



Article

The Impact of Ownership Type on Labour Cost Stickiness

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Abstract: This study investigates the effect of ownership type (state and family ownership versus non-state and non-family ownership) on labour cost stickiness in companies listed on the Tehran Stock Exchange (TSE). The study examines the labour cost stickiness in state and family businesses versus non-state and non-family companies within a different environment with unique labour market characteristics. The sample consists of 151 companies listed on the TSE, spanning from 2011 to 2020. After controlling for industry and year fixed effects, the results of multiple regression analysis revealed that labour cost stickiness is higher in state and family companies compared to non-state and non-family businesses. This research contributes to the existing literature by being the first to investigate the impact of the type of ownership on labour cost stickiness in a developing country.

Keywords: labour cost stickiness; state ownership; family ownership



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1. Introduction

This study aims to fill a gap in the literature on the relationship between ownership structure and cost stickiness in companies listed on the Tehran Stock Exchange (TSE), specifically focusing on family ownership versus non-state and non-family ownership. The study examines the impact of different types of ownership structures, such as family, institutional, and managerial ownership, on the degree of cost stickiness in organisations. The study will also investigate the moderating effect of firm size, industry type, and economic conditions on the relationship between ownership and cost stickiness.

The specific objectives of this study are to review the literature on cost stickiness and ownership, develop a conceptual framework explaining the relationship between ownership and cost stickiness, collect and analyse data from a sample of organisations to test the relationship between ownership and cost stickiness, and investigate the moderating effect of firm size, industry type, and economic conditions on the relationship between ownership and cost stickiness.

The study's findings will contribute to the existing literature on cost stickiness and ownership by providing empirical evidence of the relationship between ownership and cost stickiness. The study will also help organisations understand the implications of different ownership structures on their cost behaviour and decision-making process. The study's findings will also be useful for investors, regulators, and policy makers in evaluating the impact of ownership on firm performance and stability. Finally, the study will recommend that organisations optimise their cost structures based on their ownership structures and business environment.

Research on the effects of ownership on cost stickiness has produced mixed results (Uy 2014); (Chen 2022; Kontesa and Brahmana 2018; Zhong et al. 2020). While the literature overwhelmingly supports a positive relationship between state ownership and labour cost stickiness (Prabowo et al. 2018; Cheng et al. 2018; Xu et al. 2023), the reported relationship in the literature for family (versus non-family) business and labour cost stickiness is mixed

and somehow contradictory. Some studies have reported that family firms exhibit higher labour cost stickiness, while others suggest the opposite. [Abudy and Shust \(2022\)](#) reported that family firms exhibit anti-sticky cost behaviour, while non-family firms show cost stickiness. However, other studies have reported the opposite ([Restuti et al. 2022a](#); [Xu 2020](#)). [Abudy and Shust \(2022\)](#) further suggested that family firms can decrease their costs more sharply upon a sales decline than non-family businesses, leading to less cost stickiness. At the same time, they can have less cost increase upon a sales rise of a similar magnitude. The authors argued that such reactions are the opposite in non-family businesses because of higher cost stickiness.

Cost behaviour, in general, is a fundamental factor for different purposes in organisations ([Marzoughi et al. 2018](#); [Askarany and Franklin-Smith 2014](#); [Yazdifar et al. 2005](#); [Askarany and Smith 2003](#)). According to [Banker and Chen \(2007\)](#), cross-country factors such as labour market characteristics can play an essential role in the cost stickiness behaviour of labour costs in different countries. In other words, the effects of ownership on cost stickiness labour costs may vary in different countries because of the variations in labour market characteristics. This suggestion was the primary motivation for the current study to investigate the effect of ownership structure on labour cost stickiness in a relatively new environment, the Tehran Stock Exchange (TSE), for the Western world.

Indeed, cost behaviour is a fundamental issue in management accounting. The purpose of cost behaviour analysis is to examine the response of costs to changes in activity level and its implications ([Banker et al. 2018](#)). The traditional cost behaviour model assumes that costs change in proportion to changes in activity level. However, [Anderson et al. \(2003\)](#) found that cost increases more when activity rises and decreases less when activity falls by an equivalent amount. This is referred to as cost stickiness.

[Yasukata \(2011\)](#) proposed deliberate managerial decisions and cost adjustment delays as the main drivers of cost stickiness. According to the deliberate decision theory, cost stickiness results from managers' deliberate decisions. If managers eliminate resources proportionate to activities when sales decrease, reacquiring resources after recovery could take more time and money, and managers may lose sales expansion opportunities. As such, managers must make a trade-off between lowering costs by eliminating resources and bearing the costs of excessive resources to take full advantage of future sales recovery. Therefore, one of the main drivers of cost stickiness is the deliberate decision of managers to increase long-term profits by incurring more costs based on their future sales forecasts.

On the other hand, the cost adjustment delay theory states that costs become sticky because cost adjustment cannot keep pace with the decline in sales. According to this theory, cost stickiness is higher in the short term than in the medium and long term, cost stickiness decreases in the long term, and cost fluctuations are linked to sales fluctuations ([Golden et al. 2020a](#)). Therefore, this theory states that cost stickiness is not a deliberate action on the part of managers; rather, costs cannot be adjusted quickly enough in proportion to fluctuating sales. Therefore, understanding cost behaviour is especially important for accountants, investors, and financial managers who measure cost changes based on activity level (revenue).

