year of their tenure increases greater degree of SG&A cost stickiness than non-family firms in greater female directors' subgroup. Family firms with a higher fixed pay for CEO increases greater degree of SG&A cost stickiness than non-family firms are when firms with greater ratio of female's directors.

Third, the effect of corporate governance – CEO-director duality on SG&A cost stickiness. The findings show when firms are with CEOs that are also a director on board, a higher free cash flow is unrelated to the SG&A change in cost stickiness in non-family firms and decreases the degree of cost stickiness in family firms. The degree of SG&A cost stickiness increases more in family firms than in non-family firms when CEO-directors are in their first three years of tenure. The degree of cost stickiness decreases more in family firms than in non-family firms when CEO-directors are in their final year of tenure. The evidence also show that cost anti-stickiness is a result of CEO fixed pay ratio in both family and non-family firms.

Finally, I further examine the between active and passive family firms. I divide the family firms into active (run by family CEOs), passive family firms (run by professional CEOs). The results show the higher free cash flow substantially decreased SG&A cost stickiness in active family firms.

Compared with passive family and non-family firms, CEOs in their first three years of tenure are more likely to exhibit a SG&A cost stickiness in active family firms. In addition, compared to non-family, active family firms have stronger cost stickiness when CEOs are in first three years of their tenure. However, CEOs in the last year of tenure are less likely to exhibit the SG&A cost stickiness in active and passive family firms. Meanwhile, when the CEO's fixed pay ratio is higher, compared to passive family and non-family firms, the degree of SG&A cost stickiness is more pronounced in active family firms. Overall, the findings about the factors in agency costs of free cash flow and CEO last year support Schmid (2013) that passive family firms do not significantly differ from non-family firms.

In the next chapter, I will specifically examine the cost stickiness based on the organisation type set up which is risk aversion. The inherent risk aversion set up in family firms can also affect cost stickiness behaviour.

Chapter Four: Cost Stickiness in Family Firms – Risk Aversion

4.1 Introduction

This chapter answers Questions 5, 6, 7, 8, 9, and 10. This chapter studies the cost stickiness behaviour in family firms. I explore how the characteristics of founding family firms affect the cost asymmetric. I examine whether and how cost stickiness is related to firm-specific characteristics, specifically in risk aversion and whether the cost stickiness phenomenon exists in family firms with different incentives for accounting choices. This chapter also has implications for management accountants, firm managements, and analysts who might be interested in understanding the behaviour of their expense activities (e.g., when generating financial forecasts) and gaining awareness of how managers make accounting decisions to adjust their costs in the family-type governance structure in the US.

Anderson, Banker, and Janakiraman (2003) indicate that, on average, costs rise more as activities increase than they decrease in activities fall by an equivalent amount. However, in a traditional symmetric model, cost behaviour similarly responds to sales increase and decrease. It is vital to understand cost behaviour, such as deliberate managerial decisions or resource adjustment costs (Anderson, Banker, and Janakiraman 2003; Banker, Byzalov, and Plehn-Dujowich 2014). When firms' sales decrease, their managers will measure the benefits of cutting unused resources against resource adjustment costs in the current and future, such as capital equipment disposal costs, severance payments, and new employee subsequent hiring, recruiting, and training costs. Therefore, the managers are less likely to cut unused capacity during sales decline as rapidly as they raise resources in sales growth, which leads to cost stickiness.

Anderson, Banker, and Janakiraman (2003) find that asset and employee-intensive firms would have higher cost stickiness because they need more assets and employees to support firms' operations. As a result, they will induce more adjustment costs for decreasing resources. Some studies provide different managerial incentives, such as empire-building, earnings management, and risk-taking, influencing cost behaviour (Chen, Lu, and Sougiannis 2012; Kama and Weiss 2013; Li et al. 2021).

Family firms are often risk-averse (La Porta, Lopez-de-Silanes, and Shleifer 1999). Anderson and Reeb (2003a) argue that family firms care about enhancing their stock values and, therefore, they adopt not investing in risky, high expected-return projects. Gómez-Mejía et al. (2007) suggest that the families of family firms value the right of control for socioemotional reasons, so they even forgo financial gains to maintain that control.

The current literature shows that family firms tend to be risk-averse and conservative in the innovation of pursuing entrepreneurial strategies compared to non-family firms (Duran et al. 2015; Jones, Makri, and Gomez–Mejia 2008; Nordqvist and Melin 2010). Innovation activities can promote the growth of businesses. However, taking innovation activities is also risky for the managers and companies because they do not necessarily drive firms' success, which causes uncertain profit. Hence, the risk is a critical factor for managers to consider in taking innovation of entrepreneurial strategies. Family firms are usually perceived as unwilling to take risks about the advantage of opportunities, growths, and developments (Habbershon and Pistrui 2002; Hall, Melin, and Nordqvist 2001). Family firms are also depicted as reluctant to invest in new ventures (Cabrera-Suárez, De Saá-Pérez, and García-Almeida 2001). In other words, family firms become more focused on wealth preservation than wealth creation over time.

Dittmar and Duchin (2016) find a correlation between operational decision-making and firms' risk-taking. According to Fama and Jensen (1983), when family members are involved in management, the decision-making process would lose efficiency because of their risk aversion characteristics. In addition, family managers are risk-averse because of reputation and employment risks (Fama 1980; Jensen 1993).

Therefore, this chapter is motivated by the growing body of literature on cost stickiness which suggests that it can be influenced by the industry-level, country-level, economic environment, and company-specific factors (Anderson, Banker, and Janakiraman 2003; Subramaniam and Weidenmier 2016; Dalla Via and Perego 2014; Cannon 2014; Banker et al. 2014; Lee, Pittman, and Saffar 2020). This chapter will investigate the role of characteristic of family firms in risk aversion to selling, general and administrative (SG&A) expenses cost stickiness. Scholars have not specifically investigated cost stickiness behaviour at the family firm level in the United States in existing research.

A significant source of risk is the nature of an entrepreneurial activities that family firms undertake in operations (Zahra 2005). I propose the risk aversion in taking entrepreneurial activities in family firms may affect risk-taking in day-to-day decisions on innovation activities considering unused resources and, hence, are responsible, to some extent, for cost stickiness. I use six variables to capture risk aversion in family firms: family ownership, Founder-CEO, CEO gender, risk tone in 10-K, frequency of management earnings guidance and idiosyncratic risk.

Founders founded their firms based on the following reasons: making lives, providing jobs for their friends and relatives, or creating a legacy for their families (Zahra 2005). Prior studies find that gender impacts risk aversion, and female executives are more risk-averse than male managers (Croson and Gneezy 2009; Faccio, Marchica, and Mura 2016; Martin, Nishikawa, and Williams 2009; Zalata et al. 2019).

Moreover, I capture textual analysis to measure firms' risk aversion by analysing risk tone in companies' 10-K filing and the frequency of management earnings guidance issue by the firms. Nguyen (2011) shows that family firms' control and ownership concentration are associated with higher idiosyncratic risk. Geeta and Prasanna (2016) find that family-controlled firms are related to higher risks, especially with greater idiosyncratic risk. The greater idiosyncratic risk, the greater inherent risk in the firm so I expect firms with greater risk aversion in taking investment opportunities. These are the measurements that capture risk aversion characteristics in family firms. The risk aversion characteristic in family firm-level factors alters managers' decisions in making resource adjustments.

The empirical tests are based on a sample of 204 firms from the S&P 500 Index, comprising 2,797 observations from 1996 to 2017. I examine the asymmetry of costs by using SG&A expenses. This chapter classifies the entire sample into two subsamples: active family firms (firms manage by family member CEOs) and passive family firms (firms manage by external professional CEOs). I also adopt pooled family firms (both active and passive family firms) to examine my hypothesis.

In this study, I first propose that risk aversion in family firms is related to cost stickiness behaviour because managers make the decision to adjust unused resources. Family firms with risk aversion characteristics are likely to have fewer innovation activities, so innovation-related SG&A expenses are less likely to increase too rapidly in the short term or less SG&A related expenses incurred in delaying the reduction when sales go down.

I also predict founder-CEOs in family firms are less likely to promote more innovate activities because they are afraid to take entrepreneurial risks. Hence, the innovation related SG&A expenses are not likely to increase too rapidly or less SG&A related expenses incurred in delaying the reduction when sales go down. In addition, I use female CEO as another proxy to measure for risk aversion and expect that when female CEOs are in family firms, they become more risk aversion and therefore, firms exhibit a lower degree of cost stickiness behaviour.

In additional analysis, this chapter adopts financial constraint as another effect that can impact cost stickiness behaviour in family firms. I examine the role of financial constraints on the cost stickiness in family firms. Bernard (2016) shows that financially constrained firms are more likely to avoid financial statement disclosures to reduce market predation risk by resolving competitors' uncertainty about costs and benefits of predation product. Therefore, I expect that when family firms with a greater financial constraint enhance the firms become even more risk-averse, they are less likely to invest in innovation, which further results in a lower level of cost stickiness.

The findings first show that cost stickiness behaviour exists in active, passive and pooled family firms. When family firms have greater family ownership, managers tend to be more risk-averse, which causes the degree of cost stickiness to decrease in passive and pooled family firms. The effect of Founder–CEO, when managers in pooled family firms are also the founders, the degree of cost stickiness decreases. Compared to passive family firms, active family firms with Founder–CEOs exhibit cost anti-stickiness behaviour.

Furthermore, when active and pooled firms have female CEOs, the degree of cost stickiness decreases in the firms. The results of the effect of risk tones in 10-K filings which is negatively associated with cost stickiness. The results also indicate that earnings guidance decreases and

negatively associated with cost stickiness in passive and pooled family firms. Family firms have more frequent issue of management guidance disclosure, that is, managers are more risk averse to take innovations opportunities.

Finally, this study measures the idiosyncratic risk of a firm using the Fama-French three factors model and the Fama-French-Carhart four factors model. The results show the degree of cost stickiness is not affected by firm's idiosyncratic risk. In additional analysis, the results show when considering moderating effect of financial constraint, the degree of cost stickiness significantly reduces in active family firms.

This chapter contributes to cost stickiness and family firm literatures. Current cost stickiness literature investigates the impact of different industry-level (Cannon 2014; Banker et al. 2014; Subramaniam and Weidenmier 2016), firm size level (Dalla Via and Perego 2014), and country-level (Anderson, Banker, and Janakiraman 2003; Li et al. 2021) on management decisions. This chapter extends the dimension and fill in the gap of cost behaviour by investigating the cost stickiness phenomenon based on the intrinsic and unique characteristics of risk aversion in family firms. Risk aversion characteristics are introduced as a new set-up for different corporate governance on management incentives in family firms that lead to different decisions being made. I study how risk aversion characteristic in family firms, such as family ownership, CEO gender and Founder–CEO duality, affects managerial decisions and cost structure. This chapter further contributes to linking textual analysis with cost stickiness behaviour by looking into 10-K and frequency of management earnings guidance in financial reports.

The remainder of this chapter is organised as follows. Section 4.2 reviews the related literature and then develops the hypotheses. Section 4.3 provides the research design and methodology. In Section 4.4, I show and explain empirical results. Section 4.5 presents the conclusion.

4.2 Related Literature and Hypothesis Development

Family firms are a prevalent organisational structure in the United States (La Porta, Lopez-de-Silanes, and Shleifer 1999; Anderson and Reeb 2003b; Anderson, Mansi, and Reeb 2003). Prior literature indicate that family firms are risk-averse (Gomez-Mejia, Nuñez-Nickel, and Gutierrez 2001; Schulze et al. 2001; Romano, Tanewski, and Smyrnios 2001; Schulze, Lubatkin, and Dino 2003). Shleifer and Vishny (1986) also suggest that the largest cost in firms with more undiversified shareholders is encouraging risk avoidance. Family owners in family firms stake their human and financial capital on their enterprises, which leads to them adopting risk-averse policies (La Porta, Lopez-de-Silanes, and Shleifer 1999; Morck and Yeung 2003). Therefore, family firms are unlikely to innovate given the future uncertain payoffs (Morck and Yeung 2003). They often take on fewer debts to prevent the possibility of default (McConaughy, Matthews, and Fialko 2001).

A critical source of risk is the entrepreneurial activities that family firms undertake in their operations (Zahra 2005). Entrepreneurship in business recognises and exploits opportunities by reconfiguring existing and new resources to create new business, renewing corporate operations, and building corporate capabilities that improve the firm's responsiveness to the market demands (Zahra, Nielsen, and Bogner 1999).

Pursuing entrepreneurial opportunities is risky because they have unknown duration and payoffs. Managers of family firms have to experiment with combining resources without knowing if new combinations will succeed in generating new products, goods, or services or create new revenue streams for the firms and their owners. These experiments are time-consuming, expensive and risky (Zahra 2005).

To create new ideas or products is innovative in entrepreneurship. Innovation means to introduce something new to the market or drive transformation in products and market strategy. Innovation is driving new value and value streams, and research and development focuses on what you might already have (OECD 2019).

Innovative activities contain R&D experiments, engineering and design creative works, and other marketing or brand equity. The SG&A expenses of the above activities contain the administrative and legal work practice to apply for, register, document, manage, trade, license out, market, and enforce corporate intellectual property (IP) rights. In addition, costs of using and accessing a computer and other information and communication technology (ICT) services, such as cloud storage and processing services, can be attributed to software development and database activities (OECD 2019).

Additionally, the expenses of depreciation and amortisation include machinery, instruments, transport equipment, other equipment, computer software, and databases related to IP activities. The lease or rental expenses contain tangible assets for products or businesses in innovation. For example, leasing an additional building, plant, or space for a design lab (OECD 2019). Furthermore, employee expenses can be incurred for highly skilled labour for innovation processes, and training expenses for innovation activities can be used to train employees in performing innovation practices, such as instructing personnel or customers on the features of innovative products (OECD 2019).

The association between risk aversion and cost stickiness could depend on managers' risk aversion to entrepreneurial opportunities in response to cost stickiness when a firm's sales decrease. Business entrepreneurial risk aversion incurs less SG&A expenses related to innovation when sales decrease. Thus, I predict the degree of cost stickiness also decreases. I argue risk aversion in family firms is likely to impact the management in decision makings in resource adjustments. Li et al. (2021) also find that management control mechanisms through risk-taking incentives are essential in cost adjustment decision-making in periods of demand decline relative to demand growth.

The following sections will discuss the relationship between risk aversion factors and cost stickiness by examining family ownership, Founder–CEO duality, gender, risk tone from textual analysis, and firms' idiosyncratic risk.

4.2.1 The Impact of Family Ownership on Cost Stickiness

The owners of family businesses have risk aversion tendencies (Gomez-Mejia, Nuñez-Nickel, and Gutierrez 2001; Romano, Tanewski, and Smyrnios 2001; Schulze et al. 2001). Families with a significant shareholding ratio may exercise their voice by preventing or sabotaging radical changes that might change their firms' mission and strategic direction (Zahra 2005; Villalonga and Amit 2006). The shift in strategy may be risky and requires a significant investment in redesigning firms' culture, processes, and organisational structures. Firms often make these changes but do not have any guarantees of financial success.

Agency theory views the owner-manager conflicts as agency problem, which can be mitigated in family firms because of the governance of concentrated ownership (Jensen and Meckling 1976; Villalonga and Amit 2006). Moreover, resource-based theory suggests that family firms have a unique bundle of resources (e.g., human capital and social capital) created by the interaction between family members and businesses (Dyer 2006).

