Political Uncertainty and Cost Stickiness: Evidence from Prefecture-city Official Turnover in China

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A thesis presented for the degree of Master of Research

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Abstract

How politics influences firm behaviours and economic outcomes is a longstanding question in research and public debate. One important way in which politics is conjectured to influence real decisions is through the channel of uncertainty. While extensive prior studies focus on the impact of political uncertainty on firms' investment and financing activities, the evidence on how political uncertainty affects firms' operating decisions remains scarce. To fill this gap in the literature, this study investigates the impact of political uncertainty on asymmetric cost behaviour (i.e. cost stickiness) for listed firms in China. Using the turnover of prefecture-city officials as a measure of exogenous fluctuations in political uncertainty, we find that political turnover leads to a higher degree of cost stickiness, implying that firms retain slack resources when political uncertainty is high. Moreover, the effect of political uncertainty on cost stickiness is more pronounced for firms residing in regions with weak institutional environment, firms that are privately owned and with small size, and when the newly appointed official is from a different city. Our findings suggest that political uncertainty is an important channel through which the local political process influences corporate operational decisions, thus firms should take political uncertainty into account when setting their resource adjustment policies.

Statement of Originality

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

(Signed)

Date: 26 October 2020

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Chapter 1: Introduction

How politics influences firm behaviours and economic outcomes is a longstanding question in research and public debate. One important way in which politics is conjectured to influence real decisions is through the channel of uncertainty. Political events such as the Brexit vote in the United Kingdom, the Yellow Vest Movement in France create significant policy uncertainty, which requires firms to adapt their investment, growth plans, and allocation of resources as a response. While extensive prior studies focus on the impact of political uncertainty on firms' investment and financing activities, the evidence on how political uncertainty affects firms' operating decisions remains scarce. This is an important question because politics has direct effects on firms' operations through cost of inputs (work and resources) and customer behaviours and can also threaten business continuity. In this thesis, we contribute to the literature by examining how political uncertainty affects firms' operational decisions evident in cost stickiness.

The concept of cost stickiness is firstly introduced by Anderson et al. (2003), referring to a phenomenon in which costs response to an increase in sales is greater than costs response to an equivalent decrease in sales. Research on the drivers of cost stickiness has highlighted, for example, deliberate managerial decisions (e.g. Anderson et al., 2003; Banker et al., 2013) as well as firm-level characteristics such as asset intensity and employee intensity (e.g. Balakrishnan et al., 2004).[1] However, in focusing on cross-sectional determinants of cost stickiness, extant research generally ignores the inter-temporal changes in cost stickiness. Prior studies argue that managers respond to uncertainty by delaying downward adjustment of committed resources until they are more certain about the permanence of a decline in demand (e.g. Anderson et al., 2003). This suggests that cost stickiness appears when uncertainty rises and reverses when uncertainty is resolved. Nevertheless, this inter-temporal change in cost stickiness is rarely discussed because prior research puts more emphasis on what uncertainty rises rather than when uncertainty rises. Typically, political uncertainty arises when a

[1] See Banker and Byzalov (2014) and Banker et al. (2018) for an excellent review of the extant literature. Chapter 2 of this thesis also provides a detailed literature review on the determinants of cost stickiness.

political event occurs and is resolved afterwards. Given that cost stickiness is an outcome of inter-temporal shifts in uncertainty, the net effect of political uncertainty on sticky cost behaviour provides a good opportunity to examine the inter-temporal pattern in cost stickiness.

In this study, we examine the relationship between political uncertainty and cost stickiness in an emerging country, China, which is the second largest economy of the world. Specifically, we use prefecture-city official turnover in China as a measure of political uncertainty. Recently, a number of studies use national election as an exogenous shock to examine the effect of political uncertainty (e.g. Bialkowski et al., 2008; Boutchkova et al., 2012; Julio & Yook, 2012; Julio & Yook, 2016; Lee et al., 2020). As Julio and Yook (2012) note, national election provides a natural experimental framework for studying the effects of policy uncertainty on corporate decisions, mitigating the endogeneity between political uncertainty and economic fundamentals. However, there is no national election uncertainty in a one-party system, like China. In China, the political uncertainty is unequivocally associated with the election and turnover of government officials at local levels, for example, prefecture-city party secretaries and mayors. Naturally, political uncertainty highly increases when change in local government official occurs. It is because local governments have significant autonomy in their regions[2] and thus their turnover has wide-ranging implications not only for industry regulation, economic policy, tax distortion, but also for the economic environment where firms operate (Chen et al., 2018). Consequently, firms often face a significant amount of uncertainty related to the timing and content of local government policy changes, as well as the potential impact that these policies will have on firms' operation. Since the option value of waiting increases when uncertainty is high (Bloom et al., 2007), firms have strong incentives to delay the deliberate resource commitment decisions in turnover years, which in turn increases the degree of cost stickiness. Therefore, the effect of political uncertainty on cost stickiness is an important empirical question associated with firms' operation and profitability. Moreover, we expect that

[2] Xu (2011) describes China as "regionally decentralized authoritarianism."

political uncertainty stemming from local government official turnover strengthens firms' sticky cost behaviour.

China provides an ideal setting to study the relationship between political uncertainty and cost stickiness for several reasons. First, compared with the United States and other developed countries which form the backdrop of majority of existing studies,[3] China provides a more opportune context for examining the impact of political uncertainty. Due to China's unique socioeconomic system and political bureaucracy, politics and politicians play a more explicitly predominant role in China than in developed countries. The Chinese government directly controls resources and allocates wealth, which in turn creates uncertainties for firms and volatilities in financial markets (Haveman et al., 2017). Thus, managing political uncertainty is a primary task for Chinese firms, rather than a secondary task to firms in developed countries, and political concerns likely exert a paramount, not a peripheral, effect on business decisions, including decisions about resource adjustments. Second, prefecture-city official turnover in China creates a unique experimental setting for the study. Decisions of appointing officials in prefecture-city are exclusively dictated by the upper level government in secret deliberations. As such, Chinese firms are subject to frequent, but unanticipated changes in their political leaders, with no advance knowledge of likely timing, who is likely to gain the office, or what their approach to business is likely to be.[4] Hence, prefectural official turnovers provide a better randomized sample of external political shocks than the fixed calendar election cycles used in prior studies. Third, China has distinct institutional features that could potentially affect the relationship between political uncertainty and cost stickiness, for example, regional divergences of institutional environment and the prominent role of state-owned enterprises (SOEs) (Jiang & Kim, 2020). Analysing how these characteristics interact with local political turnover in a market that particularly values business-government relations can deepen our understanding of the possible asymmetry of the political uncertainty effect. Fourth,

[3] For example, Julio and Yook (2012), Pastor and Veronesi (2012), Gulen and Ion (2016), and Gao et al. (2019), among others.

