

ESSAY ON THE STICKINESS OF SELLING, GENERAL,  
AND ADMINISTRATIVE COST



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บทความนี้เป็นหลักฐานว่าการบริหารต้นทุนมีผลกระทบจากหลายปัจจัยและนักลงทุน  
 สามารถใช้ความรู้นี้ในการวิเคราะห์แนวทางการบริหารต้นทุนของบริษัทได้ ค่าใช้จ่ายในการขาย  
 และบริหาร (SG & A Cost) นั้นมีความเหนียวซึ่งแสดงให้เห็นว่าการจัดการค่าใช้นั้น  
 ไม่สมมาตร ความเหนียวเกิดขึ้นจากการที่ค่าใช้จ่ายในการขายและบริหารลดลงในสัดส่วนที่น้อย  
 กว่าเมื่อรายรับลดลงเมื่อเทียบกับการเพิ่มขึ้นของค่าใช้จ่ายในการขายและบริหารเมื่อรายรับ  
 เพิ่มขึ้น บทความนี้ศึกษาปัจจัยต่างๆที่อาจมีผลต่อความเหนียวของค่าใช้จ่ายในการขายและ  
 บริหารโดยการวิเคราะห์การถดถอย ปัจจัยต่างๆเช่นความเป็นเจ้าของและการกระจุกตัวของความ  
 เป็นเจ้าของนั้นช่วยลดความเหนียวของค่าใช้จ่ายในการขายและบริหารในแต่ละช่วงเวลา บริษัท  
 ที่อยู่ในอุตสาหกรรมบริการมีความเหนียวของค่าใช้จ่ายในการขายและบริหารที่สูงกว่าบริษัทใน  
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This paper provided evidences that costs management is affected by many factors and investors can use this knowledge to analyze the firm's cost management practices. Selling, General, and Administrative Costs (SG&A) appears to be sticky and showed that costs management is asymmetric. The cost stickiness occurs when the SG&A costs decrease by smaller percentage with revenue decrease compare to SG&A costs increase with revenue increase. This paper explored various factors that might have influence on the stickiness of SG&A costs using linear regression. Factors such as managerial ownership and ownership concentration are found to decrease cost stickiness in different periods. Firms within service industry are found to have significantly greater SG&A cost stickiness compare to other industries. Good corporate governance is also found to increase SG&A cost stickiness.

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## CHAPTER 1 Introduction

### 1.1 Background

Cost management is important as it is a part of earnings, which most investors care about. However, the cost management is often overlooked in various relationship studies. The Selling, General and Administrative Cost (SG&A) includes all non-production costs in any period. The costs are separated into two components which are selling cost and general & administrative cost. The selling component includes transaction costs and commission paid on sales which are direct cost. As well as salaries, benefits and wages of salesperson which are indirect cost. The general & administrative components are the overhead costs of a business; it is general ongoing operation of the business. The common component of SG&A cost that are considered fixed include rent, insurance, utilities and supplies. The component of SG&A cost that is considered semi-fixed, at least in the setting of revenue downturn where manager is required to make decisions regarding cost control, include salaries of employees and staffs. The overall salary is a product of individual wage and quantity of employee. The changes to wage or quantity of employee can be reflected in changes in SG&A cost. The SG&A cost is described as fixed or moved in proportion to changes in sales in the past, which is the reason that few researches are conducted about cost management. Anderson et al (2003) label the term “sticky” to describe when SG&A cost decrease less with revenue decreases than SG&A cost increase with revenue increases. In other words, the cost moves asymmetrically with revenue. He suggests that the stickiness occur as a result of management’s deliberate adjustment of resources committed to activities. Recent studies also suggest that costs do not symmetrically move with revenues as costs are also managed by managers, not just following revenues. This is one of the reasons that SG&A cost stickiness should be interesting to study. The fact that SG&A cost, which believed to be proportionately fixed, turn out to be asymmetric as a direct result from manager’s decision. Early literatures (Anderson et al 2003, Calleja et al 2006, He et al 2010) are concern whether the cost stickiness exist in other markets. They have discovered that cost stickiness is common phenomenal worldwide, however, the degree of stickiness

varied across different countries due to various factors. More recent studies have expanded upon the existent of cost stickiness, trying to explain the differences of the stickiness worldwide attributable to many factors. It was found that many factors indeed can affect cost stickiness, including factors that can influence managers' decision such as managers' incentives (Kama and Weiss 2013) and cultural dimension (Kitching et al 2016). This suggests that the managers' character do influence the cost management.

There are various determinants of stickiness of SG&A costs to be explored. However, this research will focus on determinants such as ownership structure, cash holding, service vs non-service industry and corporate governance. These determinants are widely studied regarding their relation with net profit but they are relatively unexplored from the perspective of cost management. They are determinants that might not directly influence the SG&A cost stickiness, but could influence how cost management is conducted. Therefore studying these determinants should give us some insight into how factors affect cost management practices.

Regarding ownership structure, the most well-known agency problem is the conflicts of interest between shareholders and manager as stated by Jensen and Meckling (1976). Managers are supposed to maximize the firms' value. But the conflicts of interest occur due to difference in incentives between managers and shareholders. The incentives for shareholders are maximum firm value because they own the right to cash flow; however, the manager may not hold significant amount of shares to care about firm value. Therefore managers rather act to pursue private benefit at the cost of firm value.

A proper ownership structure can be designed to alleviate the agency problem through various channels. One of the channels is through alignment of incentive. Alignment of incentive occurs as manager hold more shares and more rights to the cash flow, the managers' incentive converge with that of large shareholders which is firm value maximization. Monitoring is another channel which can counter the agency problem. Board of directors, as well as large shareholder can closely monitor managers' actions and allow only appropriate decisions that positively affect the firm.

Managerial ownership and ownership concentration are two measurement of ownership structure that is widely studied in regard to the conflict of interest problem. Managerial ownership is measured as percentage of shares held by the management team. There are many studies done on managerial ownership relation to firm performance but results are conflicting. Such studies include the prediction from Stulz (1988) that managerial ownership and firm value have concave relationship. In concave relationship, at low managerial ownership, it increases firm value. At high managerial ownership, it decreases firm value instead. There are two main theories explaining the concave relationship. The first is alignment of incentive theory, which states that as manager hold more shares, the incentives align with that of larger shareholder thus manager act to improve firm performance. Another theory is on the entrenchment effect, stating that once manager holds large enough number of shares and control, the marginal benefit from incentive alignment decreases and entrenched manager expropriate small investors for private benefit. Ownership concentration, measured by percentage of shares owned by five largest shareholders according to Demsetz and Lehn (1985), is also widely studied. Ownership concentration is greater when most of the shares are in the hands of largest investors; therefore it serves as a proxy for monitoring process. This is because concentrated ownership means greater cash flow rights, giving them all the more incentive to closely monitor the manager.

Managers' actions are important in every firm; however, what is even more critical than the actions are the managers' incentives which ultimately dictate the actions. Managerial ownership and ownership concentration can serve as incentive and control on the managers' actions. The actions manager take include investment decision, resource management and running the firm in general. Most studies are concern with relationship between ownership and firm performance but not many give enough attention to cost management.

Increasing in cash holding within firms worldwide has also become a topic of research. On the one hand, shareholders may doubt whether manager will engage in opportunistic behavior by diverting cash to some activity that privately benefit the manager. Furthermore, the cash held is being tradeoff with the opportunity of investing it elsewhere. On the other hand, high cash holding is often a result of firm

being profitable. Cash are often held waiting for the next investment opportunity, because it is the cheapest source of fund according to the pecking order theory. In addition, there is several research works (Devos and Rahman 2018, He 2018) showing that firms hold more cash in order to strengthen their financial position. The strong financial position is found to be advantages in the labor market for firms. This is because the labors look forward firms with promising job security. Since the labor salary is a major component of SG&A costs, the relationship between stickiness and cash holding should be investigated.

SG&A costs, when focusing on the salary of labor aspect, clearly need special attention when it comes to service firms. The service firms do not require factories to produce physical goods because the products are delivered to clients by their employees. This mean service firms are labor intensive firms, where competitive advantages are generated by employees. The three characteristics of service firms are professionalized employees, high knowledge intensity and low capital intensity. The importance of employees to service firms and the salary components of SG&A costs are therefore interesting for investigation.

Corporate governance is defined as a set of behavioral patterns. The behavior of firms such as performance, growth, efficiency, financial structure and treatments of shareholders and stakeholders are considered. The main concern of corporate governance is to reduce conflicts of interest between various stakeholders, such as shareholders, creditors and the management. Various studies have documented the relationship between corporate governance and firm value. Corporate governance has such large impact on many stakeholders, including employees as well. There are studies highlighting the role of employees in corporate governance and how it is beneficial to firm value (Fauver and Fuerst 2006). Employees can be involved in the governance by having a representative in decision making. The corporate governance is important for investigation because it affects both managers and employees, where both stakeholders can influence the stickiness of SG&A costs.

## 1.2 Objectives

The objectives of this study are to investigate various possible determinants of the stickiness of SG&A costs. The determinants include ownership structure, cash holding, service industry and corporate governance.

Starting with the ownership structure, the first objective of this study is to investigate the effect of managerial ownership and ownership concentration on SG&A cost stickiness. This is because two areas of studies mentioned above have possible linkage for study, one is ownership structure which concerns about incentives of managers and how it reduces the agency problem. Another is the cost management studies which concerns for various factors that influence managers' cost decisions. Ownership and cost management are both linked with the manager in between them. Firstly, ownership influences managers' incentive and thus actions. The managers' actions then affect the cost management as well. This study investigates the link between ownership and cost behavior via the managerial incentive pathway.

It is important to investigate this relationship because it will signify the importance of managerial incentive, which is the root of the conflict of interest problem. Greater insight into how the ownership structure influences the cost management will provide useful information for investors. Information such as whether level of managerial ownership lead to slack cost behavior, or whether concentrated ownership has effective monitoring process at all, both are beneficial for investors. The cost behavior can be used as reflection to the manager, whether the manager has aligned incentive or the company has effective monitoring.

In addition, it is important to investigate the effect of crisis on the cost stickiness as well because stock market crisis has large impact on the economy outlook in general. The period of studies include pre-crisis period (1995-1996), crisis-recovering period (1999-2000) and stable period (2016-2017). The 1996 stock market crisis in Thailand is the first crisis since the beginning of Thailand stock market, therefore would have greatly impact on the economic outlook during that time and slightly after it. The crisis clearly does not only affect the company itself but the managers' view as well. This study will also investigate whether the cost stickiness is affected by the

crisis period. If the cost stickiness is decreased due to crisis, it could that managers' cost management is less slack, monitoring process is more strict and or overly optimistic future demand outlook by manager is reduced.

Overall, the first objective is concern with effect of ownership structure on cost behavior through the managerial incentive pathway. The managerial incentive pathway has manager as the key component that leads to cost decisions of the firm. Also, crisis period is studied to investigate the impact of crisis on managers' cost decisions.

The second objective is to investigate the relationship between cash holdings and the SG&A cost stickiness. This is important as research (Gharly et al 2015) have pointed out the linkage between cash holding and employee welfare. The more important employees are to the firms, the firm holds more cash to strengthen their financial position to ensure job security perception. Since employee salary is a component of SG&A stickiness. It is interesting to investigate if the cash holding and cost stickiness are related via employees.

The third objective is to investigate the relationship between service firms and the SG&A cost stickiness. The distinguished characteristic of service firms are that they rely on employees to deliver their products. The knowledge intensive firms that heavily invest in human capital should continue to invest in human capital even if revenue decreases. This is the possible linkage between the service firms and cost stickiness. Since SG&A cost comprise of employees' salaries as well. The employees link between service firms and cost stickiness, which is interesting for investigation.

The last objective is to investigate the relationship between corporate governance and the SG&A cost stickiness. The corporate governance, in general, exists to solve agency problem which if succeed, would lead to increase in firm value. The corporate governance is concern with fulfilling interests of many stakeholders. One of the stakeholder include employee. Employee wellbeing is the link between cost stickiness with corporate governance.