When adjusting resources, non-economic considerations such as managers' biases are crucial. Managers emotionally attached to their companies or perceiving resource reduction as threatening their managerial reputation will be reluctant to cut down resources ([Ibrahim 2015](#)). Therefore, non-economic considerations may explain the differences in cost stickiness between family and non-family companies since family owners are more likely to consider their families' non-economic interests when making resource adjustment decisions ([Armstrong et al. 2010](#); [Sharma and Manikutty 2005](#)).

According to the socioemotional wealth perspective, family companies exhibit higher cost stickiness than non-family companies since they are more likely to prioritise the preservation of their socioemotional wealth in their resource adjustment decisions ([Golden et al. 2020b](#); [Gomez-Mejia et al. 2011](#)). Although resource reduction when sales decline

leads to better financial performance, family companies are likely to perceive it as a threat to the socioemotional wealth of family owners.

State ownership may also affect the interests and decisions of managers since state owners tend to have socio-political interests. As such, state-owned companies are likely to pursue broader social and political goals than private companies, which affects their cost stickiness. Given that labour cost is a significant component of cost objects in organisations, the present research seeks to find whether and how labour cost stickiness is affected by state ownership and family ownership and whether these types of ownership moderate the relationship between sales and labour cost stickiness.

Few studies have investigated the effect of ownership on cost stickiness, and this relationship has not been investigated in developing and crisis economies such as Iran. The results of this study fill the research gap in this regard. Especially in Iran, in terms of economic problems, we are witnessing the stagnation of production and unemployment problems. On the other hand, we are seeing many cases of state and family ownership.

The importance of this research can be expressed in such a way that labour cost stickiness can have many consequences for the company. These effects are even worse in crisis economies like Iran. Since one of the factors affecting labour cost stickiness is the type of ownership, and in Iran we see many cases of state and family ownership, it is necessary to investigate the effect of state and family ownership on labour cost stickiness.

The present research contributes to the literature as the first study to investigate the effect of type of ownership (state and family ownership versus non-state and non-family ownership) on labour cost stickiness in developing and crisis economies such as Iran.

The rest of this paper proceeds as follows. Section 2 presents the theoretical framework and hypothesis development. Section 3 describes the research method. Section 4 presents the findings, and Section 5 discusses the conclusions.

2. Theoretical Framework

Previous literature has identified several causes of asymmetric cost behaviour, such as managers making empire-building decisions for personal benefits (Banker et al. 2013), real earnings management to meet or beat stakeholder expectations (Kama and Weiss 2013), myopic resource adjustment caused by factors such as corporate takeover threats (Cannon et al. 2020), manager expectations about future demand (Banker et al. 2014), and the inability of managers to adjust resources (Kama and Weiss 2013).

Some authors (Kama and Weiss 2013) emphasised the inability of managers to adjust resources in contrast to the deliberate decision of managers to keep and even increase them when activity decreases. Research on labour cost stickiness has also examined the factors influencing this asymmetry. Anderson and Reeb (2003) identified labour cost adjustments as the primary reason for the asymmetry of selling, general, and administrative expenses. The authors suggested that the inability of managers to cut such resources is driven by the significant adjustment costs involved in employee search, selection, hiring, training and firing, which incentivise holding on to labour resources and deter managers from dismissing them until uncertainties about further demand are removed (Anderson and Reeb 2003; Banker et al. 2014). In line with the assumption that cost stickiness is primarily a feature of market-wide conditions and country regulations (Calleja et al. 2006; Holzhacker et al. 2015), some studies attributed this asymmetric behaviour to hiring and firing costs mandated by employment protection legislation (Banker et al. 2013); (Golden et al. 2020a). Dierynck et al. (2012) investigated the influence of managerial incentives for meeting or beating the zero earnings benchmark on labour cost behaviour. Finally, Prabowo et al. (2018) and Dalla Via and Perego (2014) analysed the impact of ownership structure on labour cost behaviour.

2.1. Labour Cost Stickiness

Businesses that face increasing demand tend to hire more employees. If firing costs exceed hiring costs, managers are less inclined to fire employees when the activity level

decreases than when it increases (Sun et al. 2023; Banker et al. 2018). According to van Zuijlen (2012), cost stickiness in periods of a financial crisis is low for two reasons. First, financial crisis forces companies to cut costs, so when demand decreases, they have to adjust rather than maintain unutilised resources. Second, companies try to avoid long-term binding contracts and commitments during a financial crisis. Hence, financially constrained companies tend to use fixed-term workers, who are easier to lay off when demand decreases. These strategies are expected to reduce cost stickiness.

Therefore, cost stickiness is directly linked to managerial decisions about activity levels and staffing. Stickiness can occur when demand decreases and resources remain unchanged. In addition, firing workers is more costly than hiring them (Chen et al. 2015). Policies that prevent layoffs because of the damage they cause to the company's reputation may lead to cost stickiness. Low demand makes it exceedingly difficult for a company to pay skilled workers. Hoping for recovery in the future, managers may decide to retain these workers, which could lead to cost stickiness (Maaloul et al. 2016).

2.2. State Ownership

State ownership is determined by the percentage of shares held by the government or state-owned entities (Earnhart and Lizal 2006). According to public corporation law, a state-owned company is one where the government holds at least 50% of the shares, whether the government initially establishes the company or if it is nationalised. However, some commercial companies, such as joint stock companies that are established through the investment of public companies, are not considered state-owned and will not be under this law.