[4] Local political leaders may also differ in their abilities to promote local economic growth (Yao & Zhang, 2015).

unlike other countries, China has rich data for analysis. To limit the power controlled by local officials and empower career politicians, prefecture-city official turnover is undergone frequently. By using this large sample data, the study can provide more comprehensive and reliable results.

Our empirical investigation offers a number of findings. First, we document novel evidence that political uncertainty stemming from prefecture-city official turnover increases firms' cost stickiness, controlling for firm-level characteristics and local economic conditions. Our coefficient estimates imply that a 1% (corresponding to 50.12 million RMB) decrease in sales revenue leads to a 1,211,272 RMB increase in sticky operating costs in turnover years relative to non-turnover years, reinforcing the economic significance of our results. The results are consistent with the findings in Lee et al. (2020) and support the positive relationship between political uncertainty and cost stickiness. To address the potential endogeneity concern, we conduct instrumental variable analysis and placebo tests, and find similar results. In addition, our findings are robust to alternative specifications of local official turnover, other cost categories, and after controlling the national election effect.

After establishing a positive relation between local political uncertainty and the degree of cost stickiness, we turn to focus on the cross-sectional analyses. We show that the impact of political uncertainty on cost stickiness is stronger when firms are located in regions with weaker institutional environment. The result supports the findings in Feng and Johansson (2017) and Gu et al. (2020). Markets with weak institutions and marketization create opportunities for political factors to influence business activities (Gu et al., 2020). Thus, when political turnover takes place in a region characterized by weak institutional environment, these weak institutions amplify the political uncertainty arising from changes in local government officials, reinforcing firms' cost stickiness.

Besides local institutional environment, we also focus on two firm-level factors that potentially affect the relationship between political uncertainty and cost stickiness. The first one is ownership structure. We find that the impact of political uncertainty on cost stickiness is more pronounced for privately owned enterprises (POEs) than for SOEs.

This result is consistent with the findings in Feng and Johansson (2017) on innovation and Ni (2019) on cash holdings. SOEs normally receive various economic benefits from both central and local governments. When the turnover occurs, the state ownership makes the firm more likely to continue receiving support from new leader when she takes up her new position immediately, leaving such firms less vulnerable to political uncertainty. The second one is firm size. Due to their larger resource bases and the advantage of economies of scale, large firms are better equipped than small ones to handle the political uncertainty in a transitional economy (Haveman et al., 2017). As a result, we expect that the impact of local political turnover will concentrate on small firms. Our empirical results confirm this conjecture.

Finally, we consider the effect of the degree of political uncertainty by distinguishing the turnover types into two categories: external appointment versus local promotion. We show that the effect of political uncertainty is stronger for external appointments, which generally represent a higher degree of political uncertainty. Our finding reveals that the appointment of an outsider by a higher level of government can lead to a more dramatic change in local economic policies.

Our study contributes to the literature in the following ways. First, we contribute to the growing literature on the economic implications of political uncertainty. Recent studies in corporate finance have documented that political uncertainty have a negative effect on firms' investment and financing activities, such as reduced investments, increased risk premiums, and higher cost of capital (e.g. Julio & Yook, 2012; Gulen & Ion, 2016; Colak et al., 2017; Gao et al., 2019), but rarely discussed how it affects firms' operations. We extend this line of research by investigating the relationship of political uncertainty and cost stickiness.

Second, this study relates to the work of Lee et al. (2020), who investigate the impact of political uncertainty arising from national election on cost stickiness in 55 countries. Nonetheless, the authors exclude China in their sample because there is no national election uncertainty in a one-party system. In this study, we explore the impact of political uncertainty on cost stickiness in China, the second largest economy in the world as well as the largest emerging market. Specifically, we provide the first piece of

evidence of relationship between political uncertainty and cost stickiness at the local government level.

Third, this study examines the impact of regional institutional environment, thereby extending existing cross-country studies to encompass a more microscopic perspective. Calleja et al. (2006), Banker et al. (2013) and Lee et al. (2020) argue that differences in legal origins across countries have important effects on corporate behaviour. Based on this logic, we investigate differences in regional institutional environments in China, and their impact on the relationship between political uncertainty and cost stickiness. In contrast to the finding in Lee et al. (2020) that firms in countries with weak institutions are less sensitive to political uncertainty, we document the opposite at the local government level in China. We therefore add to the literature by revealing that local institutional environment plays an important and unique role in the effect of local official turnover on firms' sticky cost behaviour.

The remainder of this thesis is structured as follows. Chapter 2 presents the literature and the development of hypotheses. Chapter 3 discusses data and methodology. Chapter 4 reports the empirical results. Finally, Chapter 5 is the conclusions and the limitations of this study.

Chapter 2: Literature Review and Hypothesis Development

2.1 The Determinants of Cost Stickiness

The traditional cost behaviour model distinguishes costs as fixed and variable and describes a mechanistic relation between activity and costs, stating that fixed costs are independent of the level of activity and variable costs are linearly and proportionally related with changes in the level of activity. However, recent studies investigate the complexity between costs and activities and document asymmetric cost behaviour or cost stickiness. Noreen and Soderstrom (1994) are the first to examine whether costs change proportionally with changes in the level of activity. They test whether overhead costs are proportional to overhead activities by using cross-sectional data from hospitals in Washington State. Noreen and Soderstrom (1994) argue that overhead costs are not proportional to activity levels, although only a few of the differences are statistically significant. Based on this inference, Anderson et al. (2003) conduct a more intensive investigation by examining the relationship between selling, general and administrative (SG&A) costs and net sales revenue on US industrial firms from 1979 to 1998. They show that SG&A costs increase by 0.55% in response to a 1% increase in sales revenue but decrease by 0.35% in response to a 1% decrease in sales revenue. Anderson et al. (2003) provides the first piece of strong evidence of asymmetric cost behaviour and first characterize this cost behaviour as "sticky". More importantly, they also explore the drivers of asymmetric cost behaviour and argue that sticky costs arise because managers deliberately adjust the resources committed to activities. When the level of activity declines, the manager has to decide whether to adjust capacity in order to reduce variable costs. Anderson et al. (2003) explain that the manager often hesitates to cut the slack resource if he believes that decline of demand is temporary. Furthermore, the manager believes that the adjustment costs of cutting slack resources are higher than the costs of retaining these resources during the short period of demand decline. Consequently, the manager is used to wait until she is sure about the demand change and costs thus behave asymmetrically.