### 1.3 Hypothesis

According to the alignment of incentive argument, an increase in managerial ownership aligns managers' incentive with shareholders' to maximize firm value. Therefore this should also reflect in the managerial cost behavior. The cost should be less sticky with greater managerial ownership as managers get rid of unnecessary resources in period of revenue decrease. Ownership concentration is a proxy for monitoring, as it is representation of how much of shares are in the hands of small group of larger investors. Increase in ownership concentration means greater monitoring which will serve as control for managerial decision. According to the monitoring argument, we expect the ownership concentration to decrease cost stickiness.

H1: Managerial ownership and ownership concentration decrease SG&A cost stickiness

Managerial ownership and ownership concentration are not perfectly independent from one another. Therefore both factors should not be investigated independently. As managerial ownership theoretically represents alignment of incentives, the ownership concentration represents monitoring process. The monitoring process is a control mechanism which the most direct target of control is the manager. Therefore it is possible that the monitoring process has difference in effectiveness at different level of managerial ownership. For low managerial ownership, monitoring should decrease the cost stickiness. However, for high managerial ownership, where manager has aligned incentive to begin with, the monitoring should decrease the cost stickiness to even greater degree, due to clearer cooperation in addition to monitoring alone. This lead to the development of next hypothesis, the monitoring is more effective with the increase in managerial ownership.

H2: Ownership concentration has greater impact on SG&A cost stickiness at higher level of managerial ownership

The phenomenon of sticky cost occurs due to managers' deliberate retention of resources (Anderson et al 2003). In addition, the managers' views of future demand

affect the cost retention as well. Therefore an event with significant impact on future demand outlook and cost management, such as stock market crisis, should affect the cost behavior as well. In addition, the monitoring process by boards of directors should greatly increase after the crisis period, whether the ownership concentration is highly concentrated or not. This is because other stakeholders are aware of how bad a crisis can affect the company therefore should be more vigilant on the internal of the firm. More strict monitoring also further decrease the cost stickiness as slack resources are more difficult to be retained by managers. In addition, the crisis should effect the relations mentioned in hypothesis 1 and 2 as well. This is because the manager should be more careful with cost decision, thus lead to less cost stickiness. The monitoring process, after experiencing a crisis, should seek to improve its effectiveness as well. Lastly, the interaction effect between manager and monitoring process should be stronger since both sides have experienced crisis and are more careful with cost behavior in general. These arguments lead to development of hypothesis that crisis period affect cost stickiness.

H3: There is decrease in SG&A cost stickiness in crisis-recovering period

Given enough time after the crisis, continuous crisis-recovering of the stock market in the normal period, the future outlook should become more positive to the managers. The positive future outlook that manager has might increase cost stickiness since drop in revenue is more likely to be viewed as temporary, thus SG&A cost is cut slower. In addition, the monitoring process may be weakened after the market has recovered for considerable period of time. This might be due to the monitoring party being slack after experiencing long market growth. These arguments lead to the development of hypothesis that, given enough time for market to recover, the SG&A cost stickiness recover and is stickier than the crisis-recovering period.

H4: There is increase in SG&A cost stickiness in stable period

The cash holding is shown to have relationship with employee wellbeing practice, unemployment risk, and competition for talents. Gathering from many researches, firms hold more cash when they commit to employee wellbeing. When employees face with greater unemployment risk, firm also tend to hold more cash to



ensure job security by having strong financial position. Lastly, strong financial position allows firms to remain competitive in labor market. This relationship between cash holding and employee can translate to cost stickiness in two opposite ways. The first way, when firms hold more cash, it is more desirable for employee to work with that firm. This gives the firm ability to lay off employees in the revenue downturn because the firm's financial position is attractive to new employees anyway and it is easy for re-employment. If this is the case then cash holding would decrease SG&A cost stickiness. The second way, when firms hold more cash, it is the intention of the firm to signal job security to prospective employees. When firms spend resources training employees, it might make them more reluctant to lay off employees in revenue downturn. With second argument, the cash holding should increase SG&A cost stickiness. These arguments are in opposite direction therefore the hypothesis should focus on the net effect of opposite forces. For this hypothesis, it is to see whether firms with cash holding are more or less reluctant to lay off employee. The hypothesis is if firms are more reluctant to lay off employee, it should increase SG&A cost stickiness.

##### H5: Cash holding increases SG&A cost stickiness

Employees are especially important for service firms. As the distinctive characteristic of service firms is that the products are delivered by employees. With this rational, employees are clearly what generate for service firms the competitive advantages. During the revenue decline, it is unlikely for service firms to sharply cut the headcount, the SG&A costs. Service firms still need to continually invest in employees training. In addition, service firms cannot easily substitute skilled employees with other capital such as robots and machines. These arguments lead to next hypothesis development that the SG&A cost stickiness is greater in service firms compare to non-service firms.

##### H6: SG&A cost stickiness is greater for service firms

Human capital is often intangible and can be viewed as organization capital. According to Amatachaya and Saengchote (2018), the organization capital play significant role in providing firms with competitive advantages. The alpha is earned

by firms with higher organization capital relative to physical capital ratio (high O/K ratio). This mean that firms with more capital invested into employees have better performance and return. The alpha from high O/K ratio is also significantly greater when compare between service and non-service firms. This highlights how important employees are to service firms. O/K ratio classified firms into different level of organization capital and can be viewed as how important the employees are to that firm. These arguments lead to next hypothesis development that O/K ratio, signaling importance of employees, should increase the SG&A cost stickiness.

H7: SG&A cost stickiness is greater for firms with higher O/K ratio

Corporate governance rating is a score given to firms based on many factors. Mainly looking at the transparency of the firm, characteristic of boards of directors and how firms tackle agency problem. The main purpose of having corporate governance is to maximize firm value. One might argue that corporate governance might increase firm value by focusing on cost control, and that might result in decrease in cost stickiness. However, firms with good corporate governance do not have to stick to only cost control when the firm value can be increased by various means such as increase in sales. Good corporate governance firms are aware of the importance of various stakeholders such as environment, community and employees. The employee's wellbeing is important in big organizations as it reflect how secure the firm is in a way. The employees' salaries, being a component of SG&A cost therefore might be a link between corporate governance and SG&A cost stickiness. If the good corporate governance firms take employees' wellbeing seriously, then during revenue decrease period, the firms should not aggressively cut down number of employees. This reason lead to hypothesis development that, good corporate governance firms have greater SG&A cost stickiness.

H8: Good corporate governance firms has increased SG&A cost stickiness

## 1.4 Contribution

This study contributes to academic field by bridging four areas of research with that of the SG&A cost stickiness research. The four areas of research include ownership structure, cash holding, service industry and corporate governance.

Although each four are not directly related to the cost stickiness, each different area is related to the stickiness via different linkages. The ownership structure and SG&A cost stickiness is linked via managerial incentives. The study of this linkage will highlight how importance that managerial incentives influence cost management. The cash holding and SG&A cost stickiness is linked via the employees. The study of this linkage will highlight whether firms think it is important to maintain employees during revenue decline period. The service firms and SG&A cost stickiness is also linked via the employees. Highlight whether employees are important in service firms. Lastly, the corporate governance and SG&A cost stickiness is linked via the control through manager. This will highlight how the board of directors might want manager to deal with overhead costs during revenue decline period; given employee is one of the stakeholders.

Another contribution is the use of Thailand samples in my study. Most studies on ownership structure as well as cost management are done using US firm data where ownership is considerably more dispersed and have high regulation regarding corporate governance. Using data from Thailand, one of the developing East Asia countries with high ownership concentration and weaker corporate governance with less legal restrains (Classens et al 2000) mean that the managerial incentive can have higher influence on managerial decision. In addition, the labor protection law may not be as strict and effective as the developed countries, allowing easier removal of employees, thus really showing how firms take care of SG&A costs.

## **CHAPTER 2 Literature Review**

### **2.1 Sticky Cost**

In traditional accounting literatures, Noreen (1991) described costs as fixed or a variable that proportionately changes with the activity driver. Anderson et al (2003) challenges the traditional beliefs that costs move in symmetry with sales. Selling, General and Administrative (SG&A) costs are studied due to meaningful relation as SG&A costs are driven by sales volume and they are widely available for US firms on Compustat database. He studied the relation by an empirical regression model that

relates changes in SG&A costs to the changes in revenue, distinguishing revenue increase period and revenue decrease period by using dummy variable. He found that SG&A costs increases on average 0.55% per 1% increase in sales but decrease only 0.35% per 1% decrease in sales. That is, the SG&A costs move asymmetric to sales, as the cost decrease less with revenue decrease compare to cost increase with revenue increase. This asymmetric behavior is termed “sticky cost”, and explains it as managers’ deliberate adjustment of resources in response to changes in volume. The stickiness occur when there is uncertainty about future demand, manager that are uncertain about future demand choose to delay the reduction of costs, as cost reduction or recommitment will incur adjustment costs. Anderson et al (2003) find evidence of sticky cost and does point out the importance of managerial behavior as it also affect the supposedly fixed resource management.

Recent studies investigate the cost stickiness on other countries other than the US. Calleja et al (2006) replicated the models in existing literature and investigate the sticky cost in UK, US French and German samples. The result is industry and firm specific features affect cost stickiness. They concluded that cost stickiness exist for all four countries. Cost stickiness is greater in French and German firms which they explain as differences in the systems of corporate governance and managerial oversight. In the US and the UK, the common-law system of corporate governance put most emphasis on shareholder interests, which explains the greater stickiness as management is pressured to pursue interest of shareholders. In contrast, the French and German corporate governance system is focuses on compromising external and internal interest groups. When corporate governance concerns a wider range of stakeholders, as well as more social protection to labor forces, it is more costly for French and German firms to downsize their employees quickly, resulting in greater cost stickiness.

He et al (2010) investigated whether sticky cost exists in Japanese firm, and to test cost behavior after stock market collapse in 1990. The results show cost stickiness found in Japanese firms. Also, the asset intensity of the firms and the higher economic growth increases cost stickiness. This is due to manager viewing decline in sales to be temporary in strong economic growth period, thus not cutting resources as fast. As for

asset intensity, it is more difficult for firms that rely more on asset to generate revenue to quickly cut the asset. They also find significant decrease in the cost stickiness after the burst of asset bubble, showing how the managers' cost behavior have changed post-bubble era.

Recent literatures show that sticky cost is common phenomenal worldwide, however, each country differed in the level of stickiness due to various factors. One interesting factor is national culture which has been defined by Hofstede (1980) as "the collective programming of the mind which distinguishes the members of one human group from another". Kitching et al (2016) examined how national culture may affect managers' decisions making. They used regression model adapted from Anderson et al (2003) with a sample of firms from 39 countries. It was found that countries with higher uncertainty avoidance, masculinity and long-term orientation have lower cost stickiness. Society with uncertainty avoidance feels uncomfortable when faced with uncertain or unknown situations. The individuals prefer more predictable environments. The effect of uncertainty avoidance work on cost stickiness through two channel, one is managers' reactions to demand uncertainty, second is empire-building behavior, both are expected to reduce stickiness. Masculinity is described as societies with distinct social gender roles. It can affect stickiness in two channels, one is psychological adjustment costs, two is empire-building behavior, and both work in opposite directions. Masculinity culture feel less adjustment cost relating to firing employees (Anderson et al 2003), thus lower stickiness compare to feminine culture. However, masculinity also enjoys more power and empire-building thus increase stickiness. Long-term orientation mean fostering of virtues oriented towards future rewards. It can affect stickiness on three channels: psychological adjustment costs, managers' assessments of future demand and behavioral trait. Pressure to provide long term employment and long-term-oriented manager more likely to consider future demand reversal are two channels that increase stickiness. However, the behavioral trait of thriftiness make manager focus on cost control which decrease stickiness, opposite direction with former two channels. The study showed the link between culture and sticky costs. Culture among other variable does affect managers' choices which in turns gets reflected in the degree of cost stickiness.