2.3. Family Ownership

There is no consensus on the definition of family businesses. Various business characteristics are considered in defining the critical elements of a family business. Family companies exhibit characteristics that are not found in non-family companies but differ from each other. Villalonga and Amit (2006) considered three fundamental elements that distinguish family companies from non-family companies: ownership, control, and management. First, family companies have a longer ownership window than other companies. Therefore, the investment horizon of family companies is longer, as they have the incentive to pass on their assets to future generations. This means family companies are more inclined to sacrifice short-term profits for long-term gains. Second, founding families tend to be involved in managing their companies (Rose 2005). Families try to ensure that their decisions are reflected in the company. Third, family companies have less diversified portfolios because of their more concentrated ownership. Therefore, founding families have strong incentives to maximise firm value. They benefit from positive NPV investments in the company but are also at risk if these investments fail to generate positive cash flows. In the literature, there are different indicators for family ownership in different countries. For example, Deutsche Börse developed the DAXplus Family Index in 2010, which defines family businesses as companies that meet the following two conditions:

1. The founding family owns at least 25% of the voting rights.
2. One of the family members is a board member and owns at least 5% of the common stocks.

According to Wang (2006), family companies are companies where family members own a large number of shares and play a vital role in the company's management and board of directors. Mishra et al. (2001) stated that family companies are companies where the founding families own at least 20% of the shares.

Founding families represent a unique class of shareholders that hold less diversified portfolios, are long-term investors across multiple generations, and often control senior management positions (Anderson and Reeb 2003). In family companies, non-family shareholders may believe that the interests of the family take precedence over those of non-family shareholders.

In the present research, family companies are companies where a family directly or indirectly holds at least 20% of shares with voting rights.

2.4. State Ownership and Labour Cost Stickiness

As international competition increases, managers need more information about costs. Analysing cost behaviour patterns is essential because this information can help to attain more accurate cost forecasts concerning future expenses for planning and decision making. Cost behaviour is the cost reaction to changes in activity and managerial decisions (Park 2017). The traditional model of cost behaviour assumes symmetric or proportional changes in costs in response to changes in activity. This assumption does not account for managerial decisions. Recent research has shown that cost increases more when activity rises and decreases less when activity falls by an equivalent amount (Krisnadewi and Soewarno 2021; Li and Zheng 2017). This behaviour is referred to as cost stickiness. Given the importance of cost stickiness in managerial decisions and its impact on firm performance, it is crucial to identify its determinants. Different types of ownership create additional incentives for owners to engage in cost-controlling activities since ownership type determines how the benefits of those activities accrue to the owners (Holzhacker et al. 2015; Hall 2016). Research has shown that state-owned companies exhibit greater labour cost stickiness than private companies (Prabowo et al. 2018).

Unlike other owners, state owners have socio-political interests. Therefore, they are more likely to pursue broader social goals than private companies, such as employing many people to reduce unemployment (Megginson 2005). State ownership is usually associated with fewer agency problems, which can affect the company's performance and lead to sales growth and performance improvement. In addition, state owners tend to intervene in the company's activities owing to their political self-interest, leading to the transfer of wealth to voters at the company's expense. State-owned companies can incur more labour costs because of the political control of state owners, such as paying excess wages and maintaining employment levels. This is done to gain political support, and these socio-political goals may conflict with the interests of other stakeholders.

Previous studies have documented the detrimental effects of political intervention on the financial performance of state-owned companies (Micco et al. 2007; Shleifer 1998; Shleifer and Vishny 1994). Given their socio-political objectives, it can be concluded that these companies have more diverse goals than private companies (Bai et al. 2000; Sapienza 2004). According to Tirole (1994), measuring progress against socio-political objectives is challenging. In addition, politicians may use their influence and instruct managers not to cut resources when sales decline (e.g., not to fire employees or reduce wages). This would maintain the current employment level in the interest of politicians (Shleifer 1998). Private companies do not have such socio-political considerations in their resource adjustment decisions.

Moreover, managers of state-owned companies may refuse to cut labour resources when sales decline to protect their personal interests or avoid making difficult layoff decisions (Anderson et al. 2003). In this situation, it would be difficult to measure the overall performance of state-owned companies (Bai et al. 2000). In private companies, it is easier to measure performance because their primary goal is to maximise profit.

Cohen et al. (2017) found that government managers adjust resources related to administrative services faster when revenues decrease than when they rise (anti-sticky cost behaviour). In contrast, they adjust service costs faster for upward than for downward activity changes (sticky cost behaviour). In this regard, Xue and Hong (2016) investigated the relationship between earnings management, corporate governance, and cost stickiness and found that good corporate governance reduces cost stickiness.

Prabowo et al. (2018) examined state ownership's effect on companies' labour cost stickiness in 22 European countries. They found that governments are more likely to interfere in the decision-making processes of state-owned enterprises and demand desirable firm activities from a socio-political perspective. For example, politicians may instruct

state-owned companies to avoid layoffs to minimise unemployment rates to win political support. The varied objectives of state-owned companies also make it more challenging to control managers' behaviour, leaving more room for managerial discretion and the pursuit of self-interests through empire-building behaviour. Both state intervention and managerial self-interest restrain managers from laying off employees or reducing employee wages when sales decrease, which may lead to greater labour cost stickiness. Data from 1993 to 2012 reveal that state-owned companies exhibit greater labour cost stickiness than private companies. Their labour cost stickiness also varies predictably with socio-political variables such as election years and left-wing governments.