Following Anderson et al.'s (2003) seminal work, many studies focus on investigating

the determinants of cost stickiness. Among them, one strand of literature aims at understanding how managerial deliberate decisions influence asymmetric cost behaviour. For instance, Subramaniam and Weidenmier (2003) explore sticky cost behaviour with respect to costs of goods sold (COGS) as well as SG&A costs. They find that managers normally retain underutilized resources rather than incur the costs of renegotiating the contracts when revenues decrease. Their results are consistent with the findings in Anderson et al. (2003) and confirm that cost stickiness is the result of managers' asymmetric response to demand change. Later, Banker et al. (2008) shed new insight on the impact of deliberate decisions by examining the relation between mangers' future belief of demand and cost stickiness.[5] While Anderson et al. (2003) assume that managerial intervention only affects costs when sales decrease, Banker et al. (2008) further expand the assumption and show that managerial intervention affects costs in both directions, that is, when sales increase as well as when sales decrease. By using the data from 1979 to 1998, they find that the stickiness in SG&A costs is stronger when managers are optimistic with respect to future demand. But, if managers are pessimistic, then costs may decrease more than they increase proportional to sales, resulting in cost anti-stickiness. It is because pessimism magnifies the downward adjustment to costs, which leads to a reversal of stickiness. In a recent study, by using employment protection legistation (EPL) provisions in different countries as a proxy for labour costs adjustment, Banker et al. (2013) reestablish the theory that cost stickiness reflects the deliberate resource commitment decisions of managers. They argue that the degree of cost stickiness is greater in countries with stricter EPL since stricter EPL reflects greater downward adjustment costs for labour. Using a large sample of firms in 19 OECD countries from 1990 to 2008, Banker et al. (2013) document that that extent of cost stickiness is increasing in the strictness of EPL provisions, validating the proposition that cost stickiness is driven by manager's resource adjustment decisions.

In another dimension, Chen et al. (2012) focus on the manager's motivation of

[5] As Anderson et al. (2003) note, managers' deliberate decisions reflect capacity adjustments costs and the belief on future demand.

deliberate resource commitment decisions. They test how empire-building managers affect cost stickiness in response to exogenous demand shocks for firms in the S&P 500 index during the period 1996-2005. The term "empire-building" refers to a manager's tendency to grow the firm beyond its optimal size or to maintain unutilized resources for reasons such as status, prestige and power instead of maximizing firm value (Jensen, 1986; Stulz, 1990; Hope & Thomas, 2008). Chen et al. (2012) use four variables to capture empire-building incentives of managers, including free cash flow, chief executive officer horizon, tenure, and compensation structure. They show that empire-building managers are willing to increase SG&A costs when sales rise but are reluctant to decrease these costs when sales fall, resulting in cost stickiness even in the absence of adjustment costs. Nevertheless, Kama and Weiss (2013) find contrary results and show that managers' self-interest diminishes sticky cost or even eliminates sticky cost behaviour. Kama and Weiss (2013) emphasize on deliberate decisions made by self-interested managers and analyse how resource adjustments made intentionally to earnings target affect the degree of cost stickiness based on all public firms in the United States from 1979 to 2006. They find that costs are sticky when managers have no motivation to meet financial analysts' earnings forecasts. In the presence of incentives to meet target earnings, asymmetric cost behaviour disappears, and costs express symmetric pattern. Such tendency can be explained by the fact that managers are likely to cut slack resources when facing incentives to meet earnings targets, even though they believe that the decline of sales is temporary. Cutting slack resources results in immediate cost savings, which are crucial for meeting earnings targets. When sales increase, however, incentives to meet earnings targets are expected to encourage managers to restrain the hiring of new resources and slow down growth in costs. Kama and Weiss (2013) reinforce the impact of manager's intention on resource adjustment decisions and demonstrate that some deliberate decisions induce sticky costs while others could diminish sticky costs, relying on the motivations of managers.

Furthermore, prior studies also identify other factors contributing to the asymmetric cost behaviour, both in firm level and country level. For example, Anderson et al. (2003) and Balakrishnan et al. (2004) document that asset intensity and employee intensity as

well as macroeconomic (GDP) growth have positive effects on the degree of cost stickiness. Liu and Wang (2009) add additional evidence and suggest that asset intensity, employee intensity and macroeconomic growth are also crucial to explain cost stickiness in the emerging markets, like China. In addition, Venieris et al. (2015) explore the potential relation between intangible investments and cost stickiness for US listed firms from 1979 to 2009. They observe that SG&A costs in firms associated with high proportion of intangible investments exhibit a sticky cost behaviour while SG&A costs in firms associated with low proportion of intangible investments exhibit an anti-sticky cost behaviour. Further, these results are also applicable to other categories of costs, such as research and development (R&D) costs. Cheng et al. (2018) study the effect of limited access to capital on firm cost stickiness in China and find that firms with limited access to capital have lower degree of cost stickiness.

Calleja et al. (2006) examine how corporate governance and legal system affect stickiness of operating costs for listed firms in the US, UK, France and Germany over the period 1988–2004. Both US and UK firms are operating under the common-law system of corporate governance which puts more emphasis on the notion of shareholder maximization and the stock market is to discipline underperformance of management as a means of achieving that objective. As a result, management faces considerable external pressure with regard to maximising the interest of shareholders when making the decisions. In contrast, France and Germany firms are operating under the code-law system of corporate governance which focuses on interest of external and internal groups rather than shareholders only. This system increases the role of co-determination between management, workers and fund providers in the allocation of resources and provides more social protection to workers than those in the US and UK. Under these two different corporate governance systems and legislations, Calleja et al. (2006) reveal that French and Germany firms have much stickier operating costs than US and UK firms, suggesting that rigorous external scrutiny and managerial oversight lessen cost stickiness.