Many studies show that various factors that affect managerial incentives seem to influence on the cost behavior. A recent literature, by Kama and Weiss (2013) explore motivations underlying managers' resource adjustment. They found managers' incentives such as avoid losses, earnings decreases or meeting financial analysts' earnings forecast decrease degree of cost stickiness. This is because managers intentionally adjust resource to fit their incentives.

Agency problem is an important explanation to why managerial incentives have impact on resource management. Chen et al (2012) investigated the relationship between agency problem, corporate governance and the asymmetric behavior of SG&A cost. The first research question was to test whether SG&A cost stickiness is increased by the agency problem. Using S&P 1500 firms from period 1996-2005, four variables were used as proxy for empire building incentives. Free cash flow (FCF), executive officer (CEO) horizon, tenure and compensation structure. They concluded that cost stickiness increased with agency problem. With this result, the second research question was whether this positive effect of agency problem on cost stickiness, can be mitigated by strong corporate governance. The sample was split into two subsamples based in the corporate governance factors. In the strong corporate governance group, the positive effect between the agency problem and SG&A cost stickiness become weaker. This suggests that the positive effect of the agency problem on SG&A cost asymmetry is reduced by strong corporate governance.

## 2.2 Ownership Structure

Previous researches have focused on the relationship between managerial ownership and corporate performance. This is due to the agency problem arising from misaligned incentives between managers and shareholders (Jensen and Meckling 1976). The manager-shareholder conflict has negative impact on firm value, therefore it is important to reduce the manager-shareholder conflict to maximize firm value. Jensen and Meckling (1976) argued that higher level of managerial ownership help align the incentive of manager with incentive of shareholders. The incentive-alignment effect reduces perk consumption and reduces suboptimal investment policies, this lead to better firm performance. However, Stulz (1988) argued that the relationship between managerial ownership and firm performance is nonlinear. He

demonstrated that at sufficiently high levels of managerial ownership, entrenchment effect occurs. Entrenched managers exert insufficient effort and expropriate minority shareholders for private benefits leading to worse firm performance.

There have been mixed results in the US regarding tests between managerial ownership and firm value. Demsetz and Lehn (1985) find no relationship between ownership concentration and corporate profits. However, Morck et al (1988) and Stulz (1988) found inverse-U relationship between managerial ownership and Tobin's Q (proxy of firm value). The mixed findings are attributed to the statistical methods that previous research used. Recent research by Demsetz and Villalonga (2001) studied the ownership structure using two-stage least-squares (2SLS) method and found that ownership structure has no impact on Tobin's Q; instead, Tobin's Q negatively impacts ownership structure. Cho (1998) used three endogenous variables in a three-equation simultaneous equation system. The endogenous variables include corporate value, managerial ownership and investment. The finding was that investment affects corporate value then affects ownership structure. But ownership do not affect corporate value. Himmelberg et al. (1999) argued that unobserved firm heterogeneity is not controlled by prior studies which suggested possible spurious relation between managerial ownership and firm performance.

Despite conflicting results of empirical researches that focused on firm performance. Many recent studies expand the relationship of managerial ownership and ownership concentration to various factors beyond firm performance. Fan and Wong (2002) examined the relations between earnings informativeness and ownership structure of 977 companies in seven East Asia economies. There are two explanations for how earnings informativeness and ownership structure are related. The first explanation, agency conflict between controlling owners and outside investors is created through concentrated ownership with pyramidal and cross holding. As a consequence, outside investors doubt the credibility of reported earnings because they perceive controlling owners to have self-interested purposes in reporting accounting information. The second explanation, ownership concentration prevents leakage of private information. Both explanations are based on entrenchment and information effect argument respectively, both predicting negative relation

between ownership concentration and earnings informativeness. Their empirical results are consistent with the predictions of the entrenchment and information affects arguments, highlighting how important ownership structure can influence managerial decisions which impact accounting report.

Sousa and Galdi (2016) investigated the relationship between ownership concentration and earnings quality of Brazilian firms. Earnings quality is proxies by two measures: earnings persistence and conservatism. Their result showed that concentrated ownership structure increases accounting conservatism which then leads to biased market information. Ownership concentration also is negatively related to earnings persistence and sustainability. Their study suggests the importance of accessing quality of accounting numbers with consideration of aspects related to ownership concentration. The results also suggest that ownership structure may influence earnings forecast accuracy.

Dispersed ownership is an assumption used in literatures studying role and function of the modern firms. Although largest American firms do have some ownership concentration (Demsetz 1983), however, other countries display greater ownership concentration level (La Porta et al 1998). La Porta et al (1998) is the first study to investigate the issue of ultimate control by tracing chain of ownership to determine who has the most voting rights. The results suggested that separation of ownership and control is beneficial to controlling shareholders as they can expropriate from minority shareholders, which is agency problem. Claessens et al (2000) improve on their methodologies and apply it to East Asia. They investigate the separation of ownership and control in 2,980 publicly traded companies in nine East Asia countries (Hong Kong, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand). More than two-third of firms are controlled by a single shareholder. Pyramid structures and cross-holdings are used to enhance control. Top management of about 60% of firms relating to the family of the controlling shareholder also indicates high ownership concentration. Family controlled firms are mostly old, which mean that ownership do not disperse over time. As the country become more developed the concentration of control in each firms decrease. This means that less developed countries have very concentrated control. In developing



East Asia countries, wealth concentration exists in the hands of few families which might have negative impact on legal and corporate governance policy. These findings show that controlling shareholders may expropriate from minority shareholders.

A recent study showed that ownership and governance structure of their firms lead to different CEO's management styles. Mullins and Schoar (2016) surveyed 800 CEOs in 22 emerging economies. They find that CEOs of family firms (greater ownership concentration) focus more on other stakeholders, such as employees and banks. Their role is seen as maintaining the status quo and has more hierarchical management approach. However, non-family firms' CEOs (low ownership concentration) focus on firm value maximization for shareholders and bringing about change. Management philosophies are found to be explained by ownership variation in addition to cross-country and industry-level differences. This highlights how ownership structures have deep impact on CEOs and their management decisions.

### **2.3 Cash Holding**

Various researches focus on the motives for cash holding. Corporate finance research has suggested that the decision of companies to keep cash can be described by three models. The three models are the pecking order model of Myers and Majluf (1984), the free-cash flow model (Jensen 1986) and the trade-off model (Modigliani and Miller 1958). The first model, the pecking order model states that companies are required to keep cash for new investment opportunities. Cash is used as first resource because the cost is the cheapest. The cost of funding via external funding is expensive due to asymmetric information. The bank loan, and equity raised from issuing more shares are the last resort when company need cash for new investments. The cash that companies keep does not have a target amount but are used as buffer between earnings and investments. The second model, the Jensen's free-cash flow model argued that in order for managers to get more assets under control, the excess cash are hold in reserves. In doing this, the manager power increases and do not require permission of the shareholders to accept new projects. The third model, the trade-off model is based on the trade-off between the marginal benefits and marginal costs of holding cash. The benefit from holding cash is that the company is less likely to be in

financial distress. The precautionary motive is consistent with how cash reserve is used as insurance to survive period of downturn markets.

A strand of more recent research has focus on cash holdings and different firm characteristics. Guney et al (2007) found leverage and cash holding to have U shape relationship, when leverage is either very low or very high, firms hold more cash. Another factor studied is firm size; Ferreira and Vilela (2004) give two explanations as to why large companies hold more cash. The first reason arises from managerial discretion due to having dispersed shareholders. The second reason is that the cash are kept in larger amount to prevent takeovers.

Research regarding cash holding and employee is relevant to the thesis since employee salary is a component of the SG&A costs. Gharly et al (2015) examines the relation between employee welfare practices and corporate cash holding. The idea behind this study is the stakeholder theory, which suggests that the non-financial stakeholders such as customers, suppliers and employees have influence on the firm's financial policy. There are non-contractual implicit claim promised to employees that the firm must keep. The implicit claims include employee benefits, working conditions, job security, career progression and retirement plans. And one way to keep these claims is to have conservative financial policy. The stakeholder theory argues that firms maintain substantial financial resources as credible promises to employees. Therefore the relationship between employee welfare and cash holding was studied. This study create employee welfare index (EWI) from employee relations ratings in order to proxy for firms' employee-friendly practice. The study used a sample of 13,752 firm-year observations between 2003-2009 in the US market. They found evidence that when firms try to maintain higher standards of employee welfare (having higher EWI score), they hold more cash. Their result aligns with the prediction from the stakeholder theory. In addition, the effect of EWI on cash holdings is more pronounce in human-capital-intensive firms in industries that require intensive human capital such as healthcare and high-tech industries. Overall, this study identify that the commitment to employee well-being is important reason for firms to hold cash.

Employment protection and labor regulation is common worldwide. The influence on firm is interesting to study. Cui et al (2018) examine how corporate cash holdings are influenced by employment protection. Under tradeoff framework, they argue that employment protection raises firms' adjustment costs of labor, which in turn increase cash holdings. When adjustment cost increases, the expected cost of financial distress increased through two effects. The first effect is when firm facing financial distress have to lay off employees to cover decreased cash flow, this adjustment cost then contribute to cost of financial distress. The second effect is when firm have lower incentives to adjust labor force in responses to economic conditions. Both effects lead to higher expected cost of distress. In response to the possibility of distress, firms hold more cash, which is a precautionary motive. This study employs difference-in-difference approach and use law's enactment to identify employment protection. They compare changes in cash holdings before and after the law enactment in two groups of firms, high and low labor intensity groups. The results show that high labor intensive firms significantly hold more cash after the employee protection law enactment. This study shows that employment protection can influence the firm financial policy.

Cash holding seem to be influenced by employee in numerous ways. One of the implicit claims in stakeholder theory is the job security which directly translates to unemployment risk. Devos and Rahman (2018) investigate the relationship between cash holding and unemployment risk. The unemployed face with personal and emotional distresses which are considered cost of unemployment. This is unwanted by any employees, therefore employees demand higher wage in the presence of unemployment risk. For firm to avoid higher compensating wage, the firm tent to choose conservative leverage policies to ensure employee of low unemployment risk. In order to manage the perception of job security, firm will maintain more cash. Firms with more cash holding will increase employees' perception of job security. In addition, new recruits often stay away from firm with low level of cash due to perceived unemployment risk. Therefore firm with more cash enjoy lower cost of retaining employees and lower search cost. With these arguments, they hypothesize that firm mitigate these costs by holding more cash. They investigate the relationship

between cash holding and unemployment risk. They use the unemployment insurance benefit (UI) as proxy for unemployment risk. If the UI benefit increase, then it means that the unemployment risk decrease, and vice versa. They use difference in differences approach to investigate two sets of firms. One headquartered in stated that experience more than 10% increase in UI benefit (firms with decrease unemployment risk), and control group where firms headquartered in stated without UI benefit increase (firms with no change in unemployment risk). The regression of cash level on UI benefit show that increase in UI benefit lead firms to hold less cash. This concludes that unemployment risk is positively related to cash holding. In addition, they also found that the relationship is more pronounce in labor intensive firm, firm with high payoff propensity and firms with high fraction of low-wage workers. Overall, this study also demonstrates that cash holdings are affected by employees as well.

Competition for talented employees is more intense for knowledge based industries. When skilled labor is what drives value for skilled labor intensive firms, it is costly for firm to lose labor. The knowledge leak to competitors can erode firm's competitive position which negatively affects firm value. In order to prevent leakage of talent and to attract skilled workers, firm has incentives to hold more cash to strengthen their financial balances. However, the firm does not need strong financial position if they apply covenants not to complete in the post-employment contracts. This is because the employees are prevented from moving to other firms within specified period. He (2018) studied how cash holding might be impact by competition for talents. By using noncompetition enforceability index, he noticed significant increase in workers' movement when enforceability is reduced. The results show that, firms experiencing higher enforceability, meaning less competition for workers, hold significantly less cash. This highlights how the competition for labor leads firms to increase cash holding. In addition, the effect is more concentrated to knowledge-based firm where skilled labor is more important. In conclusion, firms need strong financial position to compete in labor market and the cash holding can be used as a strategy to retain and recruit skilled labor.