According to agency theory, when family members own greater ownership in firms, their identity and wealth are more tied to the family firms. The higher ownership concentration and intention to maintain control in family firms are related to risk aversion (Gómez-Mejía et al. 2007; Schulze, Lubatkin, and Dino 2003). Therefore, family firms are likely to take less innovative activities and increase the level of risk aversion characteristic in family firms. I predict with higher degree of family ownership, CEOs are likely to take less innovation opportunities, resulting in a lower degree of cost stickiness (e.g., lower SG&A related expenses in innovation and not increase too rapidly when sales go up and less SG&A incurs in delaying the reduction when sales go down). I propose the following hypothesis.

Hypothesis 1: Higher family ownership is negatively associated with cost stickiness.

4.2.2 The Impact of Founder – CEO Duality on Cost Stickiness

Founder–CEOs are founders who also serve as CEOs. Founders are someone who started the businesses. They may centralise decision-making, so that it paralyses their employees and

reduces their ability to undertake entrepreneurial activity (Zahra 2005). McConaughy et al. (1998) find that CEO founders and CEO descendants positively influence firm performance than non-family CEOs. Barontini and Caprio (2006) find positive associations between family members as CEOs and operating valuation for firms with CEO founders and descendants.

When family members' CEOs have dual ownership and management roles in family firms, it often can reduce agency costs, namely, bonding and monitoring costs, for shareholders. Therefore, founder-CEOs in family firms are less likely to promote more innovation activities and increase risk aversion characteristics in family firms. I predict family firms with founder-CEOs are likely to have increase the degree of risk aversion to take less innovation and R&D opportunities which affect cost stickiness behaviour (e.g., less SG&A related expenses in innovation to increase too rapidly when sales go up and less SG&A expenses incur delaying the reduction when sales go down). I propose the following hypothesis:

Hypothesis 2: Founder-CEOs are negatively associated with cost stickiness.

4.2.3 The Impact of CEO Gender on Cost Stickiness

Female CEOs behave differently than male CEOs. Literature has proved the firms' benefit of having females in executive positions. Huang and Kisgen (2013) find female CEOs are more cautious in making financial decisions. Firms with female CEOs often grow more slowly, are less likely to engage in acquisition decisions, and are unlikely to fall into debt. Faccio, Marchica, and Mura (2016) and Skała and Weill (2018) further indicate female CEOs are less likely to enhance the firm's innovative activities.

Scholars also find that female executives are more risk-averse than male executives (Croson and Gneezy 2009; Faccio, Marchica, and Mura 2016; Martin, Nishikawa, and Williams 2009; Zalata et al. 2019); they are less likely to take risks (Byrnes, Miller, and Schafer 1999) and are less likely to gamble (Gneezy, Niederle, and Rustichini 2003). Overall, the above studies suggest that female CEOs do not tend to make risky decisions.

I expect family firms with female CEOs to be more risk-averse and have fewer empire-building incentives. Because female family CEOs have a higher risk aversion, they are unlikely to take innovation activities or perform cost stickiness behaviour when sales decrease. That is, SG&A-related expenses in innovation do not increase too rapidly when sales increase or SG&A expense decreases more rapidly when sales go down. Therefore, I propose the hypothesis as below:

Hypothesis 3: Being a female CEO is negatively associated with cost stickiness.

4.2.4 The Impact of Risk Tone Disclosure on Cost Stickiness

Textual information can provide insight into managers' cognitive biases, such as optimistic or pessimistic tendencies (Li 2010; Davis et al. 2015). Meanwhile, textual information can shed light on the incentives faced by managers because of managers' compensation contracts or firms' information environment (Li 2008; Bonsall and Miller 2017). Campbell et al. (2020) find managers' disclosure tone volatility reflects their firms' operational risk, and disclosure tone volatility captures information about the operational risk and the managers' disclosure transparency.

Linsley and Shrives (2006) define risk disclosure as managers communicating information about any opportunities, prospects, hazards, dangers, harms, threats or exposures that may impact a firm in the future. Kravet and Muslu (2013) also indicate that textual risk disclosures increase investors' risk perceptions of firms. Therefore, I use disclosure of risk words in the 10-K filing to measure the level of managers' risk aversion. Chen, Kama, and Lehavy (2019) further use the contextual role of managerial expectations in examining cost stickiness behaviour.

In 2005, the U.S. Securities and Exchange Commission (SEC) required firms to discuss the most significant factors that make the offering speculative or risky in Item 1A—Risk Factors of the Form 10-K. Chiu, Kim, and Wang (2019) document that risk factor disclosures (RFDs) in annual reports are useful to capital market participants, which improves investment efficiency; that is, narrative risk disclosures, either in the entire 10-K filing or in the risk factor section

alone, are significant and relevant to investors. Looking into RFDs throughout an entire 10-K not only reveals how managers tell investors about a firm's fundamental risk and future prospects but also highlights how risk-averse managers are by looking at their narratives in the disclosure. I expect that that when managers are more risk-averse, they are more likely to include more risk-related sentences in their 10-K filings.

I predict that more sentences with risk tones in the whole 10-K imply that the managers are more risk-averse to taking fewer innovation opportunities, further decreasing SG&A expenses to increase current earnings. The risk-averse attitude of managers will cause them to increase current earnings by reducing SG&A expenses so that their compensation will not be reduced when sales decrease. Therefore, I form a hypothesis is as follows:

Hypothesis 4: Firms with more risk tone disclosures are negatively associated with cost stickiness.

4.2.5 The Impact of Management Earnings Guidance on Cost Stickiness

The full disclosure theory suggests that managers' disclosure collapses to the least favourable possible information (Verrecchia 1983). When bad news is better than the least favourable possible news, managers are often better off disclosing bad news. Skinner (1997) further indicates that litigation risk makes managers quickly disclose bad news. Kasznik and Lev (1995) suggest that when firms face earnings disappointments, they are more likely to release earnings warnings. Earnings guidance is one of managers-provided information that guides outsiders in their evaluation of the firm's future earnings. I adopt earnings guidance to proxy managers' disclosure, which is earnings forecasts issued by managers.

Managerial earnings guidance (MEFs) is managers' comments, which focus on expectations of the firm's future sales and earnings based on changes in the industry and overall economic trends, so it is also called forward-looking statements. This guidance is a voluntary disclosure by managers and businesses that can be issued more than once each year. MEFs are included in the management earnings guidance section in 8-K and 10-K reports. MEFs are an important source of information for investors (Ball, Jayaraman, and Shivakumar 2012), and they

induce managerial myopia where managers forgo investment opportunities in the interest of improving their firms' short-term reported performance (Hermalin and Weisbach 2012).

Albring and Xu (2018) find a negative relationship between MEFs and risk-taking activities. They find that the managers' more frequent voluntary disclosure of MEFs, the less risk-taking behaviour the firms exhibit. I expect that the more MEFs issued by the managers in the firms, the more risk aversion managers are. When firms face litigation risk or reputational concerns, managers may release bad news quickly. I predict that for firms with more frequent MEFs, their managers are more risk-averse and take fewer innovation opportunities, resulting in fewer innovation expenses when sales go down and then reducing the sticky cost behaviour. I form the following hypothesis:

Hypothesis 5: Firms with more frequency of MEFs disclosures are negatively associated with cost stickiness.

4.2.6 The Impact of Idiosyncratic Risk on Cost Stickiness

Idiosyncratic risk is also referred to as specific, unsystematic, or inherent risks to the firms. Prior research indicates that family control and ownership concentration are related to the higher idiosyncratic risk of firms (Nguyen 2011; Geeta and Prasanna 2016). Managerial risk aversion may induce a negative relationship between investment and idiosyncratic risk (Liu and Wang 2021).

When idiosyncratic risk is greater in the firms, the unexpected inherent risk of the firms is greater. Therefore, I predict that when idiosyncratic risk is higher in the firms, the managers are likely to become more risk averse. The managers are more likely to take less risk to invest in unpredictable innovation activities, which reduces cost stickiness behaviour when sales decrease. I form the following hypothesis:

Hypothesis 6: Firms with high idiosyncratic risk are negatively associated with cost stickiness.

4.3 Methodology

4.3.1 Sample and Data

The sample for this study is from S&P 500 which covers the period from years 1996 to 2018. Data about SG&A costs, sales revenue, and other financial and accounting variables are from COMPUSTAT annual industrial files. This study excludes financial institutions and public utility firms because these firms' financial reporting requirements are subject to government regulations. I further delete observations that have missing data about SG&A costs and sales revenue in the current and the previous years and that those sales revenues are smaller than SG&A. I obtain stock price and returns data come from CRSP. I obtain risk tones data from the 10-K file published on the EDGAR website and gender data from BoardEx. The sample also delete observations with stock prices lower than $1, and exclude observations with missing risk tones data and observations with missing data.

To find out sample of family firms, this study manually handles proxy statements on the EDGAR website for each firm along with other sources, such as firm’s website or on Fundinguniverse, providing me with the following information: family ownership and whether CEO is a family member. I follow the method by Anderson and Reeb (2003b), Villalonga and Amit (2006), and Wu and Mazur (2018) to determine whether a firm is under family control. I identify it based on whether a firm met one of the following criteria: (1) A founder or a descendant of the founder sits on the board of directors, or he/she is a block-holder, and (2) at least two board members who are related either by blood or by marriage. I define this way because if the firm is within one of the above criteria, either family members who own the majority of the firm shares or two members on the board are more likely to have aligned interests to make decisions together. Hence, these firms are more likely to owned and control by the family members.

4.3.2 Family Ownership Variable

To obtain family ownership, I manually check the proxy statement on the EDGAR website for each firm each year to calculate the percentage owned by the family members. I obtain the

number of outstanding shares that are owned by the family members and then divide by the total outstanding shares of the firm in the current period to get the family ownership percentage. I follow Anderson and Reeb (2003b), Villalonga and Amit (2006), and Wu and Mazur (2018) to classify family members and calculate the percentage of common stocks that has voting right hold by the family members.

4.3.3 Textual Analysis Variable

To conduct textual analysis, I extract disclosure tone from a firm's 10-K filing in the EDGAR database. I first follow Kravet and Muslu (2013) to count the number of sentences with risk words in the entire 10-K filing to capture the informativeness of disclosures. *Risk Tone* is measured by taking the natural logarithm of the number of sentences with the risk words in the 10-K filing. If there is more than one risk word in the same sentence, it is counted as one sentence. The number of sentences containing risk words (*Risk Tone*s) reflects the firm-specific risk disclosures. More sentences with the word risk tend to be more informative about a firm's various business risks.

In an additional analysis, I adopt the following four measures to extract risk disclosures based on the word dictionary list and developed by Campbell et al. (2014) because the sample of this thesis is from S&P 500 in the United States. Thus, I follow the method of Campbell et al. (2014), which use US data in Form 10-K filings.

(1) RiskTotalWord: measured by the log of the total number of words, including Item 1A Risk Factors section, Items 7 MD&A section, and Items 7A Market Risk section.
(2) RiskKeyWord: measured by taking the log of one plus the total number of key words identified that appear in Item 1A Risk Factors, Items 7 MD&A, and Items 7A Market Risk sections. For key words identified, I follow Appendix 3 in Campbell et al. (2014).
(3) MDATotalWord: measured by the log of the total number of words, including Items 7 MD&A section and Items 7A Market Risk section.
(4) MDAKeyWord: measured by taking the log of one plus the total number of key words identified that appear in Items 7 MD&A and Items 7A Market Risk sections, where key words identified refer to Appendix 3 in Campbell et al. (2014).

4.3.4 Management Earnings Guidance Variable

Earnings guidance is the comments management provides about what they expect their firms to do in the future. These comments are known as "forward-looking statements" because guidance focuses on future sales or earnings expectations according to industry development and economic trends. These comments make investors use them to estimate firms' future earnings potential. Following Schoenfeld (2017), I manually count the number that a firm issues earnings guidance each year in the forward-looking statements of the Management's Discussion and Analysis (MD&A) on the 8-K, 10-Q, and 10-K filings. That is, I use the frequency of earnings guidance issued by the manager each year to measure the level of voluntary disclosure by the managers and firms (*Earnings Guidance*).

4.3.5 Idiosyncratic Risk Variable

Following Huang et al. (2010), I adopt the Fama and French (1993) three-factor model to measure idiosyncratic risk (*Idiorisk*1). The residual term of the Fama-French three-factor model is used to measure idiosyncratic risk of a firm, which is estimated using the idiosyncratic volatility and estimation window is 252 days (one-year trading days). I obtain the calculated idiosyncratic risk (*Idiorisk*1) measure from Beta Suite by WRDS (Beta).

$$R_{it} - r_t = \alpha_i + \beta_{1i} MKT_t + \beta_{2i} SMB_t + \beta_{3i} HML_t + \varepsilon_{it}$$

where MKT represents the return on the market portfolio, SMB represents the size factor, and HML represent the factor of book-to-market.

In addition, I follow (Duan, Hu, and McLean 2010) adopt the Fama–French–Carhart four-factor model (e.g., market, size, book-to-market, and momentum) to measure idiosyncratic risk (*Idiorisk*2) as alternative proxy for idiosyncratic risk. The residual term of the Fama–French–Carhart four-factor model is used to measure idiosyncratic risk of a firm, which is estimated using the idiosyncratic volatility and estimation window is 252 days. I also obtain the calculated idiosyncratic risk (*Idiorisk*2) measure from Beta Suite by WRDS (Beta).

$$R_{it} - r_t = \alpha_i + \beta_{1i} MKT_t + \beta_{2i} SMB_t + \beta_{3i} HML_t + \beta_{4i} MOM_t + \varepsilon_{it}$$

where MOM is the momentum factor.

4.3.6 Financial Constraints Variable

In additional analysis, I use the following three proxies of financial constraints to measure the risk aversion in firms.

a. **KZ index**: this study adopts a KZ index (*KZ*) as the proxy of financial constraints. KZ-Index (Kaplan-Zingales Index) is estimated from the following five-factor model, and the coefficients in the model come from(Kaplan and Zingales 1997).

$$KZ = -1.002 \times CashFlow + 0.2826 \times Q + 3.1392 \times Debt - 39.3678 \times Dividends - 1.3148 \times Cash$$

where *CashFlow* is (Income before extraordinary items + Total depreciation and amortization) / PPE. *Q* is measured by (Market capitalization + Total shareholders' equity - Book value of common equity - Deferred tax assets) / Total shareholders' equity. *Debt* is measured by (Total long-term debt + Notes payable + Current portion of long term debt) / Total assets. *Dividends* is Total cash dividends payments (including common and preferred shares) / PPE. *Cash* is Cash and Short-term investments / PPE. PPE is Property, Plant, and Equipment at the beginning of the year.

b. **WW index**

I adopt another proxy, the WW index (*WW*) developed by Whited and Wu (2006), to measure financial constraints. The coefficients and estimated equation are as follows:

$$WW = -0.091 \times CashF - 0.062 \times DIVPosi + 0.021 \times TLD - 0.044 \times LnTA - 0.035 \times FSG + 0.102 \times ISG$$

The above model includes six observable firm's characteristics variables, which are measured as follows. *CashF* is the sum of net income and depreciation divided by the total assets. Dividend indicator variable (*DIVPosi*) equals 1 if the firm pays cash dividends and

otherwise 0. Long-term debt (*TLD*) is measured as long-term debt divided by total assets. Firm size (*LnTA*) is the natural log of total assets. FSG_t is the firm's sales growth and ISG_t is industry's sales growth.

c. **Average KZWW**: the average of KZ index and WW index (*Average KZWW*). When the KZ index, the WW index, or average KZWW is higher, the firm has a higher level of financial constraints.