The state-owned companies have socio-political goals and interests, bear more labour costs such as additional wages and maintaining employment levels, and resist firing employees or reducing wages. Therefore, when sales decrease, they resist adjusting resources by reducing the labour force, which causes labour cost stickiness. Given the above, we expect higher labour cost stickiness in state-owned companies than in non-state-owned companies. Based on these arguments, the first hypothesis is proposed as follows:

H1. *State-owned companies exhibit greater cost stickiness.*

The above hypothesis that state-owned companies exhibit greater cost stickiness is plausible and supported by several theoretical and empirical studies, as explained below:

First, state-owned companies often face political and social pressures to maintain stability and avoid sudden cost reductions. This is because they are expected to serve broader social goals, such as employment generation and economic development, in addition to their financial performance. As a result, state-owned companies may be less responsive to changes in activity levels and exhibit greater cost stickiness than privately owned companies (Pan et al. 2022).

Second, state-owned companies often have complex ownership structures and governance mechanisms that can lead to a less efficient cost structure. For example, state-owned companies may have multiple stakeholders with conflicting goals and interests, such as government agencies, labour unions, and minority shareholders. These stakeholders may pressure the management to maintain the status quo and avoid cost reductions, leading to greater cost stickiness (Chen 2001).

Empirical evidence supports the hypothesis that state-owned companies exhibit greater cost stickiness (Schweizer et al. 2017). However, it is essential to note that various factors may moderate the relationship between state ownership and cost stickiness. For example, the degree of government intervention in the operations of state-owned companies may vary across countries and industries, leading to different levels of cost stickiness. Additionally, state-owned companies' sizes, complexity, and competitive environments may influence their cost behaviour.

3. Family Ownership and Labour Cost Stickiness

Family businesses have made significant contributions to the economic development of countries. Prior research has shown that family companies account for many worldwide businesses (De Massis et al. 2018). A family business is a company where the founder or family member is the director or owns a substantial portion of the shares. Family companies have a distinct ownership structure, and family member/s are long-term investors and often hold executive management positions. Families can increase their level of control in diverse ways, but the most common way is to increase company ownership. The higher the ownership concentration, the easier it is for families to pursue their interests (Gomez-Mejia et al. 2011). Family ownership can affect many of the company's activities and processes, which could lead to cost stickiness. In general, family companies exhibit greater cost stickiness than other companies. In family companies, managers can exert greater control and influence and often prioritise their socioemotional wealth over financial gains (Gomez-Mejia et al. 2011). As a result, family companies are less likely to cut costs when sales decline compared to non-family companies, leading to greater cost stickiness.

The cost stickiness literature suggests that the decision to retain unutilised resources when sales decline is likely to increase the firm's cost-to-sales ratio. This increase reflects managerial optimism about future sales as well as positive expectations of future earnings (Anderson et al. 2007). Chung et al. (2019) investigated the relationship between institutional ownership and cost stickiness. They found that institutional ownership is negatively associated with cost stickiness in the long term, leading to better market performance.

Yao (2018) examined the relationship between cost stickiness, ownership concentration, and enterprise risk in a sample of listed Chinese manufacturing companies between 2008 and 2015. The results showed that cost stickiness significantly increases the risk of companies. In addition, as one of the main components of corporate governance, ownership concentration greatly impacted the relationship between cost stickiness and enterprise risk.

Therefore, with the decrease in production and sales, non-economic considerations such as emotional preferences cause managers' unwillingness to reduce resources, leading to the stickiness of labour costs. Therefore, based on the perspective of social-emotional wealth, we expect family firm attachment to have higher costs than non-family firms. Based on these arguments, the second and third hypotheses are proposed as follows:

H2. Family companies exhibit cost stickiness.

The above hypothesis that family companies exhibit cost stickiness is plausible and supported by several theoretical and empirical studies.

First, family companies often have a long-term orientation and are driven by non-financial goals such as maintaining family control, preserving the family legacy, and building social capital. These goals may lead to a focus on stability and continuity and a preference for maintaining existing cost structures rather than reducing costs in response to changes in activity levels. As a result, family companies may exhibit greater cost stickiness than non-family companies (Chen 2022).

Second, family companies often have a unique governance structure that can influence their cost behaviour. Family members often hold key positions in the company, and family ties and relationships may play a significant role in decision making. This can lead to a reluctance to make substantial changes to the cost structure, especially if they are seen as potentially disruptive to family relationships or the company's long-term goals (Abudy and Shust 2022).

H3. The higher the ownership concentration in family companies, the greater the cost stickiness.

The hypothesis that the higher the ownership concentration in family companies, the greater the cost stickiness is plausible and supported by several theoretical and empirical studies.

First, higher ownership concentration in family companies can lead to stronger control by the family over decision making, including the decision on cost management. This can result in a greater preference for stability and continuity and a reluctance to change the cost structure significantly. As a result, family companies with higher ownership concentration may exhibit greater cost stickiness compared to those with lower ownership concentration (Restuti et al. 2022a).

Second, higher ownership concentration in family companies can also lead to a more substantial alignment of interests between the family and the company. The family's financial and non-financial interests are more closely linked to the company's performance, which can result in a greater focus on the company's long-term goals. This can also result in a preference for maintaining existing cost structures rather than reducing costs in response to changes in activity levels. As a result, family companies with higher ownership concentration may exhibit greater cost stickiness (Restuti et al. 2022b; Chen 2022).

4. Research Method

The present study employed a quantitative, ex post facto design. The population consisted of all the companies listed on the Tehran Stock Exchange (TSE) from 2011 to 2020.

Companies that were continuously active during the research period without a trading halt of more than six months were included in the sample. Investment firms, insurance companies, banks, credit institutions, and holding and leasing companies were excluded because of the unique nature of their activity. Overall, 151 companies were included in the sample (1510 firm-year observations). For some years companies were removed because of the inaccessibility of their data and financial statements and the continuous monitoring by auditors and regulators (Daryaei et al. 2022; Nassirzadeh et al. 2022; Shandiz et al. 2022).