Lee et al. (2020) provide the first piece of evidence that political uncertainty is an important determinant of cost stickiness, which is the closest paper to our study. They

use national election as a proxy for political uncertainty and examine the relationship between national election and cost stickiness in 55 countries for the period 1995-2012. However, they exclude China in their sample given that there is no national election uncertainty in a one-party system. Lee et al. (2020) find that the degree of cost stickiness increases in election years relative to non-election years. Furthermore, the effect of political uncertainty on cost stickiness is more pronounced in countries with sound political and legal institutions. The results suggest that managers retain slack resources when political uncertainty is high but to be resolved afterwards.

The above list of studies illustrates that the inter-temporal changes in cost stickiness is rarely discussed, with limited evidence. This study aims to fill this gap in the literature by testing the association between local official turnover and cost stickiness in China. Since China is the second largest economy in the world as well as the largest emerging market, we consider this study is economically significant.

2.2 The Economic Effect of Political Uncertainty

A growing body of research investigates the importance of political uncertainty to economic activities and financial outcomes. Bialkowski et al. (2008) and Boutchkova et al. (2012) examine stock market volatility around national elections and find that volatility is significantly higher in election years, suggesting an adverse effect of political uncertainty. Likewise Pastor and Veronesi (2012) show that announcements of policy changes trigger stock price declines and increase volatility and risk premia. In addition, Kim et al. (2012) document that political geography has a pervasive effect on the cross-section of stock returns.

Besides the financial markets, political uncertainty also shapes corporate decisions. Julio and Yook (2012) examine the impact of political uncertainty arising from national elections on the investment behaviour of firms in 48 countries from 1980 to 2005. They find that firms reduce investment expenditures by an average of 4.8% during the election years relative to the non-election years. Interestingly, this effect is stronger in countries with civil law origin, fewer checks and balances, a less stable government, and a higher ratio of central government spending to GDP. An et al. (2016) reinforce

Julio and Yook's (2012) argument by exploring the effect of political uncertainty on corporate investment at the local government level. Using prefecture-city official turnover as a proxy for political uncertainty in China, An et al. (2016) document that political uncertainty leads firms to significantly decrease investment expenditures. Furthermore, the negative effect of political uncertainty is stronger for SOEs, capital intensive firms, and firms deemed locally important. Instead of focusing on the overall corporate investment, Julio and Yook (2016) study the effect on a specific type of investment, that is, foreign direct investment (FDI). Since FDI belongs to cross-border flows of capital, it is likely to be more sensitive to the political environment as the foreign investor has limited protection from the host country's legal and political institutions. Julio and Yook (2016) use national election as a measure of political uncertainty and show that FDI flows from US companies to foreign affiliates drop significantly in election years, that is the FDI rate declines by 14% to 21% on average. More importantly, they argue that irreversibility is an important channel through which political uncertainty affects investment decisions, and thus raise an important notion to the future research on the impact of political uncertainty. In addition, Feng and Johansson (2017) explore the relationship between political uncertainty and investments in activities related to innovation and document a negative relationship between them. They also point out that this relationship is more prominent for privately owned firms and firms operating in regions characterized by weak economic institutions. Unlike the majority of studies, which use national or local elections as a measure of political uncertainty, Gulen and Ion (2016) employ the Economic Policy Uncertainty (EPU) index to estimate the effect of policy uncertainty on corporate investment. The EPU index allows researchers to realize the actual level of political uncertainty at every point in time, which improves the measurement of political uncertainty.[6] Gulen and Ion (2016) find a strong negative relationship between firm and industry-level capital investment and the aggregate level of uncertainty associated with

[6] EPU index is an index of aggregate policy uncertainty as a weighted average of three different components, including key terms related to policy uncertainty in the newspaper articles, uncertainty about future changes in tax code, and uncertainty about fiscal and monetary policy.

future policy and regulatory outcomes.

Xu et al. (2016) investigate the relationship between political uncertainty stemming from prefecture-city leadership changes and cash holdings for firms in China and find that firms hold less cash in turnover years than in non-turnover years. This result is consistent with the grabbing hand hypothesis of politician, that is politicians intend to extract resources from firms. When political turnover arises, a firm perceives the political uncertainty as just another opportunity for the newly appointed official to extract its assets, and hence firms respond by significantly reducing their cash holdings to minimise such a risk. In addition, the authors observe that the negative effect of political uncertainty is much stronger when the new official is appointed from another city and when a firm faces a higher political extraction risk or has strong twin agency conflicts. Ni (2019) extends Xu et al.'s (2016) study by providing more detailed empirical evidence on the relationship between political uncertainty and cash holdings. He not only examines the overall impact of political turnover, but also explores differences in cash policy responses between SOEs and POEs, given that ownership structure plays an important role in studying political impact. Ni (2019) reports that firms significantly decrease cash holdings during the turnover periods and such effect concentrates in POEs. In other words, POEs are more sensitive to local government official turnover than SOEs in the emerging market. These results suggest that in the absence of property rights protection, POEs are vulnerable to political expropriation.

According to the recent studies, we can see that political uncertainty has an adverse effect on economic outcomes and financial activities. However, how political uncertainty affects firms' operational decisions is still less well understood. Our study extends research investigating the economic implications of political uncertainty to include cost stickiness and provides a clear, cogent explanation of the importance of political uncertainty on corporate operational decisions.

2.3 Political Uncertainty in China and the Cost Stickiness

China's political system is a bureaucratic and hierarchical structure, consisting of five levels: central government, provinces, prefecture-level cities, counties, and townships.