4.3.7 Empirical Model

The models have been estimated using ordinary least squares (OLS) regression. I have extend model of Anderson, Banker, and Janakiraman (2003) and Chen, Lu, and Sougiannis (2012) to conduct an empirical test for cost stickiness behaviour. I have controlled for industry and year fixed effects:

$$ln\left(\frac{SG\&A_{it}}{SG\&A_{it-1}}\right) = a_0 + a_1 ln\left(\frac{Sale_{it}}{Sale_{it-1}}\right) + a_2 ln\left(\frac{Sale_{it}}{Sale_{it-1}}\right) SaleD_{it} + a_3 RiskAversion_{it} + a_4 ln\left(\frac{Sale_{it}}{Sale_{it-1}}\right) SaleD_{it} RiskAversion_{it} + a_5 ControlVariables_{it} + YearFE + IndustryFE + e_{it} \quad (1)$$

where *RiskAversion* variable includes seven measures: *Risk Tones*, *Guidance*, *Founder*, *CEOGender*, *Family_ownership*, *IdioRisk*1, and *IdioRisk*2. They are measured as follows:
Risk Tones is the natural log of the sentences contained risk tone in the 10K filings.
Guidance is the frequency of management earnings guidance in the 8-K, 10-Q and 10-K filings.
Family_Ownership is the ratio of family's shareholdings to outstanding shares.
Founder is a duality role, it equals 1 if CEO is a founder of family firm and otherwise 0.
CEOGender is the gender of CEO that it set to 1 if CEO is a woman and otherwise 0.
*IdioRisk*1 denotes idiosyncratic risk that is estimated from the Fama-French three-factor model.
*IdioRisk*2 is idiosyncratic risk, calculated from the Fama–French–Carhart four-factor model.

ControlVariables represents control variables and includes the following eight variables: *Asset intensity*, *Employee intensity*, *Successive decrease*, *Stock performance*, and interaction terms of these four variables and the change in sales. These variables are measured as follows: *ASINT* is asset intensity, measured by the log of ratio of total assets to net sales, ln(AT/SALE). *EMPINT* is employee intensity, measured as the log of ratio of employees' number to net sales, ln(EMP/SALE). *Successor* equals to 1 if the firm with a continuous decrease in sales in the two period and otherwise 0. *Stock performance* is stock price of a firm. I summarise the definitions of the main variables about risk aversion model in Table 4.1.

Table 4. 1 Variable definitions of risk aversion

Variable	Definition	Source
$\Delta lnSGA_{i,t}$	The log-change in selling, general, and administrative expenses for firm *i* from year t-1 to t, winsorised at 1 percent and 99 percent.	Compustat
$\Delta \ln SALES_{i,t}$	The log-change in sales revenue for firm *i* from year t-1 to t, winsorised at 1 percent and 99 percent.	Compustat
$Successiv\_Decrease_{i,t}$	An indicator variable of Sales successive decrease. It equals one if sales revenues in year $t-1$ are less than those in year $t-2$, and otherwise zero.	Compustat
$\ln(ASSINT)$	Asset intensity, measured as a log-ratio of total assets to net sales, ln (AT/SALE), winsorised at 1 percent and 99 percent.	Compustat
ln $(EMPINT)$	Employee intensity, measured by a log-ratio of employees' number to net sales, ln (EMPT/SALE), winsorised at 1 percent and 99 percent.	Compustat
D	Sales decrease. It equals one when sales revenue of firm i for period t is less than that in the prior period $t-1$.	Compustat
Stock Performance	The log-change in stock returns of firm i in year t, winsorised at 1 percent and 99 percent.	CRSP
Family ownership	Family's shareholdings, measured by family's shareholdings divided by outstanding shares.	EDGAR
CEO-founder	CEO own a duality role. It equals one when CEO is a founder of family firm, and otherwise zero.	EDGAR
Risk Tones	Risk tones, measured by the natural log of the number of sentences with risk words in Form 10-K filings.	EDGAR
Earnings guidance	Management earnings guidance, measured by the frequency of issuing earnings guidance each year in Management's Discussion and Analysis on the 8-K, 10-Q, and 10-K filings.	IBES Guidance
*IdioRisk*1	Idiosyncratic risk, measured as the Fama-French three-factor model.	Beta Suite by WRDS
*IdioRisk*2	Idiosyncratic risk, measured as the Fama-French-Carhart four-factor model.	Beta Suite by WRDS
Average KZWW	Financial constraints, measured by the average of the KZ index and the WW index.	Compustat
KZ	Financial constraints, measured by the KZ index.	Compustat
WW	Financial constraints, measured by the WW index.	Compustat
RiskTotalWord	Risk disclosure, the log of the total words' number in Item 1A Risk Factors, Items 7 MD&A, and Items 7A Market Risk.	EDGAR
RiskKeyWord	Risk disclosure, the log of one plus total number of key words identified that appear in Item 1A Risk Factors, Items 7 MD&A, and Items 7A Market Risk sections.	EDGAR
MDATotalWord	Risk disclosure, the log of the total number of words that include Items 7 MD&A and Items 7A Market Risk.	EDGAR
MDAKeyWord	Risk disclosure. Taking log of the value that one plus the total number of key words identified that appear in Items 7 MD&A and Items 7A Market Risk.	EDGAR

4.4 Empirical Results and Analysis

4.4.1 Sample Analysis and Descriptive Statistics

Table 4. 2 Sample analysis

	Family firms sample	Pooled	Active	Passive
(1)	Observations after excluding financial firms and sample missing data on SG&A, sales, economic variables and sales are smaller than SG&A	3,276	1,471	1,805
(2)	Observations after excluding sample missing the family ownership data	2,773	1,238	1,536
(3)	Observations after excluding sample missing the Founder-CEO duality data	2,900	1,274	1,626
(4)	Observations after excluding sample missing the CEO gender data	2,418	1,011	1,407
(5)	Observations after excluding sample missing the risk words data	2,786	1,203	1,583
(6)	Observations after excluding sample missing the management earnings guidance data	1,462	597	865
(7)	Observations after excluding sample missing the idiosyncratic risk data	2,922	1,276	1,646

Table 4.2 show the sample distribution for active and passive family firms' sample from 1996 to 2018. Table 4.3 show the descriptive statistics of variables in empirical models. Panel A indicates that Family ownership, mean is 18%, the first quartile at 25% (Q1) is 1.9%, the second quartile at 50% (Q2 or median) is 9.5%, and the third quartile at 75% (Q3) is 25.1%. The results of IdioRisk1 and IdioRisk2 are similar. For management earnings guidance, its mean is 4.16, which is close to median of 4.

The results of active family firms in Panel B show that family ownership, mean is 19.4%, the first quartile at 25% is 3.8%, the second quartile at 50% (median) is 12.3%, and the third quartile at 75% is 27.1%. These results indicate that active family firms have a higher family ownership. For CEO-founder, both 50% (median) and 75%(Q3) are 1, indicating most CEOs in active family firm are also the founders of the firms. The results of IdioRisk1 are similar to IdioRisk2. Management earnings guidance, the third quartile at 75% is 5 and mean is 4.16 that approach to median of 4.

4.4.2 Difference Analysis of Two Types of Family Firms

This study examines the cost stickiness of both active family firms and passive family firms. I use the t-test to compare the difference in the means from the two groups. In Table 4.4, I analyse the difference of variables between active and passive family firms. From column (3), using t-test to compare the difference of two samples, the findings indicate significant differences between the means of the two groups for the following variables: Change in SGA, Change in sale, Risk Tones, Total sentences, IdioRisk1, IdioRisk2, Family ownership, Average KZWW, Employee intensity, Successive decrease, and Stock performance.

In column (4) of Table 4.4, I adopt the Wilcoxon rank-sum test to compare the difference in the medians between active and passive family firms. The results of z values in column (4) show that besides Earnings guidance and Asset intensity, like the results of t-test, all other variables have significant differences between active and passive family firms.

I first examine whether the data conforms to panel data characteristics and OLS conditions before performing regression analysis. Table 4.5 represents the results of data test results. ADF test in Panel A shows that in the unit-root test of the variables, the p-values are less than 0.00; therefore, no unit root for variables sample, and meets requirement that the time series is the stationarity about panel data and OLS. The Jarque-Bera test in Panel B shows that sample variables conform to normality. Pane C indicates that the variables have no collinearity problem according to VIF.

Table 4.6 is correlation analysis of variables. Table 4.6 show that *Risk Tones*, *Earnings Guidance*, *CEO-founder*, *CEO-gender*, and *Family_ownership* are negatively related to *Change in SGA*. *IdioRisk1*, *IdioRisk2*, and *AverageKZWW* are positively related to *Change in SGA*.

Table 4. 3 Descriptive statistics

	Observations	Mean	Std Dev.	25%(Q1)	50%(Q2)	75%(Q3)
Panel A: Family firms						
Change in SGA	2797	0.064	0.140	-0.001	0.061	0.130
Change in sale	3083	0.067	0.164	-0.001	0.067	0.140
Risk Tones	3282	207.261	240.459	57	121	271
log (Risk Tones)	3279	4.717	1.244	4.043	4.804	5.606
Total sentences	3282	2632.537	3354.192	890	1519	3024
log (Total sentences)	3282	7.435	0.892	6.791	7.326	8.014
Earnings guidance	1622	4.155	2.817	2	4	5
*IdioRisk*1	2952	0.072	0.043	0.045	0.062	0.089
*IdioRisk*2	2952	0.066	0.039	0.041	0.057	0.081
Family ownership	3293	0.180	0.219	0.019	0.095	0.251
Average KZWW	2986	0.133	0.696	-0.104	0.254	0.551
KZ	3140	0.689	1.409	0.200	0.939	1.514
WW	3228	-0.379	0.077	-0.426	-0.378	-0.333
Employee intensity	3267	1.456	0.836	1.047	1.504	1.952
Asset intensity	3276	-0.05	0.638	-0.48	-0.043	0.343
Successive decrease	3282	0.282	0.45	0	0	1
Stock performance	3447	3.421	0.773	2.182	2.544	2.977
Panel B: Active family firms						
Change in SGA	1277	0.081	0.144	0.015	0.074	0.147
Change in sale	1471	0.084	0.173	0.012	0.076	0.166
Risk Tones	1505	186.167	228.154	45	105	237
log (*Risk Tones*)	1504	4.574	1.245	3.807	4.659	5.470
Total sentences	1505	2489.322	3041.909	827	1457	2955
log (*Total sentences*)	1505	7.375	0.889	6.718	7.284	7.9914
CEO-founder	1594	0.509	0.500	0	1	1
Family ownership	1553	0.194	0.212	0.038	0.123	0.271
*IdioRisk*1	1422	0.078	0.046	0.049	0.068	0.097
*IdioRisk*2	1422	0.072	0.041	0.044	0.061	0.090
Earnings guidance	695	4.159	3.012	2	4	5

Note:

Variables definitions: *Change in SGA* is the log-change in SG&A of a firm. *Change in sale* is the log-change in sales of a firm. *Risk Tones* is the natural log of the sentences containing risk word in Form 10-K filings. *Earnings guidance* is the frequency of management earnings guidance in the 8-K, 10-Q, and 10-K filings. *Family ownership* is the ratio of a family's shareholdings to outstanding shares. *Founder* is a duality role, and it is set to 1 when CEO is a founder of a family firm and 0 otherwise. *IdioRisk*1 denotes idiosyncratic risk, estimated from the Fama-French three-factor model. *IdioRisk*2 denotes idiosyncratic risk, measured by the Fama-French-Carhart four-factor model. *Asset intensity* represents asset intensity; it is the log ratio of total assets to net sales. *Employee intensity* represents employee intensity; it is the log ratio of the number of employees to net sales. *Successive decrease* equals one if the firm has a continuous decrease in sales in the two periods and otherwise 0. *Stock performance* is the stock price of a firm. *KZ*, *WW*, and *Average KZWW* represent financial constraints, where *Average KZWW* is the average of the KZ index and the WW index.

Table 4. 4 Difference analysis of two types of family firms

	Active family mean (1)	Passive family mean (2)	t-test (t value) (3)	Wilcoxon rank-sum test - active and passive family firms (z value) (4)
Change in SGA	0.077	0.055	4.036 ***	4.912 ***
Change in sale	0.081	0.056	4.111 ***	5.043 ***
Risk Tones	186.167	225.127	-4.640 ***	-6.304 ***
Total sentences	2489.322	2753.831	-2.253 **	-3.583 ***
log(*Risk Tones*)	4.568	4.853	-6.725 ***	-6.334 ***
log(*Total sentences*)	7.375	7.486	-3.620 ***	-3.585 ***
Earnings guidance	4.160	4.152	0.054	-1.545
IdioRisk1	0.078	0.066	8.035 ***	8.739 ***
IdioRisk2	0.072	0.061	7.822 ***	8.537 ***
Family ownership	0.194	0.167	3.561 ***	10.046 ***
Average KZWW	0.056	0.197	-5.539 ***	-4.164 ***
KZ	0.533	0.822	-5.748 ***	-4.657 ***
WW	-0.361	-0.394	12.331 ***	12.093 ***
Employee intensity	1.540	1.384	5.331 ***	6.584 ***
Asset intensity	-0.054	-0.046	-0.366	-0.916
Successive decrease	0.264	0.298	-2.151 **	-2.150 **
Stock performance	3.365	3.489	-4.690 ***	-5.475 ***

Note:

I use the median of variables in active and passive family firms to perform two-sample Wilcoxon rank-sum (Mann–Whitney) test. In this table, I do not list the medians of variables in active and passive family firms, and only list the z values in column (4).

Variables definitions: *Change in SGA* represents the log-change in SG&A. *Change in sale* represents the log-change in sales. *Risk Tones* is the natural log of the sentences containing risk term in the 10K filings. *Earnings guidance* is the frequency of management earnings guidance in the 8-K and 10-K filings. *Family ownership* is the ratio of family's shareholdings to outstanding shares. *Founder* is a duality role; it equals 1 if CEO is a founder of a family firm, and 0 otherwise. *IdioRisk*1 denotes idiosyncratic risk, estimated from the Fama-French three-factor model. *IdioRisk*2 denotes idiosyncratic risk, measured by the Fama-French-Carhart four-factor model. *Asset intensity* is asset intensity, taking the log of the ratio of total assets to net sales. *Employee intensity* is employee intensity, taking the log of the ratio of the number of employees to net sales. *Successive decrease* equals one if the firm has a continuous decrease in sales in the two periods and otherwise 0. *Stock performance* is stock price of a firm. *KZ*, *WW*, and *Average KZWW* represent financial constraints, where *Average KZWW* is the average of the KZ index and the WW index.

Table 4. 5 Test for variable data

Panel A: Fisher Augmented Dickey-Fuller unit-root test

Ho: All panels contain unit roots
Ha: At least one panel is stationary

variables		Risk Tones	Earnings Guidance	CEO founder	CEO gender	Family ownership
		p-value	p-value	p-value	p-value	p-value
Inverse $\chi 2$	P	0.0000	0.0000	0.0000	0.0000	0.0000
Inverse	Z	0.0000	0.0000	0.0000	0.0000	0.0000
Inverse logit	L*	0.0000	0.0000	0.0000	0.0000	0.0000
Modified $\chi 2$	Pm	0.0000	0.0000	0.0000	0.0000	0.0000
variables		IdioRisk1	IdioRisk2	AverageKZWW	KZ	WW
		p-value	p-value	p-value	p-value	p-value
Inverse $\chi 2$	P	0.0000	0.0000	0.0000	0.0000	0.0000
Inverse	Z	0.0000	0.0000	0.0000	0.0000	0.0000
Inverse logit	L*	0.0000	0.0000	0.0000	0.0000	0.0000
Modified $\chi 2$	Pm	0.0000	0.0000	0.0000	0.0000	0.0000

Panel B: Jarque-Bera normality test

This study adopts the Jarque-Bera (JB) test to conform whether variables' data follow normality. The test results of variables are that p values are close to 0 and higher than 0.05, that is, the results accept "Ho: normality". Hence, variables data follow normal distribution.

variable	Family ownership	CEO gender	CEO founder	Risk Tones	Earnings Guidanc
P value	0	0	0	0	0
variable	IdioRisk1	IdioRisk2	AverageKZWW	KZ	WW
P value	0	0	0	0	0

Panel C: Collinearity diagnostics

According to VIF test of Collinearity diagnostics, VIF values of Change in sale, Employee intensity, Asset intensity, Successive decrease, Stock performance, family ownership (or CEO founder) are less than 10, indicating that independent variables have no collinearity problem. About the test of regression with variable of Risk Tones, Earnings Guidance, CEO founder, CEO gender, IdioRisk1, IdioRisk2, AverageKZWW, KZ, or WW, I also obtain the consistent results, that is, independent variables have no collinearity problem.