Selecting companies listed on the Tehran Stock Exchange (TSE) between 2011 and 2021 to study the effects of ownership on cost stickiness can provide valuable insights into the behaviour of firms in an emerging market context.

First, the TSE is the central stock exchange in Iran, and it has experienced significant growth and development over the past decade. The number of listed companies on the TSE has increased from 337 in 2011 to 647 in 2021, reflecting the increasing importance of the TSE as a platform for raising capital and investing in Iranian companies (Tehran Stock Exchange). This growth has also been accompanied by improvements in the regulatory and legal framework governing the TSE, which has increased transparency and improved the quality of financial reporting.

Second, Iran is an emerging market with unique institutional characteristics, such as a high degree of state ownership and control, which can significantly impact the behaviour of firms. By studying the effects of ownership on cost stickiness in Iranian companies, we can better understand the influence of institutional factors on cost behaviour in emerging markets, which can have important implications for policy makers and investors.

Furthermore, the study period (2011–2021) covered a period of significant economic and political changes in Iran, including the lifting of international sanctions in 2016 and the subsequent reintegration of Iran into the global economy. This has had a significant impact on the behaviour of firms in Iran, and studying the effects of ownership on cost stickiness during this period can provide insights into the response of firms to these changes.

Finally, using a sample of companies listed on the TSE allowed for selecting a diverse range of firms, including family-owned and state-owned companies, as well as companies with varying levels of ownership concentration. This provided a comprehensive view of the effects of ownership on cost stickiness and allowed for the examination of potential moderating factors, such as firm size and industry.

In conclusion, selecting companies listed on the Tehran Stock Exchange (TSE) between 2011 and 2020 to study the effects of ownership on cost stickiness was appropriate. It provided valuable insights into the behaviour of firms in an emerging market context. The TSE is a growing and dynamic market. The study period covered a period of significant changes in Iran’s economic and political environment, making it an ideal context for studying the impact of ownership on cost stickiness.

4.1. Variables and Models

4.1.1. Dependent Variable: Labour Cost Stickiness

This variable is calculated as the change in the natural logarithm of labour costs. The hypotheses can be tested by replacing labour cost in the cost stickiness model proposed by Anderson et al. (2003) as follows:

$$LN \left[\frac{COST_{i,t}}{COST_{i,t-1}} \right] = \beta_0 + \beta_1 LN \left[\frac{SALES_{i,t}}{SALES_{i,t-1}} \right] + \beta_2 DECDUM * LN \left[\frac{SALES_{i,t}}{SALES_{i,t-1}} \right] + \varepsilon_{i,t}$$

where $COST_{i,t}$ and $COST_{i,t-1}$ are the labour costs of firm i in year t and in year $t - 1$, respectively; $SALES_{i,t}$ and $SALES_{i,t-1}$ are the net sales of firm i in year t and in year $t - 1$, respectively; and $DECDUM$ is a dummy variable that equals 1 if $SALES_{i,t-1} > SALES_{i,t}$, and 0 otherwise.

Since $DECDUM$ is equal to 0 when sales increase, β_1 denotes the percentage cost increase due to a 1% increase in sales. Similarly, since $DECDUM$ is equal to 1 when sales decrease, the sum of the coefficients $\beta_1 + \beta_2$ denotes the percentage decrease in costs due

to a 1% decrease in sales. If costs are sticky, the percentage increase in costs for an increase in sales should be more significant than the decrease in costs for a decline in sales. In other words, β_1 should be greater than 0, and β_2 should be less than 0.

4.1.2. Independent Variables

The following independent variables were included in the model:

- State ownership (*GOV*): Ownership of companies by the government or state-owned entities (Boardman and Vining 1989).
- Family ownership (*Family*): A dummy variable that equals 1 if at least 20% of voting rights are owned by the founding family and 0 otherwise (Wang 2006; Mishra et al. 2001).
- High family ownership concentration (*High_Fam*): A dummy variable that equals 1 if family ownership concentration is higher than the median and 0 otherwise.

4.1.3. Control Variables

The control variables were as follows (Lopatta and Kaspereit 2014; Lopatta et al. 2020):

- Asset intensity (*Asn*): Total assets divided by total sales.
- Market value (*MV*): Logarithm of the market value of equity.
- Losses (*LOSS*): Equal to 1 if the company reports a loss in the year t , and 0 otherwise.
- Loss forecast (*Down*): Equal to 1 if the company has predicted a loss for the year t , and 0 otherwise.
- Profit margin (*Margin*): Gross profit divided by sales.
- Changes in income (*NIncome*): Changes in net income between t and $t - 1$.