The Chinese Communist Party (CCP) is the head of this "multidivisional system", which ultimately controls and determines policies, operations, and appointments of central and local government officials (Xu et al., 2016). Under this hierarchical system, the central government draws up national economic plans and policies, and the local governments carry out those plan and policies. However, with a decentralized economic system in China, local government officials have a high degree of autonomy in their jurisdiction. For example, they decide land usage; set up business rules, codes, and regulations; and provide investment opportunities and financial credits for local firms. It goes without saying that these policies have a close connection with firms' daily operations. Thus, once the local government official is replaced, firms face high uncertainty related to economic policies, complicating their operational decisions. Although officials have immense power in local matters, their tenures are decided by upper level government officials. In China, government officials are appointed by the officials on the higher government level, rather than elected by local constituents. Such political system makes government official turnovers unpredictable for most firms. Therefore, when leadership turnover takes place, firms in the affected jurisdictions are faced with important uncertainties related to the content and timing of local government policy changes.

Political uncertainty stemming from local government official turnover affects firms' operations in the following ways. First, prefecture-city official turnover has directly impact on managers' resource adjustment decisions, which naturally shapes cost behaviour, including cost stickiness. In China, local officials are evaluated by their higher level of governments in accordance with the tasks and targets, where the performance in local economic growth would dominate in most cases (Li & Zhou, 2005). As such, they normally have strong incentives to set their own goals and strategies to boost local economic growth. When these local officials pursue their political and social objectives, they routinely exercise power to favour potential socioeconomic projects that will benefit their future promotion. However, when they are either promoted or replaced, some of their on-going policies and projects not endorsed by successors could be in danger of being discontinued, which might induce

local firms to delay making decisions until some or all of the policy uncertainty is resolved. In terms of firms' operations, the decisions refer to capacity choices and resource adjustments. The intuition is that managers are not sure whether their goods or service still align with officials' political and social objectives when prefecture-city leadership changes. The new leaders may have very different policy preference and favoured economic outcomes compared with the departing leaders. As Julio and Yook (2012 and 2016) note, the value of waiting increases when uncertainty related to changes in government policy is high. As a result, managers are likely to hold slack resources although the demand declines during this high uncertainty period, which in turn increases the degree of cost stickiness.

Second, political uncertainty arising from government official turnover weakens the firm's existing political connections, which affects its operational decisions. Prior studies document that political connections enhance firms' operations and increase their value (e.g. Fisman, 2001; Faccio, 2006; Faccio et al., 2006). Specifically, political connections are crucial for firms to achieve a goal or task in emerging markets, such as China (e.g. Xu et al., 2015; Xu et al., 2016; Chen et al., 2018). Due to the bureaucratic structure in China, politics and politicians play an important and profound role in the Chinese economy and business activities. Businesses have to cultivate and maintain good relationships with ruling politicians for policy, protection and other economic benefits. The resulting relational economy in China leads firms pay special attention to political uncertainty (Xu et al., 2016). When there is political uncertainty due to local government official turnover, a firm's political connections become uncertain or even disappear. The manager is likely to slow down the business growth and retain the existing resources until she makes connections with, or at least discovers the policy preferences of, new local government officials. Consequently, the degree of cost stickiness increases.

Third, political uncertainty leads to high adjustment costs of R&D investments, which ultimately results in greater cost stickiness. In general, R&D expenditures represent significant proportion of the cost of business operations. Firms rely on R&D investments to find and create new products or services. However, R&D investments

also bring a special type of uncertainty to firms, called irreversibility. Banker et al. (2008) document that sticky behaviour of costs is more pronounced with discretionary costs such as R&D expenditures and advertising expenses and cost stickiness is diminished with more flexible costs such as COGS costs. It is because discretionary costs such as R&D expenditures and advertising expenses are typically considered relatively irreversible due to specificity. Note that an irreversible R&D decision can itself be interpreted as a strategic move. In other words, irreversibility makes R&D more costly to adjust and hence increases the information value of waiting, causing cost stickiness to vary positively with fluctuations in political uncertainty over time. We therefore expect that political uncertainty increases the persistence of R&D expenditure given its irreversible nature and results in a higher degree of cost stickiness in turnover years.

According to above discussion, we hypothesize:

H1: Cost stickiness is greater in turnover years than in non-turnover years.

If political uncertainty drives the degree of cost stickiness, its impact is likely to vary across different regions. Unlike developed countries with relatively unified institutional environment and customer market, China has regional inequality problem. Since the reform and opening, China has designed and implemented a series of favourable policies to support the development of eastern coastal areas. During the period of over twenty years, the level of economic development in eastern regions has reached the standard of moderately developed, even developed, countries, far beyond middle and western regions (Allen et al., 2005). At present, high-tech industries are mostly concentrated in eastern coastal areas while labour-intensive industries centre in central and western regions. The imbalances of economic development in China's eastern, central and western regions lead to significant difference in policy, tax distortions and institutional environment. On the one hand, Feng and Johansson (2017) and Gu et al. (2020) find that political effect on business is more pervasive in weak institutional environments, which amplifies the political uncertainty associated with government official turnover. As such, in regions characterized by weak institutions, the effect of political uncertainty on cost stickiness may be significantly stronger. On the other hand,

Lee et al. (2020) document that firms in less democratic countries, those with weaker institutions, are less sensitive to political uncertainty. They argue that wide government policy swings are relatively scarce in countries with weak institutional environment. Following this logic, the government officials in regions with weak institutions may be unlikely to make significant changes in existing policies unless the central government officials require them to do so, lowering the effect of political uncertainty. As it is hard to predict the direction of the effect of institutional environment on the relationship between political uncertainty and cost stickiness, we therefore formulate the following hypothesis without a directional prediction:

H2: The relationship between political uncertainty and cost stickiness is associated with local institutional environment.