Family ownership							
variable	Change in sale	Employee intensity	Asset intensity	Successive decrease	Stock performance	Family ownership	Family type
VIF	1.04	1.07	1.04	1.03	1.04	1.41	1.42
CEO founder							
variable	Change in sale	Employee intensity	Asset intensity	Successive decrease	Stock performance	CEO founder	Family type
VIF	1.04	1.07	1.05	1.03	1.04	1.57	2.10

Table 4. 6 Correlation matrix

	Change in SGA	*Change in sale*	*Employee intensity*	*Asset intensity*	*Successive decrease*	*Stock performance*	FamilyType	*log (Total sentences)*
log (Risk Tones)	-0.054	-0.037	-0.2131	0.1587	-0.0562	0.0101	0.1213	0.8672
	0.0044	0.0508	0.0000	0.0000	0.0030	0.5930	0.0000	0.0000
Earnings guidance	-0.0627	0.0006	-0.0163	-0.0166	-0.0424	0.0008	0.0009	
	0.0165	0.9816	0.5328	0.5250	0.1054	0.9753	0.9721	
CEO-Gender	-0.0219	-0.0100	-0.0254	-0.0276	-0.0125	-0.0146	0.0144	
	0.2807	0.6223	0.2111	0.1752	0.5387	0.4721	0.4792	
Family ownership	-0.0816	-0.0693	0.1826	-0.0558	0.0342	0.0512	-0.0317	
	0.0000	0.0003	0.000	0.0033	0.0716	0.0070	0.0946	
CEO-Founder	0.1229	0.0981	0.0567	0.0177	-0.0304	-0.0405	-0.5781	
	0.0000	0.0000	0.0022	0.3406	0.1013	0.0293	0.0000	
IdioRisk1	0.0048	-0.0305	0.1123	-0.036	0.1056	-0.2948	-0.1485	
	0.8085	0.1271	0.0000	0.0716	0.0000	0.0000	0.0000	
IdioRisk2	0.0137	-0.0179	0.1192	-0.0411	0.1036	-0.2936	-0.1485	
	0.4929	0.3694	0.0000	0.0398	0.0000	0.0000	0.0000	
WW	-0.0679	-0.0897	0.3709	-0.1247	0.1365	-0.2562	-0.2038	
	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
KZ	0.0161	0.0090	-0.0389	-0.0176	0.0357	-0.0488	0.1215	
	0.4127	0.6477	0.0478	0.3722	0.0698	0.0130	0.0000	
Average KZWW	0.0124	0.0041	-0.0189	-0.0242	0.0429	-0.0624	0.1101	
	0.5281	0.8332	0.3374	0.2191	0.0294	0.0015	0.000	

Note:
This table shows the results of Pearson correlations coefficients between all of the two variables.
The detailed Pearson correlation coefficients for different empirical models are shown in the Appendix.

The regression analysis in this chapter uses the ordinary least square (OLS) regression. I adopt the variance inflation factor (VIF) to test the multicollinearity problem in the OLS regression analysis. The untabulated results indicate no collinearity exists because VIF values of all variables are less than 10. Moreover, Durbin Watson (DW) statistics can be used to detect the presence of autocorrelation in the residuals from OLS regression analysis. After conducting a regression analysis, I adopt the DW test to analyse whether autocorrelation in residuals exists. The untabluated results show that DW values in OLS regressions are less than 2, indicating that there is no serial correlation of residuals from regression analysis.

4.4.3 SG&A Cost Stickiness and Family Ownership

The owners of family business owners often have the tendencies of risk aversion (Gomez-Mejia, Nuñez-Nickel, and Gutierrez 2001; Romano, Tanewski, and Smyrnios 2001; Schulze et al. 2001). The higher levels of ownership concentration and intentions to maintain control in family firms are associated with risk aversion (Gómez-Mejía et al. 2007; Schulze, Lubatkin, and Dino 2003). I expect with higher degree of family ownership, CEOs are likely to take less innovation and R&D opportunities which occur less related SG&A expenses affect the degree of cost stickiness. I therefore predict higher family ownership is negatively associated with cost stickiness.

In Table 4.7, column (1), column (2), and column (3) show the results of active family firms, passive family firms, and pooled family firms, respectively. From columns (1), (2), and (3), the results show that *D*Change in sale* is negative and significant associated with *change in SGA*, t value = -3.52 in active family firms, t value = -2.14 in passive family firms, and t value = -4.06 in pooled family firms. These results indicate that for active, passive, and pooled family firms, they all exhibit cost stickiness behaviour.

The effect of family ownership, the evidence in column (1) shows that *D*Change in sale*Family ownership* is unrelated to *Change in SGA* which t value = 0.14, implying that they have no cost stickiness when active family firms have higher family ownership, supporting Hypothesis 1. In column (2) and column (3), *D*Change in sale*Family ownership* are positive and significantly related to *Change in SGA*; t value is 3.37 and t value is 2.53, respectively. The findings indicate that when passive family firms and pooled family firms have higher ownership,

their cost stickiness behaviour would be significantly decreased and exhibit anti-stickiness, supporting Hypothesis 1. These results are consistent with agency problem II and agency theory views. A higher ownership concentration in family firms will negatively affect the interests and wealth of small shareholders, inducing conflicts of interests between small and large shareholders.

Overall, these results show that regardless of family CEO in active or professional CEO in passive family firms, when family firms have greater ownership, they become even more risk-averse for CEOs to make decisions in taking the opportunities to invest in innovations.

Table 4. 7 SG&A cost stickiness and family ownership

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Passive family (2) Coefficient (t value)	Pooled family (3) Coefficient (t value)
Change in sale	0.7021 ***	0.6408 ***	0.6517 ***
	(9.40)	(12.07)	(15.41)
*D*Change in sale*	**-0.5989** ***	**-0.2349** ***	**-0.3676** ***
	(-3.52)	**(-2.14)**	**(-4.06)**
*D*Change in sale*Family ownership*	**0.0306**	**0.4712** ***	**0.3000** ***
	(0.14)	**(3.37)**	**(2.53)**
*D*Change in sale*Employee intensity*	0.0171	0.0841 **	0.0298
	(0.35)	(2.44)	(1.13)
*D*Change in sale*Asset intensity*	0.0129	-0.1674 ***	-0.1083 ***
	(0.21)	(-3.15)	(-2.79)
*D*Change in sale*Successive decrease*	0.3422 ***	0.0887	0.2387 ***
	(4.56)	(1.37)	(5.07)
*D*Change in sale*Stock performance*	0.0038 *	-0.0022 *	0.0007
	(1.77)	(-1.65)	(0.67)
Family ownership	-0.0173	-0.0199	-0.0160
	(-0.80)	(-1.21)	(-1.24)
Employee intensity	0.0027	-0.0056	-0.0018
	(0.43)	(-1.19)	(-0.48)
Asset intensity	0.0098	-0.0185 ***	-0.0048
	(1.13)	(-2.70)	(-0.92)
Successive decrease	0.0097	0.0003 **	0.0042
	(0.94)	(0.03)	(0.67)
Stock performance	0.0001	0.0001 *	0.0001 **
	(0.68)	(2.04)	(2.04)
Constant	0.0475 **	0.0307 *	0.0401 ***
	(2.18)	(1.82)	(3.14)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	1,238	1,536	2,773
F value	30.81	41.61	69.89
Adj. R^2	0.5257	0.5490	0.5334

Note:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Variables definitions: *Change in SGA* is the change in SG&A. *Change in sale* is the change in sales of a firm. *Family ownership* is the ratio of family's shareholdings to outstanding shares. *Asset intensity* represents asset intensity, which is the log-ratio of total assets to net sales. *Employee intensity* represents employee intensity, which is the log-ratio of number of employees to net sales. *Successive decrease* equals one if the firm has a continuous decrease in sales in the two periods and otherwise 0. *Stock performance* is the stock price of a firm.

4.4.4 SG&A Cost Stickiness and Founder-CEO Duality

Founder-CEOs place their self-needs ahead of the well-being of firms. Their decision-making centralise on paralysing firms' employees and reducing firms' ability to undertake risks in entrepreneurial activities (Zahra 2005). Hence, I argue founder-CEOs in family firms are less likely to promote more innovation activities because they are more afraid and risk averse to take entrepreneurial risks. I predict founder-CEOs are negatively associated with cost stickiness.

In Table 4.8, column (1) and column (2) show the results of active family firms and pooled family firms, respectively. From columns (1) and (2), the results show that *D*Change in sale* is negative and significant associated with *change in SGA*, t value = -2.06 in active family firms and t value = -3.14 in family firms, indicating that for active and pooled family firms, they exhibit cost stickiness behaviour.

The effect of founder-CEOs, the evidence in columns (1) and (2) of Table 4.8 show that *D*Change in sale*CEO-founder* is negative and significant to *Change in SGA* h t value = -1.89 in active family firms and t value = -2.50 in family firms, which implies that when active family firms with founder-CEOs, they show a cost stickiness. The results support Hypothesis 2, namely family firms with founder-CEOs would exhibit a lower cost stickiness.

In the sample, passive family firms have no founder-CEOs. Hence, column (3) of Table 4.7 presents that compared with passive family firm, the effect of founder-CEOs on cost stickiness in active family firms. The result shows that *D*Change in sale*CEO-founder*Familytype* are positive and significant associated with *Change in SGA*, t value = 2.44. The findings indicate that compared with passive family firms, active family firms with founder-CEOs exhibit lower degree of cost stickiness behaviour.

When family members' CEOs have the dual roles of management and ownership in a family firm, it reduces agency costs for shareholders and makes the CEO less empire-building inventive. My empirical results are consistent with Bertrand et al. (2008) and Sonfield and Lussier (2009), founder-CEOs in family firms are more risk-averse.

Table 4. 8 SG&A cost stickiness and CEO-founder duality

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Pooled family (2) Coefficient (t value)	Active dummy (3) Coefficient (t value)
Change in sale	0.6350 ***	0.6599 ***	0.6595 ***
	(8.27)	(15.63)	(15.64)
*D*Change in sale*	**-0.3974** **	**-0.2928** ***	**-0.2858** ***
	(-2.06)	**(-3.14)**	**(-3.07)**
*D*Change in sale*CEO-founder*	**-0.1374** *	**-0.1301** ***	**-1.2753** ***
	(-1.89)	**(-2.50)**	**(-2.69)**
*D*Change in sale*CEO-founder *Familytype*			**1.1519 ****
			(2.44)
*D*Change in sale*Employee intensity*	0.0047	0.0392	0.0385
	(0.10)	(1.53)	(1.50)
*D*Change in sale*Asset intensity*	0.0268	-0.0847 **	-0.0885 **
	(0.47)	(-2.27)	(-2.37)
*D*Change in sale*Successive decrease*	0.3358 ***	0.2298 ***	0.2259 ***
	(4.47)	(4.98)	(4.90)
*D*Change in sale*Stock performance*	0.0027	0.0003	0.0003
	(1.22)	(0.28)	(0.23)
CEO-founder	-0.0057	0.0037	0.0034
	(-0.64)	(0.52)	(0.44)
Familytype			0.0000
			(0.01)
Employee intensity	0.0011	-0.0024	-0.0024
	(0.19)	(-0.68)	(-0.68)
Asset intensity	0.0125	-0.0028	-0.0029
	(1.48)	(-0.56)	(-0.57)
Successive decrease	0.0101	0.0033	0.0032
	(1.02)	(0.54)	(0.52)
Stock performance	0.0001	0.0001 **	0.0001 **
	(0.76)	(2.11)	(2.12)
Constant	0.0481 **	0.0387 ***	0.0382 ***
	(2.30)	(3.12)	(3.06)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	1,274	2,900	2,901
F value	31.63	70.97	67.00
Adj. R^2	0.5307	0.5315	0.5323

Note:
* p < 0.1, ** p < 0.05, *** p < 0.01.
Variables definitions: Familytype =1 if active family firms and Familytype =0 if passive family firms. Change in SGA is the log-change in a firm's SG&A. Change in sale is the log-change in a firm's sales. CEO-founder is a duality role; it equals one if CEO is a founder of a family firm, and otherwise 0. Asset intensity is defined as the log-ratio of total assets to net sales. Employee intensity is defined as the log-ratio of the number of employees to net sales. Successive decrease equals one if the firm has a continuous decrease in sales in the two periods, and otherwise 0. Stock performance is the stock price of a firm.

4.4.5 SG&A Cost Stickiness and CEO-Gender

I expect that when female CEOs in family firm business, the family firms will become even become more risk averse. I predict female CEO is negatively associated with cost stickiness.

In Table 4.9, column (1), column (2), and column (3) show the results of active family firms, passive family firms, and pooled family firms, respectively. In column (1), column (2), and column (3) show that *D*Change in sale* is negative and significant associated with *change in SGA*, t value is -3.11, -2.43, and -3.71 in active family firms, passive family firms, and pooled family firms, respectively, indicating that family firms exhibit cost stickiness behaviour. About the effect of gender factor, the finding shows in columns (1) active family and (3) pooled family that t values of coefficients of *D*Change in sale*CEO gender* significantly decrease, implying that when CEOs are females, they will decrease sticky cost behaviour in active family firms and pooled family firms. These results support Hypothesis 3: being a female CEO is negatively associated with cost stickiness.

According to resource-based theory, family firms with female CEOs are risk-averse and have fewer empire-building incentives. Because family's female CEOs have higher risk aversion, they are less likely to take innovation activities or perform cost stickiness behaviour when sales decrease. Therefore, my results are consistent with the expectations of resource-based theory and confirm the findings of Faccio, Marchica, and Mura (2016), Skała and Weill (2018), and Zalata et al. (2019) that female executives are more risk-averse than male executives.

Table 4. 9 SG&A cost stickiness and CEO gender

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Passive family (2) Coefficient (t value)	Pooled family (3) Coefficient (t value)
Change in sale	0.6375 ***	0.6632 ***	0.6426 ***
	(7.44)	(12.27)	(14.35)
*D*Change in sale*	**-0.5788** ***	**-0.2826** **	**-0.3577** ***
	(-3.11)	**(-2.43)**	**(-3.71)**
*D*Change in sale*CEO gender*	**-0.4865** **	**0.2808**	**-0.3508** *
	(-1.97)	**(0.60)**	**(-1.71)**
*D*Change in sale*Employee intensity*	0.0561	0.1271 ***	0.0656 **
	(1.05)	(3.45)	(2.33)
*D*Change in sale*Asset intensity*	0.0382	-0.1306 ***	-0.0918 **
	(0.55)	(-2.49)	(-2.21)
*D*Change in sale*Successive decrease*	0.3525 ***	0.0676	0.2239 ***
	(4.49)	(1.02)	(4.57)
*D*Change in sale*Stock performance*	0.0040 *	-0.0014	0.0011
	(1.72)	(-1.03)	(0.92)
CEO gender	-0.0357	-0.0045	-0.0061
	(-1.47)	(-0.25)	(-1.12)
Employee intensity	0.0017	-0.0036	-0.0006
	(0.25)	(-0.73)	(-0.44)
Asset intensity	-0.0010	-0.0128 *	-0.0126 **
	(-0.10)	(-1.83)	(-1.52)
Successive decrease	0.0086	-0.0010	0.0111
	(0.78)	(-0.12)	(0.53)
Stock performance	0.0002	0.0001 *	0.0002 **
	(1.24)	(1.90)	(2.15)
Constant	0.0468 **	0.0230	0.0366 ***
	(1.97)	(1.32)	(2.87)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	1,011	1,407	2,418
F value	22.91	35.46	56.48
Adj. R^2	0.5049	0.5353	0.5190

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Variables definitions: *Change in SGA* is the change in SG&A. *Change in sale* is the change in sales of a firm. *CEO gender* is the gender of the CEO that is set to 1 if the CEO is a female and otherwise 0. *Asset intensity* is defined as the log-ratio of total assets to net sales. *Employee intensity* is defined as the log-ratio of the number of employees to sales. *Successive decrease* equals one if the firm has a continuous decrease in sales in the two periods, and otherwise 0. *Stock performance* is the stock price of a firm.