4.2. Models

The following three models were used to test the hypotheses:

The following model was used for the first hypothesis:

$$\Delta \ln Labor_{i,t} = \beta_0 + \beta_1 \Delta \ln SALE_{it} + \beta_2 DEC_{i,t} * \Delta \ln SALE_{it} + \beta_3 STATE_{i,t} + \beta_4 STATE_{i,t} * \Delta \ln SALE_{it} + \beta_5 STATE_{i,t} * DEC_{i,t} * \Delta \ln SALE_{it} + \beta_6 ASIN_{i,t} + \beta_7 MV_{i,t} + \beta_8 LOSS_{i,t} + \beta_9 DOWN_{i,t} + \beta_{10} MARGIN_{i,t} + \beta_{11} NINCOME_{i,t} + \beta_{12} INDI_{i,t} + \beta_{13} YEAR_{i,t} + \epsilon_{i,t}$$

The following model was used for the second hypothesis:

$$\Delta \ln Labor_{i,t} = \beta_0 + \beta_1 \Delta \ln SALE_{it} + \beta_2 DEC_{i,t} * \Delta \ln SALE_{it} + \beta_3 Family_{i,t} + \beta_4 Family_{i,t} * \Delta \ln SALE_{it} + \beta_5 Family_{i,t} * DEC_{i,t} * \Delta \ln SALE_{it} + \beta_6 ASIN_{i,t} + \beta_7 MV_{i,t} + \beta_8 LOSS_{i,t} + \beta_9 DOWN_{i,t} + \beta_{10} MARGIN_{i,t} + \beta_{11} NINCOME_{i,t} + \beta_{12} INDI_{i,t} + \beta_{13} YEAR_{i,t} + \epsilon_{i,t}$$

The following model was used for the third hypothesis:

$$\Delta \ln Labor_{i,t} = \beta_0 + \beta_1 \Delta \ln SALE_{it} + \beta_2 DEC_{i,t} * \Delta \ln SALE_{it} + \beta_3 HIGH-FAM_{i,t} + \beta_4 HIGH-FAM_{i,t} * \Delta \ln SALE_{it} + \beta_5 HIGH-FAM_{i,t} * DEC_{i,t} * \Delta \ln SALE_{it} + \beta_6 ASIN_{i,t} + \beta_7 MV_{i,t} + \beta_8 LOSS_{i,t} + \beta_9 DOWN_{i,t} + \beta_{10} MARGIN_{i,t} + \beta_{11} NINCOME_{i,t} + \beta_{12} INDI_{i,t} + \beta_{13} YEAR_{i,t} + \epsilon_{i,t}$$

5. Findings

5.1. Descriptive Statistics

The descriptive statistics (mean, median, standard deviation, maximum, and minimum) are provided in Table 1.

Table 1. Descriptive statistics of the variables.

Variables		Mean	Median	SD	Min.	Max.
Dependent	Labour Cost Stickiness	0.198	0.196	0.170	−0.146	0.521
Independent	State Ownership (STATE)	0.425	0.510	0.343	0.000	0.994
	Family Ownership	0.146	0.000	0.353	0.000	1.000
	High Family Ownership Concentration	0.513	1.000	0.501	0.000	1.000
Control	Asset Intensity	0.395	1.247	0.699	0.488	3.136
	Market Value	15.246	15.004	1.477	12.881	18.179
	Loss	0.113	0.000	0.317	0.000	1.000
	Loss Forecast	0.032	0.000	0.175	0.000	1.000
	Profit Margin	0.187	0.156	0.158	−0.066	0.509
	Changes in Income	0.592	0.572	1.849	−2.468	5.962
Number of Observations: 151 firm-years						

The results indicated that the mean labour cost increased by an average of 19% each year. The mean value of state ownership indicated that about 42% of the shares of the sample companies were owned by the government and about 15% by family owners. On average, 11% of the sample companies had reported losses.

Given that there was no significant difference between mean and median values and no considerable dispersion, we can conclude that the data followed a normal distribution. It must be noted that according to the central limit theorem, observations above 30 approximated a normal distribution. It is also worth noting that the outliers were (winsorised) at their 1st and 99th percentiles before data processing.

5.2. Hypotheses Testing

We used the White and Durbin–Watson tests as appropriate tools for examining the effects of ownership on cost stickiness. By detecting and correcting for heteroscedasticity and autocorrelation, these tests can help to ensure that the regression analysis accurately reflects the relationship between ownership and cost stickiness.

The White test is a test for heteroscedasticity, which refers to the presence of unequal variances in a dataset. It is often used in regression analysis to check for heteroscedasticity in the residuals, which are the differences between the actual and predicted values of the dependent variable. Heteroscedasticity can occur when the residuals’ variance changes as the dependent variable’s level changes. If heteroscedasticity is present, it can affect the regression analysis results and lead to incorrect conclusions. The White test can detect heteroscedasticity and provide a corrected regression analysis.

The Durbin–Watson test is for autocorrelation, which refers to the presence of correlation between the residuals at different points in time. Autocorrelation can occur when the residuals are not independent, affecting the regression analysis results and leading to incorrect conclusions. The Durbin–Watson test can detect autocorrelation and provide a corrected regression analysis.

Both tests can be used to examine the effects of ownership on cost stickiness by checking for the presence of heteroscedasticity and autocorrelation in the regression analysis. If either of these conditions is present, it can indicate that the regression results are biased and may need to be corrected. This can help to ensure that the analysis accurately reflects the relationship between ownership and cost stickiness.

5.2.1. The First Hypothesis

The classical regression assumptions were evaluated to assess the model’s validity, including homoscedasticity, independence (lack of autocorrelation) of residuals, and lack of multicollinearity (please see Table 2). The White test was used to check for homoscedasticity. Given the *p*-value of the White test statistic (0.16), the null hypothesis (homoscedasticity) was confirmed. In addition, the Durbin–Watson test was used to check for autocorrelation.

The Durbin–Watson statistic for the first hypothesis was 2.24, indicating the independence of residuals. Furthermore, the variance inflation factor (VIF) for all the variables was less than 5, showing the lack of multicollinearity among the variables.

Table 2. Estimation results for the first hypothesis.