Besides the local institutional environment, two firm-level factors, ownership structure and firm size, may also influence the relationship between political uncertainty and cost stickiness. In China, the state maintains its controlling power through equity holdings in SOEs directly or indirectly after listings (Sun & Tong, 2003; Jiang & Kim, 2020). This makes SOEs more susceptible to political uncertainty. Because in addition to the usual political influence, their operational and personnel decisions are also under the influence of, or even controlled by the local leaders. As a result, strict government control and restrictions continually affect firms' general operations and decision-making, leaving them more sensitive to political risk. As argued by An et al. (2016) and Xu et al. (2016), political uncertainty has much stronger effect on SOEs, as they are more politically connected. Thus, it is reasonable to expect that the effect of political uncertainty on stickiness is significantly stronger for SOEs. In sharp contrast, Feng and Johansson (2017) and Ni (2019) document that detrimental effect of political uncertainty is much stronger for POEs than for SOEs. SOEs are known for receiving various economic benefits from both central and local government, such as tax breaks on certain products, lower interest rates on loans, financial support from the government, and large and stable customer markets. When the local official turnover occurs, the state ownership makes new leaders to continue supporting SOEs when they take up their new position immediately, leaving such firms much less vulnerable to political

uncertainty. As a result, SOEs continue their operations as normal without dramatic effect by government official turnover. In comparison, when turnover occurs, POEs may lose their established political connections and face higher policy risk. Thus, POEs are apt to be more sensitive to local official turnover, resulting in greater impact of political uncertainty on cost stickiness. Again, there is no consensus on whether the impact of political uncertainty is stronger for SOEs or POEs. We therefore state the third hypothesis without a directional prediction:

H3: The relationship between political uncertainty and cost stickiness is related to ownership.

Compared with small firms, large firms have larger resource bases and can take advantage of economies of scale and market power to drive down their costs, enabling them to more easily recover from the costs of making operating mistakes. As a result, large firms are better equipped than small ones to handle political uncertainty (Haveman et al., 2017). Moreover, in a transitional economy like China, large firms have less exposure to regulations, taxes, fees, and fines (Tsai, 2002), and have lower risks of government expropriation of assets (Li et al., 2008; Jiang & Kim, 2020). As such, the impact of local political turnover is expected to concentrate on small firms. Therefore, we make the fourth hypothesis with a directional prediction:

H4: The relationship between political uncertainty and cost stickiness is more pronounced for small firms.

Finally, it is likely that the effect of political uncertainty on cost stickiness also depends on the degree of uncertainty of local official turnover. As Lee et al. (2020) note, the effect of political uncertainty is more pronounced when elections are more competitive during national election periods. Following this logic, we may expect that the effect of political uncertainty on cost stickiness is larger if the uncertainty of local official turnover is higher. Several prior studies use turnover type to distinguish the degree of political uncertainty arising from prefecture-city official turnover (e.g. An et al., 2016; Xu et al., 2016; Feng & Johansson, 2017). If a local government official is replaced by an official within the same city (local promotion), the degree of political uncertainty is low. Conversely, if the local government official is replaced by an official from another

city (external appointment), we expect that the degree of political uncertainty increases. It is because appointment of an outsider generally results in a more dramatic change in local economic policies (An et al., 2016), which in turn may have a more severe effect on cost stickiness. Accordingly, we propose the fifth hypothesis with a directional prediction:

H5: The relationship between political uncertainty and cost stickiness is more pronounced for external appointments.

Chapter 3: Research Design

3.1 Sample and Data

In this study, we empirically examine the relationship between political uncertainty and cost stickiness in China, and the data is collected in two stages. First, we use prefecture-city official turnover as a measure of political uncertainty. The two top leaders in prefecture-city government is prefecture-city party secretary and mayor. For simplicity, we refer to them as the "city head" and "city mayor", respectively. We hand-collect the turnover data of city heads and mayors from various public resources, such as official government websites, press releases, and newspapers.[7] The data contain detailed personnel information regarding each governors' name, age, education, previous working experience, and most importantly the timing and nature of the turnover and appointment.

Second, we obtain firm-level accounting data from China Stock Market Accounting Research (CSMAR) for all non-financial firms listed on the Shanghai Stock Exchange and Shenzhen Stock Exchange over the period 1998-2018. In the CSMAR database, the earliest year with data available is 1990. However, beginning the sample period in 1990 would result in a highly unbalanced sample since there are only a few observations at the beginning of the sample, which may undermine the reliability of test results. Moreover, the disclosure of cash flow has been mandatory in China since 1998. Thus, we start our initial sample period from 1998. In addition, we source the city-level annual real GDP growth rate and unemployment rate from the CEIC database.

Following Banker et al. (2013), our initial sample meets the following criteria: (a) the firm must have valid sales, assets, and operating costs over the past two years; (b) the firm must have clear information of state ownership and the location of headquarter; (c) we exclude firms with extreme operating costs (i.e., operating costs which are under 50% or exceed 200% of sales over the past two years); (d) we exclude firm-years with

[7] Our data are mainly collected from following websites: the Party and Government Leaders Database provided by the News of the Communist Party of China (http://cpc.people.com.cn/), Baidu Wikipedia (http://baike.baidu.com), and Zecheng Web (http://www.hotelaah.com). If the personal information provided by these websites is inconsistent, we then search for public news on the appointment of city heads and mayors through http://www.baidu.com/ to make revisions.

extreme sales (i.e., when sales rose by more than 50% or fell by more than 33% in the past two years) since these large shifts in sales likely capture unusual events such as mergers or divestitures. We further exclude firms located in Beijing, Shanghai, Tianjin and Chongqing, which are cities the Chinese central government directly controls. We obtain 20,392 firm-year observations from 2000 to 2018, after implementing this screening criteria.[8] We then assign each listed firm to a particular city based on the location of its headquarter. Combining firm-level information with prefecture-city official turnover data for 260 cities (including 1,206 city heads and 1,346 city mayors), our final sample consists of 20,392 firm-year observations from 2000 to 2018.

3.2 Measure of Political Uncertainty

The key variable of interest for this study is political uncertainty. Prefecture-city official turnover provides an ideal measure for two main reasons: (1) prefectural-level governments are the lowest hierarchy that has the right to make local policies and rules and thus they have a substantial impact on firms' operation; (2) prefectural-level governments are also the highest hierarchy that has direct impacts on local economic affairs, such as urban infrastructure development and urban land usage and supply. Many of these affairs touch on daily business operations, thus prefecture-city governments have a direct impact on local firms. Moreover, due to the dual administrative head structure in China, both turnover of city heads and turnover of city mayors have effect on firms' operations. As such, we construct a dummy variable $TURNOVER$ to indicate the nature of prefecture-city official turnover. $TURNOVER$ is equal to one if either the city head or mayor is changed in year t, and zero otherwise. Also considering the inauguration date of the new official, if an official change occurs in the first (second) half of year t, the turnover is considered as occurring in year t (year $t+1$) because it takes time for the new official to exert any influence on local economy (Li & Zhou, 2005).