4.4.6 SG&A Cost Stickiness and Risk Disclosure

Linsley and Shrives (2006) define risk disclosure as managers communicating information about any opportunities, prospects, hazards, dangers, harms, threats or exposures that may impact a firm in the future. I argue that risk factor disclosures in Form 10-K can not only show how managers tell the investors about firms' fundamental risk and future prospects but also can tell how risk averse the managers are. Therefore, I predict firms with more risk tone disclosures are negatively associated with cost stickiness.

In Table 4.10, columns (1), (2), and (3) show the results of active family firms, passive family firms, and pooled family firms, respectively. The findings show that for active family firms, *D*Change in sale* is negative and significantly related to *Change in SGA*, t value = -2.86, representing that there is cost stickiness in family firms. In column (2) of Table 4.10, passive family shows that *D*Change in sale* is negative and significantly related to *Change in SGA*, t value = -2.98, indicating that there is also cost stickiness in passive family firms. Pooled family firms in column (3) show that *D*Change in sale* is negative and significantly related to *Change in SGA*, t value = -3.88, implying that family firms have a sticky cost behaviour.

The effect of risk tones on cost behaviour, the result in column (1) of Table 4.10 indicates cost stickiness in active family firms is not affected by risk tones and exhibit cost anti-stickiness, where t value of *D*Change in sale*Risk Tones* is 0.81. The finding in column (2) of Table 4.10 also shows that cost stickiness in passive family firms is not affected by risk tones disclosures and exhibit cost anti-stickiness, where t value of *D*Change in sale*Risk Tones* is 1.58.

Moreover, pooled family firms sample shows risk tones significantly decrease cost stickiness, where the t value of *D*Change in sale*Risk Tones* is 1.65. Hence, the result of family firms also supports Hypothesis 4, that firms with more risk tone disclosures are negatively associated with cost stickiness. The findings are consistent with asymmetrical information theory; more sentences with risk tone in Form 10-K imply that managers are more risk-averse, resulting SG&A expenses decrease and current earnings increase. In other words, risk disclosure could reduce agency and information asymmetry problems.

Table 4. 10 SG&A cost stickiness and risk tones in the Form 10-K filings

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Passive family (2) Coefficient (t value)	Pooled family (3) Coefficient (t value)
Change in sale	0.7863 ***	0.8477 ***	0.7830 ***
	(5.75)	(7.50)	(9.20)
*D*Change in sale*	**-0.9381** ***	**-0.6649** ***	**-0.6943** ***
	(-2.86)	**(-2.98)**	**(-3.88)**
*D*Change in sale*Risk Tones*	**0.0294**	**0.0436**	**0.0355** *
	(0.81)	**(1.58)**	**(1.65)**
*D*Change in sale*Employee intensity*	0.0627	0.1226 ***	0.0678 ***
	(1.19)	(3.70)	(2.59)
*D*Change in sale*Asset intensity*	0.0418	-0.1675 ***	-0.1036 ***
	(0.71)	(-3.39)	(-2.77)
*D*Change in sale*Successive decrease*	0.4048 ***	0.0796	0.2464 ***
	(5.17)	(1.30)	(5.35)
*D*Change in sale*Stock performance*	0.0049 **	-0.0010	0.0016
	(2.28)	(-0.76)	(1.51)
Risk Tones	0.0040	0.0025	0.0034
	(0.56)	(0.44)	(0.77)
Total sentences	-0.0048	0.0063	0.0012
	(-0.61)	(1.00)	(0.25)
Employee intensity	0.0031	-0.0031	-0.0006
	(0.50)	(-0.69)	(-0.17)
Asset intensity	0.0131	-0.0112 *	-0.0005
	(1.50)	(-1.79)	(-0.11)
Successive decrease	0.0150	-0.0035	0.0035
	(1.47)	(-0.44)	(0.56)
Stock performance	0.0002	0.0001 **	0.0001 **
	(1.34)	(2.15)	(2.30)
Constant	0.0547	-0.0254	0.0153
	(1.25)	(-0.72)	(0.57)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	1203	1583	2,786
F value	27.86	42.18	67.50
Adj. R^2	0.5175	0.5554	0.5340

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Variables definitions: *Change in SGA* is the change in SG&A. *Change in sale* is the change in sales of a firm. *Risk Tones* is the natural log of the sentences contained risk term in the 10K filings. *Asset intensity* is defined as the log-ratio of total assets to net sales. *Employee intensity* is defined as the log-ratio of the number of employees to net sales. *Successive decrease* equals one if the firm has a continuous decrease in sales in the two periods, and otherwise 0. *Stock performance* is the stock price of a firm.

4.4.7 SG&A Cost Stickiness and Management Earnings Guidance

Albring and Xu (2018) find a negative association between MEFs and risk-taking activities. The more frequent voluntary disclosure of MEFs issued by the mangers, the less risk-taking activities in the firms. Hence, I assume the more MEFs issued by the managers in the firms, the more risk aversion mangers are. I predict firms with more frequency of MEFs disclosures are negatively associated with cost stickiness.

In Table 4.11, columns (1) active family firms, (2) passive family firms, and (3) pooled family firms show that *D*Change in sale* is negative and significant associated with *change in SGA*, t value = -1.66 in active family firms, t value = -3.28 in passive family firms, and t value = -2.71 in pooled family firms. These results indicate that for active, passive, and full family firms, they all have cost stickiness behaviour.

The effect of management earnings guidance, the findings show that *D*Change in sale*Earnings guidance* is unrelated to *Change in SGA* which t value = 0.54 in column (1). This implies that when active family managers issued more management earnings guidance, they are more risk averse to take the innovations' opportunities (less related SG&A expenses) so the degree of cost stickiness will be diminished or even do not exhibit cost stickiness.

In both column (2) and column (3), *D*Change in sale*Earnings guidance* are positive and significant related to *Change in SGA*, t value = 3.48 and t value = 2.24, respectively. The results indicate that earnings guidance decreases and negatively associated with cost stickiness in passive and pooled family firms, supporting Hypothesis 5. When family firms have more frequent issue of management guidance disclosure, that is, managers are more risk averse to take innovations opportunities.

The empirical results are consistent with the findings of Albring and Xu (2018), which show a negative relation between MEFs and risk-taking activities. My results also confirm full disclosure theory. Managers are more risk-averse when there are more frequent MEFs in the family firms. They take less innovative activities, inducing a less innovation expense and reducing cost stickiness when sales decrease.

Table 4. 11 SG&A cost stickiness and management earnings guidance

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Passive family (2) Coefficient (t value)	Pooled family (3) Coefficient (t value)
Change in sale	0.6089 ***	0.8208 ***	0.6748 ***
	(4.95)	(7.76)	(8.86)
D*Change in sale	**-0.4419 ***	**-0.6643 ***	**-0.4143 ***
	(-1.66)	**(-3.28)**	**(-2.71)**
D*Change in sale**Earnings guidance*	**0.0108**	**0.0575 ***	**0.0273 **
	(0.54)	**(3.48)**	**(2.24)**
D*Change in sale**Employee intensity*	0.0114	0.2328 ***	0.0666 *
	(0.19)	(4.61)	(1.90)
D*Change in sale**Asset intensity*	0.0051	-0.1333 **	-0.1324 ***
	(0.07)	(-1.98)	(-2.75)
D*Change in sale**Successive decrease*	0.2429 ***	-0.0546	0.1641 ***
	(2.52)	(-0.60)	(2.57)
D*Change in sale**Stock performance*	0.0018	-0.0034 **	-0.0005
	(0.72)	(-1.99)	(-0.38)
Earnings guidance	-0.0020	-0.0006	-0.0013
	(-0.96)	(-0.31)	(-0.96)
Employee intensity	0.0023	0.0104 *	0.0043
	(0.26)	(1.78)	(0.91)
Asset intensity	-0.0028	0.0011	-0.0002
	(-0.22)	(0.14)	(-0.03)
Successive decrease	0.0090	-0.0228 **	-0.0043
	(0.67)	(-2.17)	(-0.53)
Stock performance	0.0000	0.0002 *	0.0001
	(0.21)	(1.67)	(1.37)
Constant	0.0629 *	-0.0114	0.0263
	(1.67)	(-0.31)	(1.04)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	597	865	1,462
F value	13.70	22.57	33.29
Adj. R^2	0.5003	0.5398	0.5095

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Variables definitions: *Change in SGA* is the change in SG&A. *Change in sale* is the change in sales of a firm. *Earnings guidance* is the frequency of management earnings guidance in the 8-K and 10-K filings. *Asset intensity* is the log-ratio of total assets to net sales. *Employee intensity* is the log-ratio of the number of employees to sales. *Successive decrease* equals one if the firm has a continuous decrease in sales in the two periods, and otherwise 0. *Stock performance* is the stock price of a firm.

4.4.8 SG&A Cost Stickiness and Idiosyncratic Risk

Family control and ownership concentration are related to the firm's higher idiosyncratic risk (Nguyen 2011; Geeta and Prasanna 2016). Thus, when idiosyncratic risk is higher in the firms, the unexpected inherent risk of the firms is higher. I predict when idiosyncratic risk is higher, the managers are likely to become more risk averse to take risk to invest in unpredictable innovations and R&D activities. I predict idiosyncratic risk are negatively associated with cost stickiness.

Table 4.12 adopts the Fama and French three-factor model to measure idiosyncratic risk *(Idiorisk1*). In Table 4.13, I adopt the Fama–French–Carhart four-factor model to measure idiosyncratic risk (*Idiorisk2*). In Tables 4.12 and 4.13, columns (1), (2), and (3) shows the results of active family firms, passive family firms, and pooled family firms, respectively.

In Panel A of Table 4.12, I find *D*Change in sale* is negative and significant related to *Change in SGA*, t value is -3.51, -2.04, and -3.71 in active family firms, passive family firms, and pooled family firms, respectively. These results indicate that for active family firms, passive family firms, and pooled family firms, they exhibit cost stickiness behaviour.

In Panel A of Table 4.12, about the effect of high idiosyncratic risk on cost stickiness behaviour in family firms, the evidence indicates that *Change in SGA* is unrelated to *D*Change in sale*HighIdioRisk*1. t value is 0.87, -1.09, and -0.66 in active family firms, passive family firms, and pooled family firms, respectively. I further use the degree level of idiosyncratic risk in Panel B of Table 4.12, *Change in SGA* is unrelated to *D*Change in sale*IdioRisk*1. For active family firms and pooled family firms, a higher idiosyncratic risk decreases cost stickiness, which support Hypothesis 6. That is, firms with high idiosyncratic risk are negatively associated with cost stickiness.

About the results *Idiorisk2*, in Panel A of Table 4.13, the findings show that *D*Change in sale* is negative and significant related to *Change in SGA*, t value is -3.65, -2.49, and -4.09 in active family firms, passive family firms, and pooled family firms, respectively. These results

show that active family firms, passive family firms, and pooled family firms exhibit sticky cost behaviour in considering the idiosyncratic risk using the four-factor model.

In Panel A of Table 4.13, about the effect of high idiosyncratic risk on cost stickiness in family firms, the findings present that *Change in SGA* is unrelated to *D*Change in sale*HighIdioRisk*2. t value is 0.85, 0.32, and 0.11 in active family firms, passive family firms, and pooled family firms, respectively. Therefore, for active family, passive family, and pooled family firms, high idiosyncratic risk can decrease their sticky cost behaviour, supporting Hypothesis 6.

Moreover, when I adopt the level of idiosyncratic risk in Panel B of Table 4.13, *D*Change in sale* is negative and significant related to *Change in SGA*, t value is -2.46 and -2.66 in active family firms and pooled family firms, respectively. These results indicate that they exhibit cost stickiness behaviour for active family firms and pooled family firms. Next, the findings show that *Change in SGA* is unrelated to *D*Change in sale*IdioRisk*2 in active family firms and pooled family firms. In other words, for active family firms and pooled family firms, higher idiosyncratic risk in the firms could significantly reduce cost stickiness, which supports Hypothesis 6.

The results of Table 4.12 and Table 4.13 (firms with high idiosyncratic risk are negatively associated with cost stickiness) are consistent with agency theory and managerial risk aversion. They believe that when risk-averse managers have undiversified firms' stakes, that is, from the endogenous incentive of ownership. My results also confirm Panousi and Papanikolaou (2012) that a firm's idiosyncratic risk will induce a wedge between manager and shareholder decisions, cause underinvestment, and support Liu and Wang (2021) that managerial risk aversion can cause a negative association between investment and idiosyncratic risk.

Table 4. 12 SG&A cost stickiness and idiosyncratic risk – Three factors model

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Passive family (2) Coefficient (t value)	Pooled family (3) Coefficient (t value)
Panel A: High idiosyncratic risk			
Change in sale	0.6546 ***	0.6902 ***	0.6692 ***
	(8.12)	(12.65)	(15.02)
*D*Change in sale*	**-0.6410** ***	**-0.2382** **	**-0.3606** ***
	(-3.51)	**(-2.04)**	**(-3.71)**
*D*Change in sale*HighIdioRisk*1	**0.0623**	**-0.0667**	**-0.0303**
	(0.87)	**(-1.09)**	**(-0.66)**
*D*Change in sale*Employee intensity*	0.0336	0.1079 ***	0.0521 **
	(0.72)	(3.25)	(2.05)
*D*Change in sale*Asset intensity*	0.0369	-0.1281 ***	-0.0863 **
	(0.63)	(-2.68)	(-2.35)
*D*Change in sale*Successive decrease*	0.3590 ***	0.0996 *	0.2451 ***
	(4.92)	(1.62)	(5.37)
*D*Change in sale*Stock performance*	0.0046 **	-0.0019	0.0010
	(2.13)	(-1.37)	(0.85)
*HighIdioRisk*1	0.0055	-0.0030	0.0014
	(0.63)	(-0.42)	(0.26)
Employee intensity	0.0016	-0.0055	-0.0021
	(0.27)	(-1.20)	(-0.59)
Asset intensity	0.0098	-0.0152 **	-0.0037
	(1.16)	(-2.43)	(-0.74)
Successive decrease	0.0088	-0.0014	0.0034
	(0.89)	(-0.18)	(0.56)
Stock performance	0.0002	0.0001 *	0.0001 **
	(1.19)	(1.86)	(2.13)
Constant	0.0422 **	0.0301 *	0.0377 ***
	(2.01)	(1.83)	(3.04)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	1,276	1,646	2,922
F value	31.45	43.31	72.23
Adj. R^2	0.5288	0.5473	0.5340
Panel B: level of idiosyncratic risk			
Change in sale	0.6340 ***	0.6946 ***	0.6793 ***
	(6.32)	(9.76)	(11.93)
*D*Change in sale*	**-0.5212** **	**-0.1933**	**-0.3389** ***
	(-2.41)	**(-1.12)**	**(-2.61)**
*D*Change in sale*IdioRisk*1	**-0.1126**	**-0.4361**	**-0.3290**
	(-0.14)	**(-0.49)**	**(-0.58)**
IdioRisk1	-0.2140 *	-0.1268	-0.1172
	(-1.73)	(-1.03)	(-1.37)
Other Controls	Yes	Yes	Yes
Constant	Yes	Yes	Yes
Year and Industry fixed effects	Yes	Yes	Yes
Observations	1,137	1,369	2,506
F value	28.31	34.47	60.12
Adj. R^2	0.5305	0.5349	0.5259

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
In Panel A, I divide the sample into high and low subsamples based on the industry median of idiosyncratic risk in the same industry-year. For *HIdioRisk*1 variable, I set it to 1 if a firm's idiosyncratic risk is higher than the industry median of idiosyncratic risk and 0 if a firm's idiosyncratic risk is lower than its industry median. In Panel B, I adopt the value of idiosyncratic risk, *IdioRisk1*.
Other Controls variables include: *D*Change in sale*Employee intensity*, *D*Change in sale*Asset intensity*, *D*Change in sale*Successive decrease*, *D*Change in sale*Stock performance*, *Employee intensity*, *Asset intensity*, *Successive decrease*, and *Stock performance*.