## 2.4 Service Industry

Service firms are different from manufacturing firms in a number of ways. The main differences are their output, where manufacturers output is more physical, tangible and require production site. The output of service firms is intangible such as consultancy or maintenance. The service firms do not produce physical good for sale because they provide service by their employee, therefore inventory are not needed for service firms. The employee in service firms require specific knowledge in the area they are providing service, it is labor intensive and hardly automated, often service is tailored specifically for clients.

According to Nordenflycht (2010), professional service firms can be identified with three characteristics, which are knowledge intensity, low capital intensity and professionalized workforce. The most fundamental distinctive characteristic of service firm is the knowledge intensity. It implies that the production of output relies on complex knowledge, even if the knowledge is embedded in equipment, products and organizational routines. Knowledge intensity leads to two key managerial challenges, cat herding and opaque quality. Skilled employee has strong bargaining position relative to the firm and transferable skill to other firm. Therefore it is challenging to retain and direct the skilled workers. These skilled workers prefer autonomy and do not welcome formal organizational supervision. Managing firms with high knowledge intensity requires guiding and persuading instead of commanding, this is called cat herding problem. The cat herding problem is countered by alternative compensation mechanism and informality in organizational structure. The second key managerial challenge is opaque quality, referring to situations when product by experts is hard for non-experts to evaluate. Firms tackle the opaque quality, in order to ensure that experts produce high quality service output by using four mechanisms to signal quality. Bonding mechanism create penalty for producing low quality. Reputation mechanism is required for worker to maintain quality. Appearance of the firm and employee also serve as mechanism to signal quality. Lastly is the ethical code to protect clients' interests. The second distinctive characteristic to service firm is low capital intensity. This is because service firm do not require factories and equipment for production, as well as inventory for storing goods. The low non-human assets that

service firms have further increase employees' bargaining power. However, the advantage is reduced need for external fund raising, this help reducing cat herding problem because less outside investors mean less informality which satisfy the knowledge intensive employees. The third distinctive characteristic is professionalized workforce. The word professionalized in this case means that workforce has three feature, knowledge, regulation & control and ideology. It idea is that knowledgeable employees are regulated by certifications, which raise the entry barrier into industry. The employees also require having ideology that protects the interest of clients as well. Overall, the service firm is considered heavily knowledge-intensive and greatly relied on the human capital, the employees.

Service firms heavily relying on knowledge intensive employees for competitive advantage do have some downside to it. When firms train employees, it is considered that the firm has invested organization capital into the employee, which embedded into human capital. However, employees moving to rival firms mean that this invested organization capital is easily transferred to rival firm as well. Amatachaya and Saengchote (2018) have investigated whether investors demand premium for this risk in Thailand. The firms with highest ratio of organization capital to physical capital (O/K ratio) earns alpha after controlling for size, value and momentum. This means that investors do realize the risk of transferrable organization capital and demand premium for it in Thailand. Furthermore, the risk is clearly more visible in the service firms as they heavily rely on employees. Therefore, the study compares the alpha between service and non-service firms. By comparing between the portfolios with highest O/K ratio, it was found that service firms have significantly greater alpha. In conclusion, this study found that investors do demand for premium due to risk of losing organization capital when talents leave. In addition, the risk premium is greater in service firms as expected from firms that rely more on talents to generate competitive advantages. The study also distinguishes differences between service and non-service firms.

## **2.5 Corporate Governance**

Corporate governance can be separated into two categories of definition. One of the categories defines it as a set of behavioral patterns. The behavior of firms such

as performance, growth, efficiency, financial structure and treatments of shareholder and stakeholders are considered. Another category of definition is concern about rules which govern the firms. The rules come from legal system, judicial system, financial market as well as labor markets. Despite broad definition of corporate governance, its main concern is conflicts of interest between various stakeholders, such as shareholders, creditors and the management.

Researches have focus on relationship between corporate governance and firm performance. Firm performance is what believed to be good if the governance behavior of the firm is value maximizing. Nazir and Afza (2018) investigated the relationship between corporate governance and discretionary earnings management in Pakistan. The discretionary earnings management is a cause by agency problem. The opportunistic manager alters the firm's accounting report to temporary increase firm value. In doing so, the firm value is negatively affected as the transparency of accounting report is reduced. At the same time, manager can enjoy private benefit such as meeting the earnings forecast. The corporate governance is predicted to mitigate this opportunistic behavior of the manager via the moderating role. The study found that corporate governance does have moderation effect as it is positively related to firm value.

Firm-level corporate governance information is becoming more detailed and available for multiple countries worldwide. This has allowed new research to investigate unique new dataset on the firm value and corporate governance. Ammann et al (2011) examined relationship between corporate governance and firm value. The Governance Metrics International (GMI) data is unused and comprise of 6663 firm-year observations from 22 developed countries covering period 2003-2007. The GMI contains 64 different governance attribute and is classified into six categories, market for control and corporate behavior, financial disclosure and internal control, remuneration, shareholder rights, and board accountability. The study construct corporate governance index by equal weighting of 64 governance attribute. There was significant and positive relation between firm value and corporate governance. In addition, this study also able to investigate the effect of corporate social responsibility and found out that it is positively related to firm performance as well.

Another research that used firm-level corporate governance data is by Morey et al (2009). They investigate the relationship between firm value and corporate governance in 21 emerging market countries. The new firm-level corporate governance ratings dataset from AllianceBernstein is monthly-updated and cover five year period. The monthly update allows this study to investigate firms on a time-series basis. This allows the investigation into the effects of changes in corporate governance ratings. As a result, the study has found that firms with improvement in corporate governance ratings lead to higher firm value.

Apart from firm value, the relationship between corporate governance and liquidity has also been on the spotlight for many researches as well. Prommin et al (2014) investigated the effect of corporate governance on stock liquidity in Thailand. The rationale is that, corporate governance can reduce agency problem of adverse selection by improving transparency of finance and operation. Investors are believed to provide stocks with more liquidity if the adverse selection problem is reduced. The data is from 100 firms in Stock Exchange of Thailand (SET), within SET100 index to be specific, from period 2006-2009. The governance index constructed from nine governance factors related to boards of directors, executive compensation, audit, and director nominations are used as measurement for corporate governance quality. The stock liquidities are Amihid's illiquidity, liquidity ratio and turnover. The regression result reveals that within firms, corporate governance is positively related to liquidity. The relationship is economically significant as well, when governance quality increase by one standard deviation, the liquidity ratio increase by 26.19%.

Corporate governance may have effect on liquidity; however, information asymmetric arising from concentrated ownership may hinder the effectiveness of corporate governance. Prommin et al (2016) later on investigate the interactions among liquidity, ownership structure and corporate governance in Thailand. The samples were from SET100 index, the same samples and time period as Prommin et al (2014). High ownership concentration mean that majority of shares are in the hands of large investors. Information asymmetry arises due to expectation that large investors are more informed. This increase adverse selection and result in lower liquidity. If corporate governance can indeed reduce adverse selection by promoting



transparency, the information asymmetry should reduce. It was found that, ownership concentration do result in lower liquidity, highlighting presence of information asymmetry. The relationship between liquidity and ownership concentration is not varied between corporate governance levels. This suggests that corporate governance is ineffective in emerging markets. Another suggestion is that corporate governance might become ineffective due to very high ownership concentration.

Corporate governance has been viewed as responsibilities of board of directors that ultimately comes from shareholders, however, that is not the case in Germany. Germany has law that requires employee representation on the supervisory board. Fauver and Fuerst (2006) investigate corporate governance beyond shareholder view. They aim to see whether employee involvement in governance can increase firm value. Employee representative in governance should act to protect their own interests, which might also indirectly protect minor shareholders' interests. The result shows that employees improve monitoring capability to the board and this significantly increases firm value. Employee representation is found to be positively related with Tobin's Q for firms that required high coordination with workers. The firm also pay more dividend, showing effective monitoring. Their study suggests that employee representation can improve corporate governance which leads to improvement in firm value, especially for firms that need great coordination with employees.

From shareholders perspective, letting employees have too much governance decision may seem disadvantages to firm value. Balsmeier et al (2013) investigate the employees voting power and firm performance. The voting power of employees was calculated using game theory power indices. The employee voting power is different in these two scenarios. The first scenario, employee with independent directors representing disperse investors. The second scenario, employees confront one owner holding 66% of all votes. In this case, the employees' voting power would clearly be higher in the first scenario. The study found labor power and Tobin's Q to have inverse U-shaped relationship. This highlight the positive effect on firm value when having moderate employee power in corporate board decision making.

## CHAPTER 3 Data and Methodology

### 3.1 Sample

For ownership structure study, sample contains 2 parts. The first part sample will include 50 firms randomly sampled from the Stock Exchange of Thailand. Those 50 stocks will require data from all three periods: pre-crisis, crisis-recovering, and stable periods. The 1995 to 1996 period is pre-crisis period. The 1999 to 2000 is crisis-recovering period. The 2016 to 2017 is a stable period. The second part is another 50 firms, randomly sampled from the Stock Exchange of Thailand, but each period is sample separately. Overall, each period contain 100 stocks, 50 stocks being the same as other periods, another 50 stocks potentially different from other periods

For other studies, all stocks available in the Stock Exchange of Thailand will be used for sample. The periods to include are from 1990 to 2017 because it includes the downturn and upturn of the stock market.

### 3.2 Data Description

Table 1

Data required and its source

Abbreviation	Description	Unit	Source
SGA	Selling, General and Administrative costs	Million Baht annually	DataStream
Rev	Revenue	Million Baht annually	DataStream
Asset	Asset	Million Baht annually	DataStream
PPE	Property, Plant and Equipment	Million Baht annually	DataStream
MO	Managerial Ownership	%	Self-collected from SETSMART
OC	Ownership Concentration	%	Self-collected from SETSMART

Cash	Cash	Million Baht annually	DataStream
MS	Marketable Security	Million Baht annually	DataStream
Depre	Depreciation, Depletion and Amortization	Million Baht annually	DataStream
CGs	Corporate Governance Score, scaling from 3 to 5 where higher score means better corporate governance	-	SETSMART
CPI	Consumer Price Index	-	Bank of Thailand

SG&A, Revenue, Assets, Cash and Marketable Security are available in the financial statements information for Individuals Company in SETSMART and can be obtained from DataStream. The yearly changes in SG&A and Revenue of over 100% are considered outliers and are removed from observations. Errors from DataStream and zeros are also removed from observations.

Managerial Ownership will be separated into 3 variables. The first group MOA will contain the stock ownership of those with highest ranking positions. The positions include President, CEO and managing director. The second group MOB will contain the stock ownership of the rest of the management team, which include directors and independent directors. The third group MOAoB will contain the stock ownership of the top executives as well as the rest of the management team. The names, positions, and percentage of shares held can be obtained from the SETSMART under the management section.

Ownership Concentration (OC) is the percentage of shares hold by five largest investors according to Demsetz and Lehn (1985). Their study used both five largest shareholders (A5) and twenty largest shareholders (A20) and found the correlation of

ownership measure between A5 and A20 is 0.92. They also stated that ownership measure beyond twenty is difficult to interpret and twenty is considered workable outer limit. Therefore this study will adopt the five largest shareholders (A5) as ownership concentration measure. The Major Shareholder page on SETSMART contains lists of large shareholders' holding information needed for this calculation.