3.3 Empirical Models

To derive the empirical model of our tests, we start by modelling cost behaviour using

[8] Variables in the study (e.g., sales growth) require data lagged for 2 years, so our sample period begins in 2000.

economic theory. To do this, we first derive the cost-volume relationships from the cost and production function. This provides economic grounding which underlies the sticky cost hypothesis and the economic models used to test it. A common production function is the Cobb-Douglas production function, shown as follows:

$$y_1 = f(x_{1t}, x_{2t}) = A_t x_{1t}^{\alpha} x_{2t}^{\beta} \quad (1)$$

where t is a time index, A_t is a positive constant, x_{1t} and x_{2t} are input factors and α, β are positive, time-invariant fractions that add up to one which implies constant returns to scale. The corresponding Cobb-Douglas cost function can be written as:

$$c_t(y_t) = K_t y_t^{1/(\alpha+\beta)} \quad (2)$$

where K_t is a function of the parameters, $A, \alpha,$ and β. The cost growth between $t-1$ and t can be expressed as,

$$\frac{c_t(y_t)}{c_{t-1}(y_{t-1})} = \frac{K_t}{K_{t-1}} \left(\frac{y_t}{y_{t-1}}\right)^{1/(\alpha+\beta)} \quad (3)$$

We then assume that factor prices are constant over time and take the log of both sides of Eq. (3) to get the following empirical model:

$$\ln\left(\frac{c_t}{c_{t-1}}\right) = \gamma_0 + \gamma_1 \ln\left(\frac{y_t}{y_{t-1}}\right) + \varepsilon_t \quad (4)$$

where $\gamma_0 = \ln\left(\frac{K_t}{K_{t-1}}\right)$, $\gamma_1 = \frac{1}{\alpha+\beta}$, and ε_t is a zero mean error term. The above model is the traditional cost behaviour model and assumes that variable costs change proportionately with the changes in activity level, implying a constant return to scale, that is, $\gamma_1 = 1$ since $\alpha + \beta = 1$. However, prior studies provide evidence that certain cost types behave in an asymmetric manner and define this asymmetric cost behaviour with respect to directions in volume changes as cost stickiness (e.g. Anderson et al., 2003; Balakrishnan et al., 2004; Calleja, 2006). They state that costs rise more with increases in volume than they fall with decreases in volume, indicating that γ_1 should be higher for increases than for decreases in activity level. Therefore, we extend the traditional model to allow different slopes for positive and negative volume changes, given by,

$$\ln\left(\frac{c_t}{c_{t-1}}\right) = \gamma_0 + \gamma_1 \ln\left(\frac{y_t}{y_{t-1}}\right) + \gamma_2 DEC_t \ln\left(\frac{y_t}{y_{t-1}}\right) + \varepsilon_t \quad (5)$$

where $DEC_t = 1$ if $\Delta y_t < 0$, and $DEC_t = 0$ if $\Delta y_t > 0$. Following Calleja et al.

(2006), Banker et al. (2013) and Lee et al. (2020), we use operating costs to replace total cost and sales to replace volume. Then we have:

$$\ln\left(\frac{XOPR_t}{XOPR_{t-1}}\right) = \gamma_0 + \gamma_1 \ln\left(\frac{SALES_t}{SALES_{t-1}}\right) + \gamma_2\, DEC_t \ln\left(\frac{SALES_t}{SALES_{t-1}}\right) + \varepsilon_t \qquad (6)$$

where $DEC_t = 1$ if $\Delta SALES_t < 0$, and $DEC_t = 0$ if $\Delta SALES_t > 0$. The coefficient, γ_1 measures the percentage increase in operating costs with a 1% increase in sales, while the combined coefficients, $(\gamma_1 + \gamma_2)$ measures the percentage decrease in operating costs with a 1% decrease in sales. To consistent with sticky cost hypothesis, we predict that $\gamma_1 > 0$ and $\gamma_2 < 0$, suggesting that operating costs respond more to sales increases than to sales decreases.

To test our hypotheses, we augment Eq. (6) by including the interaction terms of the prefecture-city official turnover, $TURNOVER$. In addition, we explicitly control for firm-level characteristics that are known to affect the degree of cost stickiness, including asset intensity, employee intensity and an indicator for prior sales decline. Further, the model also includes the interaction terms of two prefecture-city level economic factors, i.e., GDP growth and unemployment rate. To test the impact of political uncertainty on cost stickiness, our baseline model is shown as below:

$$\begin{aligned}\Delta lnXOPR_{n,i,t} = {} & \beta_0 + (\beta_1 + \beta_2 TURNOVER_{n,t} + \beta_3 GDP_{n,t} + \beta_4 UNEMP_{n,t} \\ & + \beta_5 lnANIT_{n,i,t} + \beta_6 lnEMPINT_{n,i,t})\Delta lnSALE_{n,i,t} + (\beta_7 \\ & + \beta_8 TURNOVER_{n,t} + \beta_9 GDP_{n,t} + \beta_{10} UNEMP_{n,t} \\ & + \beta_{11} lnANIT_{n,i,t} + \beta_{12} lnEMPINT_{n,i,t} + \beta_{13} DEC_{n,i,t-1}) DEC_{n,i,t} \\ & \times \Delta lnSALE_{n,i,t} + \varepsilon_{n,i,t} \qquad (7)\end{aligned}$$

where the subscripts n, i and t index prefecture-city, firm, and year; $\Delta lnXOPR$ is the log-change in deflated operating costs; $\Delta lnSALE$ is the log-change in deflated sales; $TURNOVER$ is the prefecture-city official turnover as defined earlier; GDP is the prefecture-city's GDP growth rate; $UNEMP$ is the prefecture-city's unemployment rate; $lnANIT$ reflects asset intensity defined as the log ratio of assets to sales revenue; $lnEMPINT$ reflects employee intensity defined as the log ratio of the number of employees to deflated sales; DEC_t is a dummy variable that equals to one if sales decrease in year t, and zero otherwise; DEC_{t-1} is an indicator for prior sales decline

that equals to one if sales decreased in year $t-1$, and zero otherwise.[9] Recall that a negative sign of the coefficient of $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t}$ indicates the sticky behaviour of operating costs. Under our hypothesis **H1**, we expect that the coefficient estimation for β_8 is significantly negative, implying the positive relationship between political uncertainty and cost stickiness. In addition, we expect $\beta_9 < 0$ and $\beta_{10} > 0$ because managers are likely to regard sales decreases as transitory (permanent) and adjust committed resources downward to a smaller (larger) degree when the economic condition is strong (poor). As Anderson et al. (2003) note, asset intensity and employee intensity are empirical proxies for the magnitude of adjustment costs faced by the firm. Accordingly, we expect $\beta_{11} < 0$ and $\beta_{12} < 0$, to the extent that both of them capture the magnitude of downward adjustment costs. Finally, we expect $\beta_{13} > 0$, given that managers have pessimistic expectation regarding future sales when sale declines occur in successive periods, which in turn decreases the degree of cost stickiness.