Table 4. 13 SG&A cost stickiness and idiosyncratic risk – Four factors model

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Passive family (2) Coefficient (t value)	Pooled family (3) Coefficient (t value)
Panel A: High idiosyncratic risk			
Change in sale	0.6914 ***	0.6822 ***	0.6768 ***
	(8.27)	(12.44)	(14.95)
*D*Change in sale*	**-0.6944** ***	**-0.2868** **	**-0.3981** ***
	(-3.65)	**(-2.49)**	**(-4.09)**
*D*Change in sale*HighIdioRisk2*	**0.0621**	**0.0193**	**0.0051**
	(0.85)	**(0.32)**	**(0.11)**
*D*Change in sale*Employee intensity*	0.0354	0.1120 ***	0.0533 **
	(0.76)	(3.38)	(2.10)
*D*Change in sale*Asset intensity*	0.0374	-0.1313 ***	-0.0867 **
	(0.64)	(-2.73)	(-2.35)
*D*Change in sale*Successive decrease*	0.3751 ***	0.0928	0.2450 ***
	(5.05)	(1.50)	(5.37)
*D*Change in sale*Stock performance*	0.0047 **	-0.0013	0.0013
	(2.15)	(-0.98)	(1.13)
HighIdioRisk2	-0.0010	-0.0005	0.0000
	(-0.12)	(-0.07)	(0.01)
Employee intensity	0.0019	-0.0053	-0.0020
	(0.31)	(-1.16)	(-0.57)
Asset intensity	0.0099	-0.0150 **	-0.0037
	(1.17)	(-2.39)	(-0.74)
Successive decrease	0.0100	-0.0020	0.0036
	(1.00)	(-0.25)	(0.58)
Stock performance	0.0002	0.0001 **	0.0001 **
	(0.99)	(2.01)	(2.13)
Constant	0.0433 **	0.0292 *	0.0377 ***
	(2.06)	(1.77)	(3.03)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	1,276	1,646	2,922
F value	31.20	43.04	72.22
Adj. R^2	0.5268	0.5457	0.5340
Panel B: level of idiosyncratic risk			
Change in sale	0.6426 ***	0.6754 ***	0.6700 ***
	(6.41)	(9.62)	(11.86)
*D*Change in sale*	**-0.5679** **	**-0.2016**	**-0.3504** ***
	(-2.46)	**(-1.23)**	**(-2.66)**
*D*Change in sale*IdioRisk2*	**0.2396**	**-0.2520**	**-0.1684**
	(0.23)	**(-0.28)**	**(-0.25)**
IdioRisk2	-0.2076	-0.1607	-0.1234
	(-1.53)	(-1.24)	(-1.34)
Other Controls	Yes	Yes	Yes
Constant	Yes	Yes	Yes
Year and Industry fixed effects	Yes	Yes	Yes
Observations	1,137	1,369	2,506
F value	28.30	34.43	60.08
Adj. R^2	0.5304	0.5346	0.5257

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
In Panel A, I divide the sample into high and low subsamples based on the industry median of idiosyncratic risk in the same industry-year. For *HIdioRisk2* variable, I set it to 1 if a firm's idiosyncratic risk is higher than the industry median of idiosyncratic risk and 0 if a firm's idiosyncratic risk is lower than its industry median. In Panel B, I adopt the value of idiosyncratic risk, *IdioRisk2*.
Other Controls include: *D*Change in sale*Employee intensity*, *D*Change in sale*Asset intensity*, *D*Change in sale*Successive decrease*, *D*Change in sale*Stock performance*, *Employee intensity*, *Asset intensity*, *Successive decrease*, and *Stock performance.*

4.5 Additional Analysis

4.5.1 Financial Constraints Analysis

I further investigate the moderating role of financial constraints on the association between cost stickiness and risk aversion characteristics in family firms. Bernard (2016) find financially constrained firms are more likely to avoid financial statement disclosure to reduce product market predation risk. Therefore, I argue that greater more significant financial constraints in firms enhance the firms to become more risk-averse to taking innovation opportunities, which results in a lower degree of cost stickiness.

In Table 4.14, I use the average of KZ index and WW index (*Average KZWW*) to measure financial constraint. In Table 4.14, columns (1), (2), and (3) shows the results of active family firms, passive family firms, and pooled family firms, respectively. The findings show that *Change in SGA* is negative and significant related to *D*Change in sale*, t value is -4.12, -2.39, and -4.80 in columns (1), (2), and (3), respectively, indicating that sticky cost behaviour exists in active family firms, passive family firms, and pooled family firms. Considering the moderating effect of financial constraint, the findings show that *Change in SGA* is negative and significant related to *D*Change in sale*Average KZWW*, t value is -1.70 in column (1), showing that sticky the degree of cost stickiness significantly reduces in active family firms.

In Table 4.15, I measure financial constraint using the KZ index and WW index in Panel A and Panel B, respectively. Columns (1), (2), and (3) shows the results of active family firms, passive family firms, and pooled family firms, respectively. The results of the KZ index in Panel A show that *Change in SGA* is negative and significant related to *D*Change in sale*, t value is -3.66, -2.08, and -4.25 in columns (1), (2), and (3), respectively, implying that there is a cost stickiness behaviour in active, passive, and pooled family firms. In Panel A of Table 4.15, I find that sticky cost behaviour significantly reduces in family firms, showing non-stickiness, implying that financial constraint would not affect the cost stickiness of family firms. In Panel B, the results of the WW index in active and pooled family firms are consistent with those in measure of KZ index.

Table 4. 14 SG&A cost stickiness and financial constraints – Average of KZ and WW

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Passive family (2) Coefficient (t value)	Pooled family (3) Coefficient (t value)
Change in sale	0.7540 ***	0.6284 ***	0.6713 ***
	(10.07)	(10.96)	(15.44)
*D*Change in sale*	**-0.8288** ***	**-0.2900** **	**-0.4757** ***
	(-4.12)	**(-2.39)**	**(-4.80)**
*D*Change in sale*Average KZWW*	**-0.1145** *	**0.0726**	**0.0086**
	(-1.70)	**(1.31)**	**(0.21)**
*D*Change in sale*Employee intensity*	0.0694	0.1305 ***	0.0792 ***
	(1.14)	(3.41)	(2.68)
*D*Change in sale*Asset intensity*	0.0373	-0.1659 ***	-0.1128 ***
	(0.60)	(-3.10)	(-2.85)
*D*Change in sale*Successive decrease*	0.3853 ***	0.0822	0.2340 ***
	(4.68)	(1.19)	(4.68)
*D*Change in sale*Stock performance*	0.0051 **	-0.0004	0.0022 *
	(2.04)	(-0.31)	(1.91)
Average KZWW	-0.0044	-0.0037	-0.0044
	(-0.84)	(-0.61)	(-1.16)
Employee intensity	0.0045	-0.0073	-0.0024
	(0.70)	(-1.49)	(-0.64)
Asset intensity	0.0092	-0.0173 ***	-0.0055
	(1.03)	(-2.57)	(-1.04)
Successive decrease	0.0077	-0.0010	0.0022
	(0.76)	(-0.13)	(0.35)
Stock performance	0.0002	0.0001 **	0.0001 **
	(1.01)	(2.18)	(2.47)
Constant	0.0304	0.0325 *	0.0338 ***
	(1.37)	(1.85)	(2.58)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	1,111	1,474	2,585
F value	27.70	35.36	61.17
Adj. R^2	0.5306	0.5230	0.5225

Note:
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Variable's definitions: *Change in SGA* is the change in SG&A of a firm. *Change in sale* is the change in sales of a firm. *Asset intensity* is defined as the log-ratio of total assets to sales. *Employee intensity* is defined as the log-ratio of the number of employees to sales. *Successive decrease* equals 1 if the firm has a continuous decrease in sales in the two periods, and otherwise 0. *Stock performance* is the stock price of a firm. *Average KZWW* is the average of KZ index and WW index.

Table 4. 15 SG&A cost stickiness and financial constraints – KZ and WW

Dependent variable = Change in SGA	Active family (1) Coefficient t value	Passive family (2) Coefficient t value	Pooled family (3) Coefficient t value
Panel A: KZ			
Change in sale	0.7229 ***	0.6122 ***	0.6504 ***
	(9.80)	(10.18)	(14.91)
*D*Change in sale*	**-0.6802** ***	**-0.2579** **	**-0.4151** ***
	(-3.66)	**(-2.08)**	**(-4.25)**
*D*Change in sale*KZ*	**-0.0272**	**0.0510** *	**0.0221**
	(-0.84)	**(-1.86)**	**(1.08)**
KZ	-0.0016	-0.0008	-0.0015
	(-0.60)	(-0.26)	(-0.79)
Other Controls	Yes	Yes	Yes
Constant	Yes	Yes	Yes
Year and Industry fixed effects	Yes	Yes	Yes
Observations	1,164	1,518	2,682
F value	29.15	36.36	63.87
Adj. R^2	0.5321	0.5228	0.5243
Panel B: WW			
Change in sale	1.0900 ***	0.5438 ***	0.7421 ***
	(6.50)	(3.23)	(6.54)
*D*Change in sale*	**-1.6283** ***	**-0.2033**	**-0.7147** ***
	(-4.54)	**(-0.73)**	**(-3.42)**
*D*Change in sale*WW*	**-1.1395** *	**-0.0423**	**-0.5244**
	(-1.72)	**(-0.09)**	**(-1.43)**
WW	-0.0943	-0.0727	-0.0591
	(-1.38)	(-1.32)	(-1.47)
Other Controls	Yes	Yes	Yes
Constant	Yes	Yes	Yes
Year and Industry fixed effects	Yes	Yes	Yes
Observations	1,203	1,580	2,783
F value	28.24	40.52	66.50
Adj. R^2	0.5158	0.5405	0.5253

Note:

* $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

In Panel A, I divide the sample into high and low subsamples based on the industry median of idiosyncratic risk in the same industry-year. Other Controls variables include: D*Change in sale*Employee intensity, D*Change in sale*Asset intensity, D*Change in sale*Successive decrease, D*Change in sale*Stock performance, Employee intensity, Asset intensity, Successive decrease, and Stock performance.

Variable's definitions: Change in SGA is the change in SG&A. Change in sale is the change in sales of a firm. Asset intensity is defined as the log-ratio of total assets to sales. Employee intensity is defined as the log-ratio of number of employees to sales. Successive decrease equals 1 if the firm has a continuous decrease in sales in the two periods, and otherwise 0. Stock performance is the stock price of a firm. KZ and WW represent financial constraints**.**

4.5.2 Alternative Risk Disclosure Analysis

In this section, I use another four measures to capture the firm's risk disclosure according to the method of Campbell et al. (2014). I test whether the above results are robust.

(1) *RiskTotalWord*, measured by the taking log of the total number of words, includes Item 1A Risk Factors section, Items 7 MD&A section, and Items 7A Market Risk section.
(2) *RiskKeyWord*, measured by taking the log of one plus the total number of key words identified that appear in Item 1A Risk Factors, Items 7 MD&A, and Items 7A Market Risk sections. The key words identified refer to Appendix 3 in Campbell et al. (2014).
(3) *MDATotalWord*, measured by the log of the total number of words, includes Items 7 MD&A and Items 7A Market Risk sections.
(4) *MDAKeyWord*, measured by taking the log of one plus the total number of key words identified that appear in Items 7 MD&A section and Items 7A Market Risk section. The key words identified refer to Appendix 3 in Campbell et al. (2014).

The results of risk disclosure measures of *RiskTotalWord* and *RiskKeyWord* are shown in Panel A and Panel B of Table 4.16, respectively. The results of risk disclosure measures of *MDATotalWord* and *MDAKeyWord* are shown in Panel A and Panel B of Table 4.16, respectively. From Panels A and B in Table 4.16, I find SG&A cost stickiness behaviour when sales decrease in active family subsample, passive family subsample, and entire family firms' sample. However, the more risk information disclosure significantly decreases SG&A cost stickiness. These results indicate that managers release more risk information imply that they are more risk-averse, resulting in their empire-building incentive decrease and then decreasing their cost stickiness behaviour.

Similarly, the evidence Panels A and B in Table 4.17 also show that for active family subsample, passive family subsample, and entire family firms' sample, they exhibit cost stickiness behaviour when sales decrease. However, when risk information disclose more, managers would decrease SG&A cost stickiness because of their attitudes of risk aversion. Therefore, alternative measures of risk disclosure also support Hypothesis 4, that is, firms with more risk tone disclosures are negatively associated with cost stickiness.