### 3.3 Methodology

This study adapts the regression model from the empirical model used to study SG&A stickiness in the Anderson et al (2003) paper. All test statistics will be t-test, however, since this study involve with industries, therefore the standard errors will be clustered by industries for robustness. The original model used by Anderson et al (2003) is as follow:

$$\begin{aligned} \log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = & \beta_0 + \beta_1 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2 D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3 \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] \\ & + \beta_4 D \cdot \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5 \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6 D \cdot \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \varepsilon_{i,t} \end{aligned} \quad (0)$$

The change in % of SG&A cost corresponding to 1% change in revenue when the preceding revenue is lower than current revenue is the  $\beta_1$ . The term  $D$  is a dummy variable for decrease revenue, taking a value of 1 when preceding revenue is greater than current revenue. When the revenue increase by 1%, SG&A increase by  $\beta_1\%$ , however, when the revenue decrease by 1%, SG&A decrease by  $[\beta_1 + \beta_2]\%$ . Therefore, negative significant  $\beta_2$  show that sticky cost exists. The asset intensity  $\left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right]$  serving as control variable as the firms with greater asset intensity requires higher asset to generate revenue, therefore would increase SG&A cost stickiness as well. The  $\left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right]$  serves as control variables for proportions of fixed cost that firms have.

To test hypothesis 1, Managerial Ownership (A, B and AoB) decreases SG&A cost stickiness and Ownership Concentration decreases SG&A cost stickiness. Variables, MOA, MOB, MOAoB and OC are added into the regression model.

$$\begin{aligned} \log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = & \beta_0 + \beta_1 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2 D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3 \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] \\ & + \beta_4 D \cdot \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5 \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6 D \cdot \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] \\ & + \gamma_j D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot MO_{i,t} + \gamma_4 D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot OC_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Where  $j = MOA_{i,t}, MOB_{i,t}$  and  $MOAoB_{i,t}$

The term  $MO_{i,t}$  shown in the (1) stand for  $MOA_{i,t}, MOB_{i,t}$  and  $MOAoB_{i,t}$ .

To test hypothesis 1 that Managerial Ownership and Ownership Concentration decrease stickiness, the  $\gamma_j$  and  $\gamma_4$  are tested whether it is positive and significant.

To test hypothesis 2, Ownership Concentration has greater impact on SG&A cost stickiness at higher level of managerial ownership. Interaction terms between MO (A, B and AoB) and OC are added.

$$\begin{aligned} \log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = & \beta_0 + \beta_1 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2 D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3 \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] \\ & + \beta_4 D \cdot \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5 \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6 D \cdot \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] \\ & + \gamma_j D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot MO_{i,t} + \gamma_4 D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot OC_{i,t} \\ & + \theta_j D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot MO_{i,t} \cdot OC_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

Where  $j = MOA_{i,t}, MOB_{i,t}$  and  $MOAoB_{i,t}$

To test the hypothesis 2 that ownership concentration has greater impact on SG&A cost stickiness at higher level of managerial ownership. The  $\theta_j$  are tested whether it is positive and significant

To test hypothesis 3 SG&A cost is less sticky after crisis period. Two dummy variables, PC and CR are added for three sample period. PC is a dummy variable taking value of 1 for Pre-crisis period during 1995-1996 and taking value of 0 otherwise. CR is a dummy variable taking value of 1 for crisis-recovering Period during 1999-2000. If both PC and CR is 0, then the period is Stable Period during 2016-2017. To test hypothesis 3, the focus is on the differences in SG&A cost stickiness in three periods.

$$\begin{aligned}
 X_{i,t}^k = & \beta_0^k + \beta_1^k \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2^k D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3^k \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] \\
 & + \beta_4^k D \cdot \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5^k \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6^k D \cdot \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] \\
 & + \gamma_j^k D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot MO_{i,t} + \gamma_4^k D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot OC_{i,t} \\
 & + \theta_j^k D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot MO_{i,t} \cdot OC_{i,t} + \varepsilon_{i,t}
 \end{aligned}$$

Then

$$\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = X_{i,t}^{SP} + X_{i,t}^{CR} \cdot CR + X_{i,t}^{PC} \cdot PC \quad (3/4)$$

Where  $j = MOA_{i,t}, MOB_{i,t}$  and  $MOAoB_{i,t}$

Where  $k = SP, CR$  and  $PC$

To test the hypothesis 3 that SG&A cost stickiness decrease after the crisis period. When comparing the Pre-crisis and crisis-recovering Period.  $\gamma_j^{CR}$ ,  $\gamma_4^{CR}$  and  $\theta_j^{CR}$  should be positive and significant, as well as have greater value than  $\gamma_j^{PC}$ ,  $\gamma_4^{PC}$  and  $\theta_j^{PC}$  respectively.

To test the hypothesis 4 that SG&A cost stickiness increase in the stable period. When comparing the crisis-recovering Period and Stable Period. The same regression model 3 is used. The test is to see whether  $\gamma_j^{CR}$ ,  $\gamma_4^{CR}$  and  $\theta_j^{CR}$  are be positive and significant.

To test the hypothesis 5, whether cash holding increase cost stickiness, cash holding (CH) is introduced as independent variable into the regression model.

$$\begin{aligned} \log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = & \beta_0 + \beta_1 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2 D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3 \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] \\ & + \beta_4 D \cdot \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5 \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6 D \cdot \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] \\ & + \beta_7 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] CH_{i,t} + \beta_8 D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] CH_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (5)$$

The cash holding (CH) according to Opler et al (1999) is calculated as  $= \frac{Cash+MS}{Assets-(Cash+MS)}$ , where MS stands for Marketable Securities. To test hypothesis 5 that the cash holding increase cost stickiness,  $\beta_8$  is tested whether it is negative and significant.

To test hypothesis 6a, whether service firms have greater cost stickiness, dummy variable “S” are added to model 6

$$\begin{aligned} X_{i,t}^k = & \beta_0^k + \beta_1^k \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2^k D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3^k \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] \\ & + \beta_4^k D \cdot \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5^k \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6^k D \cdot \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \varepsilon_{i,t} \\ \log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = & X_{i,t}^{NS} + X_{i,t}^S \cdot S \end{aligned} \quad (6a)$$

Where  $k = NS, S$

The industries label of firms is available from SETSMART. There are total of 9 industrial classifications (Agro, Consump, Financial, Indus, Propcon, Resource, Service and Tech, Not Available). For the hypothesis 6a, the Service firms are represented by S dummy variable. All 8 other industries are considered non-service-industry. Therefore,  $S = 0$  will represent non-service (NS, other 8 industries). To test hypothesis 6a, the  $\beta_2^S$  is tested whether it is negative and significant.

To test hypothesis 6b, the other 7 industries are separately compared with the service industry, therefore there is no longer the need to lump 7 industries into non-service-industry. There need to be 7 dummy variables for 8 categories. Therefore 7 dummy variables are the first letter from each industry. For example “A” is dummy variable for Agro, “R” is dummy variable for Resource.

$$\begin{aligned}
 X_{i,t}^k &= \beta_0^k + \beta_1^k \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2^k D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3^k \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] \\
 &\quad + \beta_4^k D \cdot \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5^k \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6^k D \cdot \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \varepsilon_{i,t} \\
 \log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] &= X_{i,t}^S + X_{i,t}^A \cdot A + X_{i,t}^C \cdot C + X_{i,t}^F \cdot F + X_{i,t}^I \cdot I + X_{i,t}^P \cdot P + X_{i,t}^R \cdot R + X_{i,t}^T \cdot T + X_{i,t}^{NA} \\
 &\quad \cdot NA
 \end{aligned} \tag{6b}$$

Where  $k = A, C, F, I, P, R, T, NA$

If all dummy variables are 0, then it represents Service industry. Testing hypothesis 6b is to test whether individual  $\beta_2^k$  are positive and significant for 8 dummy variables ( $k$ ).

To test hypothesis 7, measurement of level of organization capital is calculated using the methodology of Amatachaya and Saengchote (2018). The O/K ratio contains the organization capital (O) and physical asset (K). The organization capital (O) component is calculated as follow  $O_{i,t} = (1 - \delta_0)O_{i,t-1} + \frac{SGA_{i,t}}{CPI_t}$ . The initial value of organization capital is required and defined as  $O_0 = \frac{SGA_1}{(g+\delta_0)}$ . The physical asset (K) component is Property, Plant and Equipment (PPE) in financial statements. Similar to Amatachaya and Saenchote (2018), the depreciation rate ( $\delta_0$ ) is set to 20% complying with Thai Revenue code in corporate income tax. The perpetual growth rate ( $g$ ) is set to 10%. Consumer Price Index ( $CPI$ ) data is obtained from Bank of Thailand. O/K ratio is then used as the level of organization capital. In the model 7, O/K ratio is a new variable in the regression model.



$$\begin{aligned}
\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] &= \beta_0 + \beta_1 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2 D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3 \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] \\
&+ \beta_4 D \cdot \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5 \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6 D \cdot \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] \\
&+ \beta_7 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot O/K_{i,t} + \beta_8 D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot O/K_{i,t} + \varepsilon_{i,t}
\end{aligned} \tag{7}$$

To test hypothesis 7 that high O/K ratio firms have greater cost stickiness, the  $\beta_8$  is tested whether it is negative and significant.

To test hypothesis 8 that corporate governance scores decrease cost stickiness, 3 dummies are added for 4 CG score categories. The CG scores available from SETSMART are “-, 3, 4 and 5”. Where the higher number represent better corporate governance practice. This study treat the scores as “N/A not available, Low, Medium and High” respectively. L, M and H will be used as dummy variables for Low, Medium, High CG scores respectively. If all L, M and H are 0, then it represents the N/A group.

$$\begin{aligned}
X_{i,t}^k &= \beta_0^k + \beta_1^k \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2^k D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3^k \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] \\
&+ \beta_4^k D \cdot \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5^k \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6^k D \cdot \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \varepsilon_{i,t} \\
\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] &= X_{i,t}^{NA} + X_{i,t}^L \cdot L + X_{i,t}^M \cdot M + X_{i,t}^H \cdot H
\end{aligned} \tag{8}$$

Where  $k = L, M, H$

To test hypothesis 8 whether good corporate governance increase cost stickiness,  $\beta_2^k$  are tested whether they are negative and significant, and to be more specific, test whether  $\beta_2^L > \beta_2^M > \beta_2^H$ .

## CHAPTER 4 Empirical Result

There are four subsections in the empirical result chapter. The subsections are ownership structure, cash holding, service industry and corporate governance. Each subsection will contain regression results of the models used to investigate those factors. Discussion of results will be provided in each subsection as well

### 4.1 Ownership Structure

Table 2

Descriptive statistics of variables used in (1) – (3/4)

VARIABLES	N	mean	median	sd	min	max
$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	300	3.60%	3.28%	13.70%	-71.60%	61.40%
$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	300	3.26%	2.98%	10.30%	-53.90%	38.30%
MOA	300	10.45%	1.97%	16.32%	0.00%	76.92%
MOB	300	7.34%	1.45%	12.26%	0.00%	73.39%
OC	300	15.33%	5.96%	19.79%	0.00%	83.73%
MOAoB	300	57.15%	57.23%	16.07%	17.18%	98.50%
Dep/A	269	0.0413	0.0351	0.0315	0.0010	0.2390
D	300	33.70%	0.00%	47.30%	0.00%	100.00%
AINT	300	2.97	1.40	8.71	0.25	120.7

MO is Managerial Ownership, OC is Ownership Concentration, AINT is  $\left[\frac{Asset_{i,t}}{Rev_{i,t}}\right]$ , Dep/A is  $\left[\frac{Depre_{i,t}}{Asset_{i,t}}\right]$ , D is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.

Table 3

Correlation coefficient of variables used in (1) – (3/4)

	$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	AINT	Dep/A	MOA	MOB	MOAoB	OC
$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	1.0000							
$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	0.3809*	1.0000						
AINT	0.1164*	-0.1688*	1.0000					
Dep/A	-0.0276	0.0330	-0.1847*	1.0000				
MOA	-0.0561	-0.1410*	0.0813	-0.1389*	1.0000			
MOB	-0.0572	-0.1918*	-0.0712	-0.0138	0.4218*	1.0000		
MOAoB	-0.0674	-0.1670*	0.0406	-0.1306*	0.9192*	0.6541*	1.0000	
OC	-0.0677	-0.0707	0.0353	0.0309	0.1269*	-0.0883	0.0359	1.0000

MO is Managerial Ownership, OC is Ownership Concentration, AINT is  $\left[\frac{Asset_{i,t}}{Rev_{i,t}}\right]$ , Dep/A is  $\left[\frac{Depre_{i,t}}{Asset_{i,t}}\right]$

\* Indicates significance at the 5% significance level.