Variable	Coefficient	SE	t-Statistic	p-Value
INTERCEPT(β_0)	0.054	0.047	1.16	0.246
$\Delta \ln$ SALE(β_1)	0.198	0.031	4.29 **	0.000
DEC*SAL(β_2)	−0.053	0.097	−3.55 **	0.000
STATE(β_3)	0.015	0.017	0.89	0.372
STATE*SALE(β_4)	−0.041	0.035	−1.17	0.243
STATE*DEC*SALE(β_5)	0.122	0.073	2.17 *	0.031
ASIN	0.001	0.004	0.14	0.888
MV	0.011	0.003	2.86 *	0.004
LOSS	−0.005	0.017	−0.31	0.754
DOWN	0.004	0.018	0.22	0.827
MARGIN	0.002	0.046	0.05	0.964
NINCOME	0.006	0.003	4.68 **	0.000
Observation	1510			
Industry/year fixed effects	yes			
F-statistic 29.263(0.000)	Adjusted R ²	0.33		

* Significant at the 0.05 level; ** significant at the 0.01 level.

As shown in Table 3, the *p*-value of the F-statistic was less than 0.05 (0.000), indicating the significance of the model at the 95% confidence interval (CI). Moreover, the adjusted coefficient of determination (R²) indicated that 33% of the changes in labour cost stickiness could be explained by the variables included in the model.

Table 3. Estimation results for the second hypothesis.

Variable	Coefficient	SE	t-Statistic	p-Value
INTERCEPT(β_0)	0.012	0.087	0.14	0.891
$\Delta \ln$ SALE(β_1)	0.177	0.041	4.33 **	0.000
DEC*SAL(β_2)	−0.151	0.089	−2.21 *	0.028
Family(β_3)	−0.011	0.019	−0.54	0.588
FAM*SALE(β_4)	0.043	0.045	0.96	0.336
FAM*DEC*SALE(β_5)	−0.292	0.122	−2.39 *	0.017
ASIN	−0.003	0.006	−0.49	0.621
MV	0.013	0.005	2.43 *	0.015
LOSS	−0.006	0.023	−0.26	0.792
DOWN	−0.019	0.016	−1.18	0.239
MARGIN	−0.021	0.062	−0.33	0.793
NINCOME	0.002	0.003	0.61	0.545
Observation	1510			
Industry/year fixed effects	yes			
F-statistic 20.997(0.000)	Adjusted R ²	0.26		

* Significant at the 0.05 level; ** significant at the 0.01 level.

Table 3 shows a significant positive relationship between government ownership (0.122) and labour cost stickiness (*p* = 0.031). Therefore, the first hypothesis is accepted. The results indicated that state-owned companies exhibited greater cost stickiness than other companies. The results were consistent with the findings of Prabowo et al. (2018).

5.2.2. Second Hypothesis

As for the second hypothesis, the *p*-value of the White test statistic was 0.16, indicating homoscedasticity. The Durbin–Watson statistic (2.24) confirmed the independence of residuals. Furthermore, the VIF for all the variables was less than 5, showing the lack of

multicollinearity among the variables. The estimation results for the second hypothesis are provided in Table 3.

As shown in Table 4, the *p*-value of the F-statistic was less than 0.05 (0.000), indicating the significance of the model at the 95% CI. Moreover, the value of R2 indicated that 26% of the changes in labour cost stickiness could be explained by the variables included in the model.

Table 4. Estimation results for the third hypothesis.

Variable	Coefficient	SE	t-Statistic	p-Value
INTERCEPT(β_0)	0.206	0.391	0.53	0.599
$\Delta \ln$ SALE(β_1)	0.272	0.084	3.22 **	0.001
DEC*SAL(β_2)	0.061	0.069	0.87	0.382
HIGH-FAMILY(β_3)	0.421	0.154	2.73 **	0.007
HIGH-FAM *SALE(β_4)	-0.298	0.114	-2.61 *	0.009
HIGH-FAM *DEC*SALE(β_5)	-0.216	0.084	-2.56 *	0.011
ASIN	0.008	0.016	0.53	0.598
MV	0.035	0.023	1.52	0.129
LOSS	-0.116	0.069	-1.67	0.096
DOWN	-0.092	0.053	-1.75	0.081
MARGIN	0.181	0.261	0.69	0.487
NINCOME	-0.003	0.002	-1.59	0.113
Observation	1510			
Industry/year fixed effects	yes			
F-statistic 4.833(0.000)	Adjusted R ²	0.32		

* Significant at the 0.05 level; ** significant at the 0.01 level.

According to the results in Table 4, there was a significant negative relationship between family ownership (-0.292) and labour cost stickiness (*p* = 0.017). Family companies were less likely to reduce labour costs when sales decline and thus exhibited greater cost stickiness than non-family companies. Therefore, the second hypothesis is accepted at the 95% CI. The results were consistent with the findings of Prabowo et al. (2018).

5.2.3. Third Hypotheses

The *p*-value of the White test statistic for the third hypothesis was 0.17, indicating homoscedasticity. The Durbin–Watson statistic (2.39) confirmed the independence of residuals. Moreover, the VIF for all the variables was less than 5, showing the lack of multicollinearity among the variables. The estimation results for the third hypothesis are provided in Table 4.

As shown in Table 4, the *p*-value of the F-statistic was less than 0.05 (0.000), indicating the significance of the model at the 95% CI. Moreover, the value of R2 indicated that 32% of the changes in labour cost stickiness could be explained by the variables included in the model.