Table 4. 16 SG&A cost stickiness and total risk disclosure

Panel A: Total risk words

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Passive family (2) Coefficient (t value)	Pooled family (3) Coefficient (t value)
Change in sale	0.8026 ***	0.6669 ***	0.6669 ***
	(4.50)	(5.59)	(6.69)
*D*Change in sale*	**-1.3365 *** **	**-0.6512** ***	**-0.7999** ***
	(-3.24)	**(-2.80)**	**(-4.00)**
*D*Change in sale* RiskTotalWords*	**0.0402**	**0.0454** ***	**0.0353** ***
	(1.39)	**(2.72)**	**(2.52)**
*D*Change in sale*Employee intensity*	0.1066 *	0.0947 ***	0.0907 ***
	(1.81)	(2.59)	(2.96)
*D*Change in sale*Asset intensity*	0.0945	-0.0892	-0.0400
	(1.36)	(-1.57)	(-0.92)
*D*Change in sale*Successive decrease*	0.4518 ***	0.1172 *	0.2622 ***
	(5.06)	(1.75)	(4.91)
*D*Change in sale*Stock performance*	0.0070 ***	0.0005	0.0033 **
	(2.53)	(0.25)	(2.18)
RiskTotalWords	0.0020	0.0030	0.0026
	(0.68)	(1.49)	(1.51)
Employee intensity	0.0026	-0.0124 **	-0.0059
	(0.35)	(-2.29)	(-1.37)
Asset intensity	0.0194 *	-0.0098	0.0039
	(1.87)	(-1.35)	(0.67)
Successive decrease	0.0188	-0.0010	0.0053
	(1.51)	(-0.11)	(0.74)
Stock performance	0.0004 **	0.0000	0.0001
	(1.95)	(0.60)	(0.94)
Constant	-0.0026	0.0303	0.0212
	(-0.07)	(1.28)	(1.08)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	973	1,218	2,191
F value	20.43	38.59	54.55
Adj. R^2	0.4844	0.5921	0.5347
Panel B: Total key risk words			
Change in sale	0.7659 ***	0.6080 ***	0.6143 ***
	(6.18)	**(6.92)**	**(8.68)**
*D*Change in sale*	**-1.2924** ***	**-0.4392** ***	**-0.6642** ***
	(-4.47)	**(-2.64)**	**(-4.67)**
*D*Change in sale* RiskKeyWords*	**0.0645** **	**0.0456** **	**0.0435** ***
	(2.43)	**(3.26)**	**(3.51)**
*D*Change in sale*Employee intensity*	0.0961 *	0.0889 **	0.0811 ***
	(1.66)	(2.42)	(2.63)
*D*Change in sale*Asset intensity*	0.0673	-0.1002 *	-0.0555
	(0.96)	(-1.76)	(-1.27)

*D*Change in sale*Successive decrease*	0.4592 ***	0.1234 *	0.2692 ***
	(5.15)	(1.84)	(5.05)
*D*Change in sale*Stock performance*	0.0074 ***	0.0007	0.0037 **
	(2.69)	(0.36)	(2.40)
RiskKeyWords	-0.0030	0.0014	-0.0008
	(-0.55)	(0.38)	(-0.26)
RiskTotalWords	0.0052	0.0016	0.0034
	(0.97)	(0.41)	(1.08)
Employee intensity	0.0026	-0.0126 **	-0.0063
	(0.34)	(-2.34)	(-1.46)
Asset intensity	0.0189 *	-0.0098	0.0040
	(1.83)	(-1.35)	(0.68)
Successive decrease	0.0185	-0.0007	0.0054
	(1.49)	(-0.08)	(0.75)
Stock performance	0.0005 **	0.0000	0.0001
	(2.07)	(0.62)	(0.96)
Constant	-0.0140	0.0356 **	0.0194 **
	(-0.38)	(1.42)	(0.96)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	973	1,218	2,191
F value	20.22	37.92	53.71
Adj. R^2	0.4870	0.5929	0.5360

Note:

In this table, columns (1), (2), and (3) shows the results of active family firms, passive family firms, and pooled family firms, respectively. * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$. *RiskTotalWords* represents the log value of the total number of words in the Item 1A Risk Factors, Items 7 MD&A, and Items 7A Market Risk sections. *RiskKeyWords* represents the log value of one plus the total number of key words identified that appear in Item 1A Risk Factors, Items 7 MD&A, and Items 7A Market Risk sections. Other variables' definitions are the same as those in the above tables.

Table 4. 17 SG&A cost stickiness and risk disclosure on MD&A and market risk

Panel A: Risk words disclosure

Dependent variable = Change in SGA	Active family (1) Coefficient (t value)	Passive family (2) Coefficient (t value)	Pooled family (3) Coefficient (t value)
Change in sale	0.7201 ***	0.6954 ***	0.6323 ***
	(5.06)	(7.24)	(8.02)
*D*Change in sale*	**-0.6799 ****	**-0.5442** ***	**-0.5087** ***
	(-2.27)	**(-2.93)**	**(-3.31)**
*D*Change in sale*MDATotalWords*	**-0.0237**	**0.0359** ***	**0.0058**
	(-1.26)	**(2.53)**	**(0.55)**
*D*Change in sale*Employee intensity*	0.0766	0.0959 ***	0.0946 ***
	(1.30)	(2.61)	(3.08)
*D*Change in sale*Asset intensity*	0.1021	-0.0690	-0.0315
	(1.48)	(-1.21)	(-0.73)
*D*Change in sale*Successive decrease*	0.4376 ***	0.1019	0.2619 ***
	(4.86)	(1.52)	(4.90)
*D*Change in sale*Stock performance*	0.0073 ***	0.0007	0.0030 **
	(2.65)	(0.38)	(1.98)
MDATotalWords	-0.0002	0.0037 **	0.0016
	(-0.09)	(2.23)	(1.23)
Employee intensity	0.0016	-0.0112 **	-0.0053
	(0.21)	(-2.08)	(-1.22)
Asset intensity	0.0209 **	-0.0100	0.0041
	(2.04)	(-1.38)	(0.70)
Successive decrease	0.0191	-0.0011	0.0058
	(1.54)	(-0.13)	(0.81)
Stock performance	0.0004 *	0.0001	0.0001
	(1.81)	(0.73)	(0.95)
Constant	0.0207	0.0306	0.0311 *
	(0.67)	(1.53)	(1.90)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	973	1,218	2,191
F value	20.42	38.67	54.32
Adj. R^2	0.4843	0.5926	0.5337
Panel B: Key risk words disclosure			
Change in sale	0.7141 ***	0.6505 ***	0.6171 ***
	(6.07)	(8.26)	(9.58)
*D*Change in sale*	**-0.6586** ***	**-0.4281** ***	**-0.4801** ***
	(-2.58)	**(-2.77)**	**(-3.68)**
*D*Change in sale* MDARiskWords*	**-0.0432** **	**0.0424** ***	**0.0065**
	(1.98)	**(2.84)**	**(0.56)**
*D*Change in sale*Employee intensity*	0.0702	0.0976 ***	0.0954 ***
	(1.19)	(2.66)	(3.11)
*D*Change in sale*Asset intensity*	0.1043	-0.0744	-0.0317
	(1.51)	(-1.31)	(-0.73)

*D*Change in sale*Successive decrease*	0.4222 ***	0.1127 *	0.2629 ***
	(4.67)	(1.69)	(4.91)
*D*Change in sale*Stock performance*	0.0073 ***	0.0011	0.0030 **
	(2.66)	(0.57)	(1.98)
MDARiskWords	-0.0005	0.0010	0.0010
	(-0.10)	(0.27)	(-0.06)
MDATotalWords	-0.0004	0.0030	0.0030
	(-0.08)	(0.92)	(0.73)
Employee intensity	0.0014	-0.0109 **	-0.0109
	(0.19)	(-2.01)	(-1.20)
Asset intensity	0.0206 **	-0.0099	-0.0099
	(2.00)	(-1.37)	(0.72)
Successive decrease	0.0188	-0.0014	-0.0014
	(1.51)	(-0.16)	(0.79)
Stock performance	0.0004 *	0.0001	0.0001
	(1.78)	(0.74)	(0.93)
Constant	0.0240	0.0304	0.0304 *
	(0.79)	(1.48)	(1.81)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	973	1,218	2,191
F value	20.08	37.99	53.21
Adj. R^2	0.4851	0.5933	0.5336

Note:

In this table, columns (1), (2), and (3) shows the results of active family firms, passive family firms, and pooled family firms, respectively. * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$. *MDATotalWords* is the log of the total number of words in Items 7 MD&A section and Items 7A Market Risk section. *MDARiskWords* is the log of one plus the total number of key words identified that appear in Items 7 MD&A and Items 7A Market Risk sections. Other Variable's definitions are the same as those in the above tables.

4.6 Conclusion

In this chapter, I examine the risk aversion characteristic in family firms on cost stickiness behaviour. This study explored the impact of risk aversion, in context of family ownership, CEO-founder, CEO-gender, textural risk tone, management earnings guidance and idiosyncratic risk.

The findings first show sticky cost behaviour in active family firms, passive family firms, and pooled family firms. The effect of family ownership, when family firms have higher ownership, cost stickiness decreases in passive and pooled family firms. This means that when family firms have greater family ownership, they will even be more risk-averse and likely not to take or take fewer innovation activities. Hence, the related SG&A expenses are not likely to increase in a short period and delay to decrease when sales decline.

The evidence also indicates that founder-CEOs decrease the degree of cost stickiness in pooled family firms. When CEOs are females, cost stickiness decreases in active and pooled family firms. The result of pooled family firms supports my prediction that firms with more risk tone disclosures in the 10-K filing are negatively associated with cost stickiness.

Another document related to financial disclosure is the voluntary management earnings guidance. The results indicate that when active and passive family firms are more frequently disclosing management earnings guidance issued by the firms, the managers are risk-averse to taking innovation opportunities. Hence, the results show that the frequency of management earnings guidance issued is negatively associated with cost stickiness.

I further adopt the Fama-French three-factor model and the Fama-French-Carhart four-factor model to measure idiosyncratic risk. Both measures show that the firm’s idiosyncratic risk can decreases cost stickiness for active family firms, passive family firms, and pooled family firms.

In the additional analysis, I examine the influence of financial constraints on the relationship between risk aversion and cost stickiness. I adopt the average of KZ index and WW index to measure financial constraint. The findings show that sticky cost behaviour exists in

active family firms, passive family firms, and pooled family firms. Considering the moderating effect of financial constraint shows that sticky cost behaviour significantly reduces in active family firms. However, the firm's financial constraints can decrease cost stickiness in passive family firms and pooled family firms.

The next chapter will sum up the findings of my thesis, my contribution, limitations, and what readers can take in their future research.

Chapter Five: Conclusions

5.1 Summary of the Study

Building on the important role of managerial decisions in cost management, which impacts the cost stickiness behaviour, this thesis comprises a literature review of the important studies by prior scholars and two studies on the role of managerial decisions in cost stickiness. Managerial decisions are affected by various factors such as different economic environments, company sizes, industry groups, cultures, backgrounds, and managers' incentives (Anderson, Banker, and Janakiraman 2003; Weiss 2010; Chen, Lu, and Sougiannis 2012; Cannon 2014; Banker et al. 2014; Banker, Byzalov, and Chen 2013; Lee, Pittman, and Saffar 2020)

Current cost management research introduces managerial decisions regarding the fundamental driver of costs. Many factors may affect management decisions, such as product demand characteristics, industry structure, strategic position, managerial incentives and psychological biases, incentives, and biases of stakeholders, corporate earnings management and governance, government law and regulation, and national or regional culture. This study argues that family ownership is an essential factor influencing cost management decisions (and cost stickiness) in such firms. This study investigates how cost structure behaves in family-type of firms. Family ownership is pervasive and prominent among publicly traded US firms (Anderson and Reeb 2003b; Pérez-González 2006). Hence, family ownership is an important structure. Family firms have a unique ownership structure. The founding families are a distinct class of shareholders, who have poorly diversified portfolios, often are long-term investors (multiple generations), and control senior positions in the management team (Anderson and Reeb 2003b).

First, this study compares the effects of agency problems on sticky cost behaviour in family and non-family firms. This study explores the impact of agency problems in the context of free cash flow, CEOs in their first three years of their tenure, CEOs in the final year of their tenure, and CEO fixed pay ratio. This study finds both family and non-family firms exhibit cost stickiness behaviour. The results indicate that, unlike in non-family firms, a higher free cash flow does not lessen the degree of SG&A cost stickiness in family firms. This study also shows

that, in the comparison between family and non-family firms in the low free cash flow subgroup, cost stickiness increases similarly when considering the empire-building incentive of free cash flow. The study finds that the degree of cost stickiness decreases when CEOs are in their first three years of tenure in pooled and non-family samples. SG&A stickiness in family firms is higher than in non-family firms when CEOs are in the first three years of their tenure.

Next, the study finds that when CEOs of family firms are in the final year of their tenure, SG&A cost stickiness declines. However, in non-family firms, SG&A cost stickiness increases when their CEOs are in their final year of tenure. Moreover, this study shows that CEOs in their final year of tenure are less likely to exhibit SG&A cost stickiness in family firms than in non-family firms. SG&A cost stickiness increases with the ratio of fixed pay in CEOs' total compensation when sales decrease in the current period in pooled and non-family subsamples.

In the additional analysis, I examine the influence of corporate governance on the relationship between agency problems and SG&A cost stickiness. This study finds that in the low-board-size subgroup, cost stickiness increases more in family firms than in non-family firms. Regarding CEO fixed pay, the study finds that family firms are more likely to exhibit cost stickiness than non-family firms in a low-board-size subgroup. Both CEOs in their first three years of tenure and CEOs in their final year increase cost stickiness more in family firms than in non-family firms in the low-board-size subgroup. Compared to non-family firms, family firms are more likely to show cost stickiness when the CEO's fixed pay is higher. The results indicate that a higher ratio of female directors may increase cost stickiness in family firms more than in non-family firms when CEOs are in their first three years of tenure, CEOs are in their final year of tenure, and CEOs have a higher fixed pay. SG&A cost stickiness increases more in family firms than in non-family firms when CEO-directors are in their first three years of tenure. The degree of cost stickiness decreases more in family firms than in non-family firms when CEO-directors are in final year of tenure. The evidence also shows that cost anti-stickiness results from a CEO fixed pay ratio in family and non-family firms. This study further divides the full sample of family firms into active and passive family subsamples. The findings indicate that higher free cash flow substantially decreases the degree of SG&A cost stickiness in active family firms. However, the extent of decrease in stickiness is more pronounced in passive family firms and non-family firms.

Family firms are often more risk-averse (La Porta, Lopez-de-Silanes, and Shleifer 1999). Anderson and Reeb (2003a) argue that family firms are concerned about how to enhance their share values and, therefore, they will avoid investing in risky, high expected return projects. Gómez-Mejía et al. (2007) suggest that family firms view control rights for socioemotional reasons; even though they forgo financial gains, they should maintain their control. Research has also documented how different managerial incentives, such as risk-taking, may influence cost behaviour (Chen, Lu, and Sougiannis 2012; Kama and Weiss 2013; Li et al. 2021). The current family firm literature shows that family firms are risk-averse and conservative regarding the innovative behaviour of pursuing entrepreneurial strategies compared to non-family firms (Duran et al. 2015; Jones, Makri, and Gomez–Mejia 2008; Nordqvist and Melin 2010). Hence, this study is motivated by the risk aversion characteristic of the family type of organisational structure to examine cost stickiness behaviour.

This study finds that there is sticky cost behaviour in active family firms, passive family firms, and pooled family firms. The finding shows that when family firms have higher ownership, cost stickiness decreases in both passive and pooled family firms. Hence, the related SG&A expenses are unlikely to increase in a short period and delay to decrease when sales decline. The evidence indicates that founder-CEOs decrease the degree of cost stickiness in pooled family firms. Female CEOs decrease the degree of cost stickiness decreases in active and pooled family firms. For pooled family firms, firms with more risk tone disclosures in 10-K filing are negatively associated with cost stickiness. My findings also show the frequency of issuance of management earnings guidance is negatively related to cost stickiness.

The additional analysis finds that sticky cost behaviour exists in active family firms, passive family firms, and pooled family firms. The moderating effect of financial constraints shows that sticky cost behaviour significantly reduces in active family firms. However, the financial constraints do not influence cost stickiness in passive and pooled family firms.

5.2 Academic Contributions and Practical Implications

The studies in this thesis have several implications for academics, and practitioners. The academic contributions are summarised as follows. The first and second studies filled the research gap related to cost stickiness behaviour in a family-type of organisation structure. Existing cost stickiness research has not yet specifically examined cost stickiness behaviour in family firms or the relationship between cost stickiness and the specific characteristics of such firms. These studies extend the dimension of cost behaviour by investigating this cost stickiness phenomenon in family firms based on the intrinsic and unique characteristics of family firms. Different management incentives in family firms lead to different accounting choices in making decisions. Family firm characteristics such as closely aligned interests between owner and manager, risk aversion and conservatism create an impact on manager decisions and to cost structure. The impact of family ownership on cost management decisions is a potentially important determinant of cost stickiness. This thesis provides insight into the importance of managerial decision-making in shaping a firm's cost structure.