Table 4

Regression of managerial ownership and ownership concentration on changes in SG&A cost.

VARIABLES	(1MOA) $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$	(1MOB) $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$	(1MOAoB) $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot MO$	1.051 (1.031)	0.0291 (0.435)	0.00567 (0.00570)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot OC$	-1.075 (1.279)	-0.331 (0.562)	-0.939 (1.158)
Observations	269	269	269
Adjusted R-squared	0.209	0.203	0.207

This table contains results from linear regressions of MO and OC on changes in SG&A cost. (1)  $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = \beta_0 + \beta_1 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2 D \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3 \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_4 D \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5 \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6 D \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \gamma_j D \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] MO_{i,t} + \gamma_4 D \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] OC_{i,t} + \varepsilon_{i,t}$ , Where  $j$  is  $MOA_{i,t}$ ,  $MOB_{i,t}$  and  $MOAoB_{i,t}$ , MO is Managerial Ownership, OC is Ownership Concentration.  $D$  is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.  $t$ -statistics are shown in parentheses. Standard errors are clustered by industry.

\* Indicate significance at the 10% significance level.

\*\* Indicate significance at the 5% significance level.

\*\*\* Indicate significance at the 1% significance level.

The DataStream unfortunately is unable to provide data of depreciation, depletion and amortization for all of 300 firm-years, therefore the sample size for ownership studies consists of 269 observations.

The regression models 1 include OC and either one of MOA, MOB or MOAoB to examine the impact of one specific ownership category at a time. The regression results in table 4, three models reveal that the variables MOA, MOB, MOAoB and OC do not significantly affect the SG&A stickiness.

Table 5

Regression of managerial ownership, ownership concentration and interaction variable on changes in SG&A cost.

VARIABLES	(2MOA) $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	(2MOB) $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	(2MOAoB) $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot MO$	8.601 (6.680)	0.514 (10.84)	0.0672 (0.0591)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot OC$	0.624 (0.757)	-0.252 (1.374)	1.115 (1.194)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot MO \cdot OC$	-11.68 (9.653)	-0.660 (14.76)	-0.0903 (0.0837)
Observations	269	269	269
Adjusted R-squared	0.224	0.200	0.220

This table contains results from linear regressions of MO, OC and interaction variable of MO and OC on changes in SG&A cost. (2)  $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right] = \beta_0 + \beta_1 \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] + \beta_2 D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] + \beta_3 \left[\frac{Asset_{i,t}}{Rev_{i,t}}\right] + \beta_4 D \left[\frac{Asset_{i,t}}{Rev_{i,t}}\right] + \beta_5 \left[\frac{Depre_{i,t}}{Asset_{i,t}}\right] + \beta_6 D \left[\frac{Depre_{i,t}}{Asset_{i,t}}\right] + \gamma_j D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] MO_{i,t} + \gamma_4 D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] OC_{i,t} + \theta_j D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] MO_{i,t} OC_{i,t} + \varepsilon_{i,t}$ , Where  $j$  is  $MOA_{i,t}$ ,  $MOB_{i,t}$  and  $MOAoB_{i,t}$ , MO is Managerial Ownership, OC is Ownership Concentration.  $D$  is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.  $t$ -statistics are shown in parentheses. Standard errors are clustered by industry.

\* Indicate significance at the 10% significance level.

\*\* Indicate significance at the 5% significance level.

\*\*\* Indicate significance at the 1% significance level.

The model 2 does include all categories of ownership as well as interactions between each ownership category with ownership concentration. The results from table 5 show that interaction of managerial ownership and ownership concentration does not significantly affect SG&A cost stickiness.

Table 6

Regression of managerial ownership and ownership concentration, including interaction variables and period dummy variables on changes in SG&A cost.

VARIABLES	(3/4MOA) $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	(3/4MOB) $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	(3/4MOAoB) $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot MO$	0.864 (1.118)	0.763 (2.949)	0.0120 (0.00934)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot OC$	3.681** (1.564)	3.792*** (1.092)	3.847** (1.404)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot MO \cdot OC$	-3.305 (2.477)	-2.395 (3.491)	-0.0299 (0.0159)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot MO \cdot CR$	12.18 (16.12)	-6.697 (19.42)	-0.120 (0.241)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot OC \cdot CR$	-3.707 (1.712)	-6.113 (3.541)	-6.971 (4.574)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot MO \cdot OC \cdot CR$	-37.16 (21.78)	-2.558 (26.78)	0.0417 (0.330)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot MO \cdot PC$	32.52*** (6.838)	56.87** (28.17)	0.273*** (0.0590)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot OC \cdot PC$	-2.671 (3.427)	-5.662 (3.908)	-1.602 (3.409)
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot MO \cdot OC \cdot PC$	-55.58 (11.71)	-90.12 (60.00)	-0.473 (0.107)
Observations	269	269	269
Adjusted R-squared	0.304	0.303	0.309

This table contains results from linear regressions of MO, OC and interaction variable of MO and OC with dummy variables for different periods on changes in SG&A cost. (3/4)

$$X_{i,t}^k = \beta_0^k + \beta_1^k \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] + \beta_2^k D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] + \beta_3^k \left[\frac{Asset_{i,t}}{Rev_{i,t}}\right] + \beta_4^k D \left[\frac{Asset_{i,t}}{Rev_{i,t}}\right] + \beta_5^k \left[\frac{Depre_{i,t}}{Asset_{i,t}}\right] + \beta_6^k D \left[\frac{Depre_{i,t}}{Asset_{i,t}}\right] + \gamma_j^k D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] MO_{i,t} + \gamma_4^k D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] OC_{i,t} + \theta_j^k D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] MO_{i,t} OC_{i,t} + \varepsilon_{i,t}$$

Then  $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right] = X_{i,t}^{SP} + X_{i,t}^{CR} CR + X_{i,t}^{PC} PC$  Where  $j$  is  $MOA_{i,t}$ ,  $MOB_{i,t}$  and  $MOAoB_{i,t}$ , MO is Managerial Ownership, OC is Ownership Concentration, Where  $k$  is  $SP$ ,  $CR$  and  $PC$  which is indicator

variable that equals 1 in Stable Period, Crisis Recovering and Pre-crisis respectively and equals 0 otherwise.  $D$  is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.  $t$ -statistics are shown in parentheses. Standard errors are clustered by industry.

\* Indicate significance at the 10% significance level.

\*\* Indicate significance at the 5% significance level.

\*\*\* Indicate significance at the 1% significance level.

The hypothesis 3 and 4 attempts to investigate the relationship between managerial ownership, ownership concentration and SG&A cost stickiness in three periods, pre-crisis, crisis-recovering period and stable period. The regression result from table 6 reveals that ownership concentration (OC) is significantly positive in the stable period. Furthermore, the three categories of managerial ownership (MOA, MOB and MOAoB) are significantly positive in the pre-crisis period.

Models 1 and 2 do not contain any significant relation between managerial ownership, ownership concentration and SG&A stickiness. However, model 3/4 does show some significant relation. Although the model 3/4 cannot answer the hypothesis 3 and 4 as there are no significant value of the same variables in two different periods to compare. Nevertheless, this model reveal some explanation that hypothesis 1 and 2 have under investigation.

Firstly, the three categories of managerial ownership, during pre-crisis period (1995-1996), do decrease SG&A cost stickiness as predicted by hypothesis 1. Pre-crisis period where it is a period that stock market thrives. Managers may be incentivized to aggressive cost cutting practice because growth of net profit can be greatly beneficial for their firm. Possible explanation is, as managers hold more shares, they have more power and incentives to improve net profit via cost cutting. The aggressive cut of SG&A cost during revenue downturn result in decrease of SG&A cost stickiness as found buy model 3/4.

Secondly, the ownership concentration decrease SG&A stickiness as predicted by hypothesis 1, but during stable period (2016-2017). The stable period is long after crisis period, the market has been given long time to recover. The ownership concentration decreasing SG&A cost stickiness could highlight how effective the

monitoring process become in cost cutting practice. Having gone through crisis period, or having learned from previous mistakes of other companies, could explain the increased effectiveness of monitoring process by groups of ownership that is highly concentrated.

The model 3/4, however, cannot find any significant of interaction variables between managerial ownership and ownership concentration. Therefore it cannot conclude hypothesis 2. This could mean that managerial ownership and ownership concentration are quite independent from each other.

## 4.2 Cash Holding

Table 7

Descriptive statistics of variables used in (5).

VARIABLES	N	mean	median	sd	min	max
$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	8,947	3.52%	0.00%	14.90%	-98.90%	98.90%
$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	8,947	2.97%	0.00%	14.20%	-98.40%	99.90%
D	8,947	34.00%	0.00%	47.40%	0.00%	100.00%
CH	8,947	14.00%	6.35%	20.10%	0.09%	146.30%
AINT	8,947	2.918	1.2678	12.88	0.0417	624.9
Dep/A	7,771	0.0427	0.0354	0.0398	2.57e-05	1.246

CH is  $\frac{Cash+MS}{Assets-(Cash+MS)}$ , AINT is  $\left[\frac{Asset_{i,t}}{Rev_{i,t}}\right]$ , Dep/A is  $\left[\frac{Depre_{i,t}}{Asset_{i,t}}\right]$ , D is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.

Table 8

Correlation coefficient of variables used in regression (5).

	$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	CH	AINT	Dep/A
$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	1				
$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	0.3504*	1			
CH	-0.01703	-0.0445*	1		
AINT	0.003574	-0.1127*	-0.0269*	1	
Dep/A	-0.0422*	-0.0384*	-0.0291*	-0.0917*	1

CH is  $\frac{Cash+MS}{Assets-(Cash+MS)}$ , AINT is  $\left[\frac{Asset_{i,t}}{Rev_{i,t}}\right]$ , Dep/A is  $\left[\frac{Depre_{i,t}}{Asset_{i,t}}\right]$

\* Indicates significance at the 5% significance level.

Table 9

Regression of cash holding on changes in SG&amp;A cost.

VARIABLES	(5) $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$
$D \cdot \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] \cdot CH$	0.0268 (0.138)
Observations	7,771
Adjusted R-squared	0.137

This table contains results from linear regressions of CH on changes in SG&A cost. (5)  $\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right] = \beta_0 + \beta_1 \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] + \beta_2 D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] + \beta_3 \left[\frac{Asset_{i,t}}{Rev_{i,t}}\right] + \beta_4 D \left[\frac{Asset_{i,t}}{Rev_{i,t}}\right] + \beta_5 \left[\frac{Depre_{i,t}}{Asset_{i,t}}\right] + \beta_6 D \left[\frac{Depre_{i,t}}{Asset_{i,t}}\right] + \beta_7 \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] CH_{i,t} + \beta_8 D \log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right] CH_{i,t} + \varepsilon_{i,t}$ , CH is  $\frac{Cash+MS}{Assets-(Cash+MS)}$ ,  $D$  is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.  $t$ -statistics are shown in parentheses. Standard errors are clustered by industry.

\* Indicate significance at the 10% significance level.

\*\* Indicate significance at the 5% significance level.

\*\*\* Indicate significance at the 1% significance level.

The regression result shown in table 9 suggests that coefficient of CH variable is not significantly different from zero. The CH therefore does not have any effect on the degree of cost stickiness at all.

This concludes that our hypothesis 5, which proposed that cash holding increases cost stickiness, cannot be accepted. This might be due to the net effects of firms having high cash holding. On the one hand, the firm with high cash holding might be very desirable to prospect employee and this allow them to layoff and re-employ during revenue downturn without much adjustment cost. On another hand, firms hold cash to compete for skilled employees in labor market. Therefore might be reluctant to layoff employee due to adjustment costs they face. Overall, there is no relationship between cash holding and cost stickiness.