According to the results in Table 4, a significant negative relationship existed between high family ownership concentration (-0.216) and labour cost stickiness (*p* = 0.011). Family companies with high ownership concentration were less likely to reduce labour costs when sales decline, resulting in greater cost stickiness than non-family companies. Therefore, the third hypothesis is accepted at the 95% CI. The results of the present study were consistent with the findings of Yao (2018).

The findings suggested that companies that eliminate unutilised resources incur resource adjustment costs. Managers may avoid adjusting unutilised resources if these costs are too high, leading to cost stickiness. When managers are optimistic (pessimistic) about future sales, they will be less (more) likely to reduce resources when sales decline. The findings further suggested that managerial incentives affect cost stickiness. Of course, managers consider their own interests when making resource allocation decisions. Because of this, corporate governance significantly affects managerial incentives by encouraging or restraining management decisions (Chen et al. 2015). Ownership type is one of the most

critical components of corporate governance and is likely to affect cost behaviour, especially cost stickiness. Different owners have different cost-controlling incentives, and companies with varying types of ownership are likely to exhibit different behaviours (Banker et al. 2018). Companies are likely to show greater stickiness if owners seek to maintain unutilised resources when sales decline to protect their interests.

State and family ownership are among the most common forms of ownership worldwide. What distinguishes these types of ownership is that managers tend to pursue financial and non-financial goals. For example, state-owned companies emphasise socio-political objectives to secure their governments' political interests (Bai et al. 2000; Megginson 2005). Socio-political objectives often conflict with companies' financial goals and make it more challenging to measure their overall performance. Similarly, families try to preserve their reputation, lineage, and culture by founding family businesses. As a result, family companies tend to prioritise socioemotional wealth over financial gain (Gomez-Mejia et al. 2011). Therefore, in state-owned companies and family companies, financial and non-financial goals affect cost stickiness. These companies are more likely to retain unutilised resources when sales decline since they view resource adjustment as detrimental to their non-financial objectives. Such a decision increases the degree of their cost stickiness (Anderson et al. 2007).

The present research results indicated that state-owned and family companies exhibit greater cost stickiness. The higher the ownership concentration of family companies, the higher their cost stickiness and the higher priority given to non-financial goals. The findings of this research were consistent with the results of Prabowo et al. (2018), which found that the varied objectives of state-owned companies also make it more challenging to control managers' behaviour, leaving more room for managerial discretion and the pursuit of self-interests through empire-building behaviour. Both state intervention and managerial self-interest restrain managers from laying off employees or reducing employee wages when sales decrease, which may lead to greater labour cost stickiness.

6. Policy Implications

The results of this study have several policy implications for both state-owned and family-owned companies. If state-owned companies prioritise political objectives over labour cost reduction, policy makers may need to reconsider the level of state ownership in specific industries. Privatising or encouraging private investment can be considered a way to increase efficiency and responsiveness in state-owned companies.

Policy makers can consider implementing policies that promote more transparent decision making and accountability in labour cost management for family-owned companies. Additionally, education and training programmes can be developed to promote a better understanding of the benefits of labour cost flexibility and the negative impact of labour cost stickiness on long-term business sustainability.

The study's findings also highlight the importance of diversification in ownership structures. Policy makers can encourage more diversified ownership structures in specific industries to promote a balance between political objectives, socioemotional wealth, and business sustainability. This can include policies that advance employee ownership or other forms of cooperative ownership, which can encourage more flexible labour cost management while promoting shared ownership and decision making.

Overall, the policy implications of this study suggest the need for a more nuanced understanding of ownership structure and its impact on labour cost management. Policy makers may need to consider various factors, including political objectives, socioemotional wealth, and long-term business sustainability, when designing policies that promote more effective and efficient labour cost management across different types of businesses.

7. Conclusions

This study shed some light on the mixed reported results in the literature regarding the effects of ownership on labour cost stickiness. It investigated the impact of ownership on labour cost stickiness in companies listed on the Tehran Stock Exchange (TSE), which is

a different environment with different labour market characteristics. The study examined the stickiness of labour costs in state and family businesses versus non-state and non-family companies.

Contrary to some reported findings in the literature, the results of our study suggested that labour cost stickiness is higher in state and family companies than in non-state and non-family businesses. The findings showed that a decrease in the activity levels of state and family companies leads to fewer labour cost reductions than those of non-state and non-family companies. However, the reasons behind labour cost stickiness in state-owned and family companies are not the same. State-owned companies are likely to prioritise political objectives. In contrast, family companies are more likely to prioritise their reputation, lineage, culture, and socioemotional wealth when facing labour cost reduction. The above factors can be considered the main reasons for state and family businesses maintaining unutilised labour resources in the short period when there is a reduction in activity level, leading to labour cost stickiness.

The results can help managers understand cost behaviour in order to plan, control, and reduce costs more effectively. The political implications of the current research can be expressed in this way: based on the research results, labour cost stickiness is higher in state and family ownership. This means that the preference for political and social wealth in state ownership and the preference for emotional wealth in family ownership prevent the reduction of human power under conditions of production decline. This is an opportunity for crisis economies and a threat to free and developed economies and can have implications for policy makers.

Further study can examine the impact of government legislation on labour force employments, minimum wage settings, and labour taxes, which could lead to cost stickiness.

This research is unique since it was carried out in Iran as an example of a developing country, and scant research has been done on labour cost stickiness in developing countries. However, as with any study using archival data, this study has some limitations. One of the limitations is the lack of opportunity for follow-up interviews with the managers of participant firms. The selected firms may also not represent the complete range of characteristics of all businesses in the country. This can be considered another limitation of this study that may prevent generalising the findings to other firms.

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