The first study also extends the cost behaviour literature to investigate the agency factors that drive SG&A cost behaviour in addition to economic factors. The first study contributes to corporate governance literature by investigating the role of corporate governance in cost stickiness in family and non-family firms. The second study extends the existing cost stickiness literature and family firms literature by filling in the gap of risk aversion characteristic in family firms with cost stickiness behaviour. Li et al. (2021) examine the association between management control mechanisms through incentive vega and cost stickiness from operational and managerial decisions.

The second study also contributes to the literature by examining the documented sticky cost responses to the changes in product demand and providing empirical evidence supporting the contextual role of risk tone in 10-K disclosure and the frequency of management earning guidance in shaping this stickiness cost behaviour. This is also the first study that uses risk tone in 10-K disclosure and management earning guidance to examine cost stickiness. Overall, this thesis provides valuable insights into cost, management, and financial accounting literature and

encourages further research to enhance our understanding of underlying mangers' decisions' motivations in shaping a firm's cost structure.

This thesis has implications for management accountants, firm management, and analysts who might be interested in understanding the behaviour of their expense activities (e.g., when generating financial forecasts) and gaining awareness of how managers make accounting decisions to adjust their costs in the family-type governance structure in the United States. The implications are likely to expand further the audience of the cost structure and decision literature besides management accounting researchers or attract the attention of accountants. A better understanding of cost behaviour has functional implications for cost accounting and financial accounting topics such as earnings manipulation and earnings forecasts.

Finally, studies in this thesis also provide implications for financial analysts and auditors. A typical procedure in financial statement analysis involves comparing SG&A expense as a percentage of net sales either across firms within an industry or time series for a specific firm. Financial analysts and auditors explain a disproportionate increase in selling expenses as a negative signal because it maybe represents a loss of managerial control or an effect of unusual sales. This analysis would mislead analysts or decision-makers because the underlying assumption that SG&A expenses move proportionately with sales is not empirical valid when including sales increase and sales decrease data. Similarly, auditors implicitly assume that expenses or costs would change proportionately with sales when they engage in analytical review procedures (Eilifsen and Messier Jr 2000). The analytical procedure would improve from a better understanding of how SG&A costs move with sales revenue.

5.3 Limitations and Suggestions for future research

The results in two studies could be interpreted with the following caveats. First, I have controlled for known economic determinants based on the prior literature; however, it may be possible that I have not considered controlling for all possible economic determinants. In addition, the agency problems and risk aversion factors may not be perfect proxies. Another limitation is that, due to the time-consuming manual data collection process for the family firms database, such as the classification of family firms and common stock of family ownership percentage, this study

collected the data from the S&P 500. Therefore, the data sample observations are not as large as in other cost stickiness studies.

The studies in this thesis suggest several interesting avenues to be explored in future research. The findings in this thesis also provide helpful insights into the management-related and financial accounting-related literature and encourage further research to increase the understanding of the motivation for underlying managers' decision-making about firms' cost structure or change. I leave the investigation of the association between agency problems and risk aversion determinants of sticky cost behaviour and can expect future profitability in future research.

Future research could also investigate the effect of earning persistence on cost stickiness. When earnings series are more persistent, the effect of earnings innovations extends for a longer time. This research direction can contribute to the literature on accounting earnings quality by emphasizing that the moderating role of earnings persistence is critical in managers' cost decision-making.

Future research could examine the effect of auditing on cost stickiness. Auditors implicitly assume that costs should move proportionately with sales. Their analytical review procedure can improve by deeply exploring how SG&A costs move with sales revenues. Generally, the value of an external audit is greater when a firm's internal corporate governance mechanism is weak. Auditors should reduce managers' earnings manipulation because the objective of auditing is to analyse the accuracy and reliability of the reports disclosed by a firm. An auditor's ability to reduce managers' earnings management can be used to measure the audit quality (Hoitash, Markelevich, and Barragato 2007).

Future research can also examine whether cost stickiness during the COVID-19 pandemic. The economy dropped significantly in this event. As a result, most companies cut resources in order to survive. Thus, researchers can investigate the cost stickiness during and after COVID-19 and managers' incentives during and after COVID-19.

Another fruitful or complementary approach in future research will be to determine alternative measures of textural analysis. The findings of Chiu, Kim, and Wang (2019) indicate that risk factor disclosure is useful to capital market participants, that is, narrative risk disclosures, such as disclosures in the risk factor section alone or disclosure in the 8-K and 10-K filings, are relevant to investors. For future research, the researcher can specifically consider the disclosure of related future capital expenditure or future research and development expenses in the 8-K or10-K filings from the SEC's EDGAR website and use Python programming to extract related risk tones. Research can also further consider additional characteristics in the financial statements when exploring how to make resource allocation decisions and explain the implications on a firm's cost structure and capacity utilisation. Furthermore, the researchers could look at other possible forms of textual analysis to analyse the risk aversion and other characteristics or factors that could affect managerial decisions, such as conference calls, earning press releases and meetings, or even conducting interviews with managers.

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Appendices

Table A. 1 Pearson correlation analysis of variables - Risk tone

	Change in SGA	*Change in sale*	*RiskTone*	*Total_ sentence*	*Employee intensity*	*Asset intensity*	*Successive decrease*	*Stock performance*	*Familytype*
Change in SGA	1								
Change in sale	0.7001	1							
	0.0000[a]								
RiskTone	-0.054	-0.0370	1						
	0.0044	0.0508							
Total_sentence	-0.0284	-0.0148	0.8672	1					
	0.1341	0.4348	0.0000						
Employee intensity	-0.0231	-0.0625	-0.2131	-0.0997	1				
	0.2237	0.0010	0.0000	0.0000					
Asset intensity	-0.0206	-0.0664	0.1587	0.1244	-0.2109	1			
	0.2778	0.0005	0.0000	0.0000	0.0000				
Successive decrease	-0.1985	-0.1675	-0.0562	-0.0122	0.0362	0.0625	1		
	0.0000	0.0000	0.0030	0.5201	0.0558	0.0010			
Stock performance	0.1153	0.107	0.0101	-0.0237	-0.1316	0.0460	-0.1224	1	
	0.0000	0.0000	0.5930	0.2120	0.0000	0.0152	0.0000		
Familytype	-0.0753	-0.0611	0.1213	0.0599	-0.0853	0.0236	0.0324	0.0743	1
	0.0001	0.0012	0.0000	0.0016	0.0000	0.2139	0.0870	0.0001	

Notes: This table uses the sample of family firms to analyze the Pearson correlation coefficients of variables. *RiskTone* is log of Risk Tone.
Familytype is a dummy variable, which equals 1 if family firm is an active type and equals 0 if family firm is a passive type.
[a] represents the p value of correlation coefficient.

Table A. 2 Pearson correlation analysis of variables – Management earnings guidance

	Change in SGA	*Change in sale*	*Earnings guidance*	*Employee intensity*	*Asset intensity*	*Successive decrease*	*Stock performance*	*Familytype*
Change in SGA	1							
Change in sale	0.6816	1						
	0.0000[a]							
Earnings guidance	-0.0627	0.0006	1					
	0.0165	0.9816						
Employee intensity	0.0268	-0.0183	-0.0163	1				
	0.3065	0.4842	0.5328					
Asset intensity	-0.0062	-0.0687	-0.0166	-0.2385	1			
	0.8118	0.0086	0.5250	0.0000				
Successive decrease	-0.2399	-0.2138	-0.0424	0.0202	0.0963	1		
	0.0000	0.0000	0.1054	0.4393	0.0002			
Stock performance	0.1384	0.1135	0.0008	-0.1140	0.0356	-0.1517	1	
	0.0000	0.0000	0.9753	0.0000	0.1736	0.0000		
Familytype	-0.046	-0.0192	0.0009	-0.1045	0.0396	0.0378	0.0557	1
	0.0787	0.4636	0.9721	0.0001	0.1299	0.1482	0.0331	

Notes: This table uses the sample of family firms to analyze the Pearson correlation coefficients of variables.

Familytype is a dummy variable, which equals 1 if family firm is an active type and equals 0 if family firm is a passive type.

[a] represents the p value of correlation coefficient.

Table A. 3 Pearson correlation analysis of variables – CEO Gender

	Change in SGA	*Change in sale*	*GENDER*	*Employee intensity*	*Asset intensity*	*Successive decrease*	*Stock performance*	*Familytype*
Change in SGA	1							
Change in sale	0.6877	1						
	0.0000[a]							
GENDER	-0.0219	-0.0100	1					
	0.2807	0.6223						
Employee intensity	-0.0281	-0.0716	-0.0254	1				
	0.1667	0.0004	0.2111					
Asset intensity	-0.0197	-0.0572	-0.0276	-0.2469	1			
	0.3319	0.0049	0.1752	0.0000				
Successive decrease	-0.2067	-0.1697	-0.0125	0.0388	0.0629	1		
	0.0000	0.0000	0.5387	0.0562	0.0020			
Stock performance	0.1148	0.1063	-0.0146	-0.1279	0.0402	-0.1172	1	
	0.0000	0.0000	0.4721	0.0000	0.0484	0.0000		
Familytype	-0.0735	-0.0617	0.0144	-0.0914	0.0090	0.0571	0.0615	1
	0.0003	0.0024	0.4792	0.0000	0.6567	0.0049	0.0025	

Notes: This table uses the sample of family firms to analyze the Pearson correlation coefficients of variables.

Familytype is a dummy variable, which equals 1 if family firm is an active type and equals 0 if family firm is a passive type.

[a] represents the p value of correlation coefficient.

Table A. 4 Pearson correlation analysis of variables – Family ownership

	Change in SGA	*Change in sale*	*Family ownership*	*Employee intensity*	*Asset intensity*	*Successive decrease*	*Stock performance*	*Familytype*
Change in SGA	1							
Change in sale	0.6981	1						
	0.0000							
Family ownership	-0.0816	-0.0693	1					
	0.0000	0.0003						
Employee intensity	-0.0234	-0.0607	0.1826	1				
	0.2175	0.0014	0.0000					
Asset intensity	-0.0112	-0.0576	-0.0558	-0.1987	1			
	0.5567	0.0024	0.0033	0.0000				
Successive decrease	-0.1980	-0.1678	0.0342	0.0316	0.0610	1		
	0.0000	0.0000	0.0716	0.0963	0.0013			
Stock performance	0.1100	0.1052	0.0512	-0.1309	0.0446	-0.1150	1	
	0.0000	0.0000	0.0070	0.0000	0.0187	0.0000		
Familytype	-0.0903	-0.0781	-0.0317	-0.0831	0.0024	0.0404	0.0773	1
	0.0000	0.0000	0.0946	0.0000	0.8997	0.0335	0.0000	

Notes: This table uses the sample of family firms to analyze the Pearson correlation coefficients of variables.

Familytype is a dummy variable, which equals 1 if family firm is an active type and equals 0 if family firm is a passive type.

a represents the p value of correlation coefficient.

Table A. 5 Pearson correlation analysis of variables – Founder CEO

	Change in SGA	*Change in sale*	*Founder*	*Employee intensity*	*Asset intensity*	*Successive decrease*	*Stock performance*	*Familytype*
Change in SGA	1							
Change in sale	0.6982	1						
	0.0000[a]							
Founder	0.1229	0.0981	1					
	0.000	0.0000						
Employee intensity	-0.0242	-0.0636	0.0567	1				
	0.1934	0.0006	0.0022					
Asset intensity	-0.0098	-0.0536	0.0177	-0.2032	1			
	0.5982	0.0039	0.3406	0.0000				
Successive decrease	-0.1979	-0.1675	-0.0304	0.0348	0.0564	1		
	0.0000	0.0000	0.1013	0.0608	0.0024			
Stock performance	0.1110	0.1061	-0.0405	-0.1312	0.0444	-0.1203	1	
	0.0000	0.0000	0.0293	0.0000	0.0167	0.0000		
Familytype	-0.0851	-0.0715	-0.5781	-0.0823	0.0116	0.0314	0.0775	1
	0.0000	0.0001	0.0000	0.0000	0.5336	0.0912	0.0000	

Notes: This table uses the sample of family firms to analyze the Pearson correlation coefficients of variables.

Familytype is a dummy variable, which equals 1 if family firm is an active type and equals 0 if family firm is a passive type.

[a] represents the p value of correlation coefficient.

Table A. 6 Pearson correlation analysis of variables – Idiosyncratic risk

	Change in SGA	*Change in sale*	*IdioRisk1*	*IdioRisk2*	*Employee intensity*	*Asset intensity*	*Successive decrease*	*Stock performance*	*Familytype*
Change in SGA	1								
Change in sale	0.6966	1							
	0.0000[a]								
IdioRisk1	0.0048	-0.0305	1						
	0.8085	0.1271							
IdioRisk2	0.0137	-0.0179	0.9730	1					
	0.4929	0.3694	0.0000						
Employee intensity	-0.0332	-0.0608	0.1123	0.1192	1				
	0.0968	0.0023	0.0000	0.0000					
Asset intensity	-0.0123	-0.0507	-0.0360	-0.0411	-0.1947	1			
	0.5371	0.0111	0.0716	0.0398	0.0000				
Successive decrease	-0.1939	-0.1626	0.1056	0.1036	0.0312	0.0566	1		
	0.0000	0.0000	0.0000	0.0000	0.1190	0.0046			
Stock performance	0.1481	0.1637	-0.2948	-0.2936	-0.2041	0.0223	-0.1480	1	
	0.0000	0.0000	0.0000	0.0000	0.0000	0.2635	0.0000		
Familytype	-0.0664	-0.0574	-0.1485	-0.1485	-0.0756	0.0245	0.0124	0.0714	1
	0.0009	0.0040	0.0000	0.0000	0.0002	0.2209	0.5336	0.0003	

Notes: This table uses the sample of family firms to analyze the Pearson correlation coefficients of variables.

Familytype is a dummy variable, which equals 1 if family firm is an active type and equals 0 if family firm is a passive type.

[a] represents the p value of correlation coefficient.

Table A. 7 Pearson correlation analysis of variables – Financial constraints

	Change in SGA	*Change in sale*	*WW*	*KZ*	*Average WW KZ*	*Employee intensity*	*Asset intensity*	*Successive decrease*	*Stock performance*	*Familytype*
Change in SGA	1									
Change in sale	0.6865	1								
	0.0000[a]									
WW	-0.0679	-0.0897	1							
	0.0006	0.0000								
KZ	0.0161	0.0090	0.0481	1						
	0.4127	0.6477	0.0144							
Average WW KZ	0.0124	0.0041	0.1016	0.9986	1					
	0.5281	0.8332	0.0000	0.0000						
Employee intensity	-0.0435	-0.0744	0.3709	-0.0389	-0.0189	1				
	0.0271	0.0002	0.0000	0.0478	0.3374					
Asset intensity	0.0105	-0.0412	-0.1247	-0.0176	-0.0242	-0.1935	1			
	0.5935	0.0364	0.0000	0.3722	0.2191	0.0000				
Successive decrease	-0.2094	-0.1715	0.1365	0.0357	0.0429	0.0292	0.0511	1		
	00000	00000	00000	0.0698	0.0294	0.1384	0.0093			
Stock performance	0.1053	0.1008	-0.2562	-0.0488	-0.0624	-0.1455	0.0574	-0.1240	1	
	00000	00000	00000	0.0130	0.0015	0.0000	0.0035	0.0000		
Familytype	-0.1001	-0.0920	-0.2038	0.1215	0.1101	-0.0856	0.0381	0.0451	0.0765	1
	0.0000	00000	00000	00000	00000	00000	0.0529	0.0218	0.0001	

Notes: This table uses the sample of family firms to analyze the Pearson correlation coefficients of variables.

Familytype is a dummy variable, which equals 1 if family firm is an active type and equals 0 if family firm is a passive type.

[a] represents the p value of correlation coefficient