### 4.3 Service Industry

Table 10

Descriptive statistics of variables used in (6).

VARIABLES	N	mean	median	sd	min	max
$\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$	8,555	3.49%	3.00%	14.60%	-98.90%	98.90%
$\log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right]$	8,555	3.14%	2.93%	14.40%	-98.40%	99.90%
D	8,555	33.40%	0.00%	47.20%	0.00%	100.00%
AINT	8,547	2.939	1.2500	12.30	0.0417	474.8
Dep/A	8,196	0.0431	0.0353	0.0713	2.57e-05	5.368

AINT is  $\left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right]$ , Dep/A is  $\left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right]$ ,  $D$  is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.

Table 11

Correlation coefficient of variables used in (6).

	$\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$	$\log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right]$	AINT	Dep/A
$\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$	1			
$\log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right]$	0.3507*	1		
AINT	0.0037	-0.0872*	1	
Dep/A	-0.0362*	-0.0487*	-0.0556*	1

AINT is  $\left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right]$ , Dep/A is  $\left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right]$

\* Indicates significance at the 5% significance level.

Table 12

Count and percentage of total for industry dummy variables used in (6).

Industry	Count	Percentage of Total
SERVICE	1,500	17.53%
AGRO	816	9.54%
CONSUMP	748	8.74%
FINCIAL	259	3.03%
INDUS	1,213	14.18%

PROPCON	1,367	15.98%
RESOURC	590	6.90%
TECH	524	6.13%
N/A	1,538	17.98%
TOTAL	8,555	100.00%

Table 13

Regression results of industry dummy variables on changes in SG&amp;A cost.

VARIABLES	(6a) $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$	(6b) $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot S$	-0.0978* (0.0652)	
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot A$		0.103*** (0.00133)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot C$		0.188*** (0.00572)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot F$		0.462*** (0.00154)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot I$		0.0722*** (0.00713)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot P$		-0.0495*** (0.00396)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot R$		0.244*** (0.00202)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot T$		-0.132*** (0.000838)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot NA$		0.276*** (0.00166)
Observations	8,196	8,196
Adjusted R-squared	0.133	0.152

This table contains results from linear regressions of industry dummy variables on changes in SG&A cost. (6a)  $X_{i,t}^k = \beta_0^k + \beta_1^k \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2^k D \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3^k \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_4^k D \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5^k \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6^k D \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \varepsilon_{i,t}$ ,  $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = X_{i,t}^{NS} + X_{i,t}^S S$ , Where  $k$  is  $NS, S$  which is an indicator variable that equals 1 if industry is non-service and service respectively and equals 0 otherwise. (6b)  $X_{i,t}^k = \beta_0^k + \beta_1^k \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2^k D \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3^k \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_4^k D \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5^k \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6^k D \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \varepsilon_{i,t}$ ,  $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = X_{i,t}^S + X_{i,t}^A A + X_{i,t}^C C + X_{i,t}^F F + X_{i,t}^I I + X_{i,t}^P P + X_{i,t}^R R + X_{i,t}^T T + X_{i,t}^{NA} NA$ , Where  $k$  is  $A, C, F, I, P, R, T, NA$  which is an indicator variable that equals 1 if industry is Agro, Consumption, Financial, Industrial, Property&Construction, Resource, Technology and Not Available respectively and equals 0 otherwise.  $D$  is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.  $t$ -statistics are shown in parentheses. Standard errors are clustered by industry.

\* Indicate significance at the 10% significance level.

\*\* Indicate significance at the 5% significance level.

\*\*\* Indicate significance at the 1% significance level.

According to the regression result of (6) as presented in the table 13, dummy variable for service industry does have negative coefficient and significant at 10% significance level. The negative coefficient mean that the SG&A cost is cut less when the revenue decreases, meaning increase in SG&A cost stickiness. The firms which are categorized by SET as service industry do have higher SG&A cost stickiness.

The result from (6b) is an attempt to compare the cost stickiness of service industry with 7 other industries, namely agriculture, consumption, financial, industrial, property and construction, resource and technology. The regression result show that 5 out of 7 industries do have coefficient that are positive and significant at 1% significant level. This means that those 5 industries do have lesser degree of cost stickiness compare to the service industry. However, property & construction and technology industry have significant negative coefficient which mean that the two industries have greater stickiness than the service industry.

The hypothesis 6 concerning about service industry has been proven that indeed the service industry does have greater SG&A cost stickiness a. Due to the nature of service firms that require trained employees for products. During revenue downturn, the service firms are less likely to quickly layoff their employees. However, the property and construction and technology industries having even greater

SG&A cost stickiness is a surprise finding as well. The technology industries having to rely a lot on employees to provide product, similar to that of service industry, is understandable that it got high SG&A cost stickiness. However, the property & construction industry, while also rely on great number of employees, the employees skills seem to be more replaceable that other 2 industries. Therefore, this result show that construction workers are more crucial to the property & construction firms than it looks.

Table 14

Descriptive statistics of variables used in (7).

VARIABLES	N	mean	median	sd	min	max
$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	8,916	3.47%	2.92%	14.80%	-98.90%	98.90%
$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	8,916	2.89%	2.78%	14.10%	-98.40%	99.90%
D	8,916	34.10%	0.00%	47.40%	0.00%	100.00%
OK	8,916	0.411	0.085	1.097	0.00153	11.49
AINT	8,916	2.901	1.26057	13.66	0.0417	624.9
Dep/A	7,757	0.0426	0.035612	0.0374	2.57E-05	0.694

OK is Organization Capital / Physical Asset, AINT is  $\left[\frac{Asset_{i,t}}{Rev_{i,t}}\right]$ , Dep/A is  $\left[\frac{Depre_{i,t}}{Asset_{i,t}}\right]$ , D is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.

Table 15

Correlation coefficient of variables used in (7).

	$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	OK	AINT	Dep/A
$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	1				
$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	0.3564*	1			
OK	-0.00955	-0.00279	1		
AINT	-0.00895	-0.1105*	0.004768	1	
Dep/A	-0.0444*	-0.0344*	-0.0996*	-0.0933*	1

OK is Organization Capital / Physical Asset, AINT is  $\left[\frac{Asset_{i,t}}{Rev_{i,t}}\right]$ , Dep/A is  $\left[\frac{Depre_{i,t}}{Asset_{i,t}}\right]$

\* Indicates significance at the 5% significance level.

Table 16

Regression of organization capital/ physical asset ratio on changes in SG&amp;A cost.

VARIABLES	(7) $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot OK$	0.0233 (0.0261)
Observations	7,757
Adjusted R-squared	0.141

This table contains results from linear regressions of O/K on changes in SG&A cost.  $(7) \log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = \beta_0 + \beta_1 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2 D \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3 \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_4 D \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5 \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6 D \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_7 \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] O/K_{i,t} + \beta_8 D \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] O/K_{i,t} + \varepsilon_{i,t}$ , OK is Organization Capital / Physical Asset, D is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise. *t*-statistics are shown in parentheses. Standard errors are clustered by industry.

\* Indicate significance at the 10% significance level.

\*\* Indicate significance at the 5% significance level.

\*\*\* Indicate significance at the 1% significance level.

The regression result in table 16 show that the coefficient of O/K ratio is not significantly different from 0. Therefore O/K ratio does not have any effect on the SG&A cost stickiness. The hypothesis 7, stating that O/K ratio increase SG&A cost stickiness cannot be accepted.

Although Amatachaya and Saengchote (2018) have used O/K ratio to distinguish between service and non-service firm by identifying that O/K ratio leads to investors demanding more premium to compensate risk of losing organization capital when talent moves. The service firms were found to earn greater alpha due to risk of losing talent is more impactful. Therefore the O/K ratio in a way signals how important the employees are to the firm. This led to the development of hypothesis 7 which cannot be proved correct.

## 4.4 Corporate Governance

Table 17

Descriptive statistics of variables used in (8).

VARIABLES	N	mean	median	sd	min	max
$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	8,555	3.49%	3.00%	14.60%	-98.90%	98.90%
$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	8,555	3.14%	2.93%	14.40%	-98.40%	99.90%
D	8,555	33.40%	0.00%	47.20%	0.00%	100.00%
AINT	8,547	2.939	1.250	12.30	0.0417	474.8
Dep/A	8,196	0.0431	0.035312	0.0713	2.57e-05	5.368

AINT is  $\left[\frac{Asset_{i,t}}{Rev_{i,t}}\right]$ , Dep/A is  $\left[\frac{Depre_{i,t}}{Asset_{i,t}}\right]$ ,  $D$  is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.

Table 18

Correlation coefficient of variables used in (8).

	$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	AINT	Dep/A
$\log\left[\frac{SGA_{i,t}}{SGA_{i,t-1}}\right]$	1			
$\log\left[\frac{Rev_{i,t}}{Rev_{i,t-1}}\right]$	0.3507*	1		
AINT	0.0037	-0.0872*	1	
Dep/A	-0.0362*	-0.0487*	-0.0556*	1

AINT is  $\left[\frac{Asset_{i,t}}{Rev_{i,t}}\right]$ , Dep/A is  $\left[\frac{Depre_{i,t}}{Asset_{i,t}}\right]$

\* Indicates significance at the 5% significance level.

Table 19

Count and percentage of total of corporate governance scores dummy variables used in (8).

CG score	Count	Percentage of Total
LOW	1,609	18.81%
MEDIUM	2,296	26.84%
HIGH	1,428	16.69%
N/A	3,222	37.66%
TOTAL	8,555	100.00%

Table 20

Regression of corporate governance score dummy variables on changes in SG&A cost.

VARIABLES	(8) $\log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right]$
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot L$	0.0507 (0.170)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot M$	-0.276** (0.129)
$D \cdot \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] \cdot H$	-0.275* (0.196)
Observations	8,196
Adjusted R-squared	0.135

This table contains results from linear regressions of corporate governance scores dummy variables on changes in SG&A cost. (8)  $X_{i,t}^k = \beta_0^k + \beta_1^k \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_2^k D \log \left[ \frac{Rev_{i,t}}{Rev_{i,t-1}} \right] + \beta_3^k \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] +$

$$\beta_4^k D \left[ \frac{Asset_{i,t}}{Rev_{i,t}} \right] + \beta_5^k \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \beta_6^k D \left[ \frac{Depre_{i,t}}{Asset_{i,t}} \right] + \varepsilon_{i,t}, \log \left[ \frac{SGA_{i,t}}{SGA_{i,t-1}} \right] = X_{i,t}^{NA} + X_{i,t}^L L + X_{i,t}^M M + X_{i,t}^H H,$$

Where  $k$  is  $L, M, H$  which is an indicator variable that equals to 1 if the CG score is 3(low), 4(medium) and 5(high) respectively and equals 0 otherwise.  $D$  is an indicator variable that equals 1 if the revenue decreased and equals 0 otherwise.  $t$ -statistics are shown in parentheses. Standard errors are clustered by industry.

\* Indicate significance at the 10% significance level.

\*\* Indicate significance at the 5% significance level.

\*\*\* Indicate significance at the 1% significance level.

According to the regression result in table 20, the coefficient for Medium (M) and High (H) corporate governance score are negative and significant at 5% and 10% significant level respectively. This mean that the M and H cg score do increase SG&A cost stickiness.

The value of coefficient of H (-0.275) is similar to that of M (-0.276) meaning that the High cg score does have similar SG&A cost stickiness with Medium cg score

as hypothesized in hypothesis 8. However, the Low (L) cg score does not affect SG&A cost stickiness as it is not significantly different from 0. The hypothesis 8 cannot be entirely rejected, as the cg score does indeed increase SG&A cost stickiness, especially at Medium and High cg score.

Although they are significant at 10%, it result is still as hypothesized. The companies with greater cg scores should be more considerate about many more factors apart from net profit. External factors such as corporate social responsibility are taken seriously, therefore there is no doubt that internal factors such as employee's wellbeing is of major importance as well. Naturally, employee's wellbeing translates to job security and then onto SG&A cost stickiness as hypothesized.

## **CHAPTER 5 Conclusion**

The study takes interest in SG&A cost stickiness phenomenon because it is something that many investors overlook. Due to revenue and net profit being the major focus for most investors. Costs, such as SG&A cost on the other hands, seems to be overlooked by investors. The cost stickiness phenomenon, occurs when the SG&A cost decrease less with revenue decrease compare to cost increase with revenue increase. This highlight that cost management is not straightforward task as believed. The stickiness phenomenon show that cost management contain the firm's future outlook, manager future outlook, unique to specific industries and even varied by corporate governance.

The study has explored various factors that could directly or indirectly affect the SG&A cost stickiness. The factors studied are ownership structure (managerial ownership and ownership concentration), cash holding, service industry and corporate governance. The study found that managerial ownership and ownership concentration do decrease SG&A cost stickiness via incentive alignment and monitoring respectively during different periods. The service industry is confirmed to have distinctively high cost stickiness compare to other industries due to how dependent on the employees to deliver products. The firms with good corporate governance scores clearly take employees wellbeing seriously that have been shown in the increase in SG&A cost stickiness.



In conclusion, this study has gained various insights that the cost management is not a fixed process but rather can be influenced by many factors. This allow investors to use cost stickiness to gain insight on how the firm manage their cost, whether firms have reasonable cost management compare to other firms within industries. Also the knowledge of high managerial ownership leading to more responsive cost cutting might either be viewed as either good or bad by the investors.

## APPENDIX

### Appendix 1. List of stocks used in the Ownership Structure studies (1) to (3/4)

1995-1996

SAWANG KAMART HTC PTTEP BCP ROCK WORLD CPH SVH DTCI SSF CSC  
 UV WACOAL SAMART TIW TTTM SINGER SFP PDJ LOXLEY THCOM CNT  
 VARO KDH EGCO KCE CPF TNPC SPC PSL CWT TVO ITD PAF PF SIAM TU  
 HANA SHANG WG CSR PK SAMCO VNT SUC TPCORP TC QH SCP YCI TCCC  
 ASIA STANLY ALUCON METCO AHC FE DIGI PDI BH NPC AFC POMPUI  
 SSC OGC BSI TWS TPIPL KYE AQ TWFP STEC DTC KARAT NEP TPP SUE  
 ADVANC ICC INTUCH LANNA LTX SCC TGCI UST HT MDX SPP PPC LH  
 MAKRO GFPT TFI CENTEL BANPU PG UTC TPC IFEC

1999-2000

SAWANG KAMART HTC PTTEP BCP ROCK WORLD CPH SVH DTCI SSF CSC  
 UV WACOAL SAMART TIW TTTM SINGER SFP PDJ LOXLEY THCOM CNT  
 VARO KDH EGCO KCE CPF TNPC SPC PSL CWT TVO ITD PAF PF SIAM TU  
 HANA SHANG WG CSR PK SAMCO VNT SUC TPCORP TC QH SCP AHC BSI  
 GRAMMY WFC MAKRO MODERN TRUBB TBSP UT GOLD TGP POST  
 ROJNA DELTA SMK SPALI DTC MINT ATC PL CENTEL U SORKON PA  
 SMPK UPF MDX NKI UTL YCI SPP SGF UFM MBK KKC MFC POLAR CK NPC  
 IRPC PPC TWS ACC BH NEP TCMC MPT PT BRC TASCO

2016-2017

SAWANG KAMART HTC PTTEP BCP ROCK WORLD CPH SVH DTCI SSF CSC  
 UV WACOAL SAMART TIW TTTM SINGER SFP PDJ LOXLEY THCOM CNT  
 VARO KDH EGCO KCE CPF TNPC SPC PSL CWT TVO ITD PAF PF SIAM TU  
 HANA SHANG WG CSR PK SAMCO VNT SUC TPCORP TC QH SCP ACAP PB  
 VIH CPR ECL QLT GPSC GLOW GYT PPP VPO K WAVE BJCHI SMK CHAYO

PERM SAMTEL UP MILL GCAP SCC SLP WICE TCC AJ BDMS TCMC PICO  
AH AI DIMET CM SKR TMILL SAM RWI OTO LDC WP LTX MOONG GC VI  
MBK WINNER HTECH TVD FOCUS MAJOR



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## REFERENCES

- Amatchaya, Srisuda, and Kanis Saengchote. "Organization Capital and Expected Returns in Service and Non-Service Firms: Evidence from Thailand." *International Review of Finance* (2018).
- Ammann, Manuel, David Oesch, and Markus M Schmid. "Corporate Governance and Firm Value: International Evidence." *Journal of Empirical Finance* 18 (2011): 36-55.
- Anderson, Mark C, Rajiv D Banker, and Surya N Janakiraman. "Are Selling, General, and Administrative Costs "Sticky"?". *Journal of Accounting Research* 41, no. 1 (2003): 47-63.
- Balsmeier, Benjamin, Andreas Bermig, and Alexander Dilger. "Corporate Governance and Employee Power in the Boardroom: An Applied Game Theoretic Analysis." *Journal of Economic Behavior & Organization* 9 (2013): 51-74.
- Calleja, Kenneth, Michael Stelias, and Dylan C Thomas. "A Note on Cost Stickiness: Some International Comparisons." *Management Accounting Research* 17, no. 2 (2006): 127-40.
- Chen, Clara Xiaoling, Hai Lu, and Therodore Sougiannis. "The Agency Problem, Corporate Governance, and the Asymmetrical Behavior of Selling, General, and Administrative Costs." *Contemporary Accounting Research* 29, no. 1 (2012): 252-82.
- Cho, Myeong Hyeon. "Ownership Structure, Investment, and the Corporate Value: And Empirical Analysis." *Journal of Financial Economics* 47, no. 1 (1998): 103-21.
- Claessens, Stijin, Simeon Djankov, and Larry H.P Lang. "The Separation of Ownership and Control in East Asian Corporations." *Journal of Financial Economics* 58, no. 1 (2000): 81-112.
- Cui, Chenyu , Kose John, Jiaren Pang, and Haibin Wu. "Employment Protection and Corporate Cash Holdings: Evidence from China's Labor Contract Law." *Journal of Banking and Finance* 92 (2018): 182-94.
- Demsetz, Harold. "The Structure of Ownership and the Theory of the Firm." *Journal of Law and Economics* 26, no. 2 (1983): 375-90.
- Demsetz, Harold, and Kenneth Lehn. "The Structure of Corporate Ownership: Causes and Consequences." *Journal of Political Economy* 93, no. 6 (1985): 1155-77.
- Demsetz, Harold, and Belen Villalonga. "Ownership Structure and Corporate Performance." *Journal of Corporate Finance* 3, no. 3 (2001): 209-33.
- Devos, Erik, and Shofiqur Rahman. "Labor Unemployment Insurance and Firm Cash Holdings." *Journal of Corporate Finance* 49 (2018): 15-31.
- Fan, Joseph P.H, and T.J Wong. "Corporate Ownership Structure and the Informativeness of Accounting Earnings in East Asia." *Journal of Accounting and Economics* 33, no. 3 (2002): 401-25.
- Fauver, Larry, and Michael E Fuerst. "Does Good Corporate Governance Include Employee Representation? Evidence from German Corporate Boards." *Journal of Financial Economics* 82 (2006): 673-710.
- Ferreira, Miguel A, and Antonio S Vilela. "Why Do Firms Hold Cash? Evidence from Emu Countries." *European Financial Management* 10, no. 2 (2004): 295-319.
- Ghaly, Mohamed, Viet Anh Dang, and Konstantinos Stathopoulos. "Cash Holding and Employee Welfare." *Journal of Corporate Finance* 33 (2015): 53-70.

- Guney, Yilmaz, Aydin Ozkan, and Neslihan Ozkan. "International Evidence on the Non-Linear Impact of Leverage on Corporate Cash Holdings." *Journal of Multinational Financial Management* 17, no. 1 (2007): 45-60.
- He, Daoping, Jenny Teruya, and Takashi Shimizu. "Sticky Selling, General, and Administrative Cost Behavior and Its Changes in Japan." *Global Journal of Business Research* 4, no. 3 (2010): 1-10.
- He, Zhaozhao. "Money Held for Moving Stars: Talent Competition and Corporate Cash Holdings." *Journal of Corporate Finance* 51 (2018): 210-34.
- Himmelberg, Charles P. "Understanding the Determinants of Managerial Ownership and the Link between Ownership and Performance." *Journal of Financial Economics* 53, no. 3 (1999): 353-84.
- Hofstede, Geert. *Culture's Consequences: International Differences in Work-Related Values*. Beverly Hills: Sage Publications, 1980.
- Jensen, Michael C, and William H Meckling. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3, no. 4 (1976): 305-60.
- Jensen, Michael C. "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers." *The American Economic Review* 76, no. 2 (1986): 323-29.
- Kama, Itay, and Dan Weiss. "Do Earnings Targets and Managerial Incentives Affect Sticky Costs?". *Journal of Accounting Research* 51, no. 1 (2013): 201-24.
- Kitching, Karen, Raj Mashruwala, and Mikhail Pevzner. "Culture and Cost Stickiness: A Cross-Country Study." *The International Journal of Accounting* 51 (2016): 402-17.
- La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer. "Corporate Ownership around the World." *The Journal of Finance* 54, no. 2 (1998): 471-517.
- Modigliani, Franco, and Merton H. Miller. "The Cost of Capital, Corporation Finance and the Theory of Investment." *The American Economic Review* 48, no. 3 (1958): 261-97.
- Morck, Randall, Andrei Shleifer, and Robert W Vishny. "Management Ownership and Market Valuation: An Empirical Analysis." *Journal of Financial Economics* 20 (1988): 293-315.
- Morey, Matthew, Aron Gottesman, Edward Baker, and Ben Godridge. "Does Better Corporate Governance Result in Higher Valuations in Emerging Markets? Another Examination Using a New Data Set." *Journal of Banking & Finance* 33 (2009): 254-62.
- Mullins, William , and Antoinette Schoar. "How Do Ceos See Their Role? Management Philosophy and Styles in Family and Non-Family Firms." *Journal of Financial Economics* 119, no. 1 (2016): 24-43.
- Myers, Stewart C, and Nicholas S Majluf. "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have." *Journal of Financial Economics* 13, no. 2 (1984): 187-221.
- Nazir, Mian Sajid, and Talat Afza. "Does Managerial Behavior of Managing Earnings Mitigate the Relationship between Corporate Governance and Firm Value? Evidence from and Emerging Market." *Future Business Journal* 4 (2018): 139-56.
- Nordenflycht, Andrew Von. "What Is a Professional Service Firm? Toward a Theory

- and Taxonomy of Knowledge-Intensive Firms." *Academy of Management Review* 35, no. 1 (2010): 155-74.
- Noreen, Eric. "Conditions under Which Activity-Based Costing Systems Provide Relevant Costs." *Management Accounting Research* 3 (1991): 159-68.
- Opler, Tim, Lee Pinkowitz, RenéM Stulz, and Rohan Williamson. "The Determinants and Implications of Corporate Cash Holdings." *Journal of Financial Economics* 52 (1999): 3-46.
- Prommin, Panu, Seksak Jumreornvong, and Pornsit Jiraporn. "The Effect of Corporate Governance on Stock Liquidity: The Case of Thailand." *International Review of Economics and Finance* 32 (2014): 132-42.
- Prommin, Panu, Seksak Jumreornvong, Pornsit Jiraporn, and Shenghui Tong. "Liquidity, Ownership Concentration, Corporate Overnance, and Firm Value: Evidence from Thailand." *Global Finance Journal* 31 (2016): 73-87.
- Sousa, Erivelto Fioresi de, and Fernando Caio Galdi. "The Relationship between Equity Ownership Concentration and Earnings Quality: Evidence from Brazil." *Rev. Adm. (São Paulo)* 51, no. 4 (2016): 331-41.
- Stulz, RenéM. "Managerial Control of Voting Rights." *Journal of Financial Economics* 20 (1988): 25-54.





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