[9] Although the log-linear specification of asymmetric cost bahaviour model is the most commonly used model in the extant literature (e.g. Banker et al., 2013; Cheng et al., 2018; Lee et al., 2020), Balakrishnan et al. (2014) note that the log-linear specification does not explicitly control for a firm's cost structure. The estimated coefficients are influenced by the magnitude of fixed or non-controllable costs in the function, leading to a non-constant elasticity in the response. Considering the possible bias toward finding cost asymmetry due to fixed or non-controllable costs, we also develop Balakrishnan et al.'s (2014) model and estimate the linear specification of the baseline model. The test results are reported in Appendix Table A.2. We obtain similar results. Moreover, Dierynck et al. (2012) argue that including independent variables, such as asset intensity, employee intensity and GDP growth, can effectively control for fixed costs and the economic condition. In this study, since we include sufficient control variables in the baseline model, to a great extent our log-linear model mitigates the effect of fixed or non-controllable costs.

Chapter 4: Empirical Results

4.1 Descriptive Statistics

We present the distribution of sample observation by year from 2000 to 2018 in Panel A of Table 4.1. The sample period encompasses 20,392 firm-year observations, with the most (2,060) in 2018 and the least (457) in 2000. Panel B presents the distribution of prefecture-city official turnover by year. The average turnover ratios of city heads and city mayors are 29.01% and 29.63%, respectively.[10] In column 3, we report the distribution of key variable $TURNOVER$. The five highest turnover years are 2002, 2003, 2007, 2017 and 2018, and most surround the national election years (2002, 2007, 2012 and 2017). This pattern raises a potential concern that the prefecture-city official turnover captures the national election effect. We will address this concern later in the section of robustness checks.

Table 4.1
Sample Description
This table presents the sample distribution by year (Panel A) and the distribution of prefecture-city official turnover by year (Panel B) over the period 2000-2018.

Panel A: Sample distribution by year

Year	No. of observations	No. of cities	No. of provinces
2000	457	152	27
2001	521	166	28
2002	588	168	28
2003	649	179	28
2004	661	182	28
2005	739	197	28
2006	813	203	28
2007	770	196	28
2008	853	196	28
2009	926	205	28
2010	939	214	28
2011	1,092	212	28
2012	1,364	227	28
2013	1,539	229	28
2014	1,616	234	28
2015	1,562	229	28
2016	1,599	235	28
2017	1,644	227	28
2018	2,060	244	28
Total	20,392	260	28

[10] In our sample period, the median (mean) tenure of city head is 3.92 (4.17) years, while the median (mean) of city major is 4 (4.23) years.

Panel B: Distribution of prefecture-city official turnover by year

Year	Head turnover (%)	Mayor turnover (%)	Head or mayor turnover (%)	Head and mayor turnover (%)
2000	22.98%	28.45%	40.92%	10.50%
2001	28.98%	32.25%	40.50%	20.73%
2002	34.86%	29.76%	51.19%	13.44%
2003	37.29%	49.31%	61.94%	24.65%
2004	14.98%	13.16%	23.15%	4.99%
2005	30.72%	26.12%	40.19%	16.64%
2006	15.62%	20.79%	26.69%	9.72%
2007	29.74%	38.83%	52.62%	19.09%
2008	36.34%	26.14%	45.60%	16.88%
2009	9.07%	16.09%	20.95%	4.21%
2010	23.75%	22.36%	34.29%	11.82%
2011	28.02%	33.06%	43.59%	17.49%
2012	34.24%	35.48%	46.48%	23.24%
2013	28.91%	32.75%	44.64%	17.02%
2014	13.99%	14.73%	23.76%	4.95%
2015	36.94%	24.14%	49.48%	8.45%
2016	32.40%	29.39%	45.53%	16.26%
2017	53.71%	43.19%	72.26%	24.64%
2018	38.70%	46.96%	64.31%	21.35%
Average	29.01%	29.63%	43.58%	15.06%

Table 4.2 presents the summary statistics for key variables used in this study. All continuous variables are winsorized at the top and bottom 1% of their respective distributions to mitigate the effect of outliers. The mean (median) of $\Delta lnXOPR$ is 0.092 (0.102), indicating that the mean (median) percentage increase in operating costs is 9.6 (10.7). The mean (median) of $\Delta lnSALE$ is 0.085 (0.098), implying that the mean (median) percentage increase in sales is 8.9 (10.3). In our sample, 28% of the firm-year observations experience sales declines, as shown by the mean value of variable, DEC_t. This figure is comparable to that of prior studies in the context of Chinese firms. For example, Gu et al. (2020) report that 30% of sample firms experience a sales decrease. Moreover, our interested variable $TURNOVER$ has a mean of 0.449 with a standard deviation of 0.498, suggesting frequent political turnover in China. In terms of local economic condition of the prefecture-cities, the average GDP growth rate and unemployment rate are 10.9% and 3.0%, respectively. On average, the sample firm has asset intensity of 0.619 and employee intensity of 0.276.

Table 4.2
Summary Statistics
This table reports summary statistics for the major variables used in the empirical analysis. The subscripts n, i and t denote city, firm, and year indices, respectively. The detailed definitions of all variables are provided in Appendix Table A.1.

	N	Mean	S.D.	25%	Median	75%
$\Delta lnXOPR_{n,i,t}$	20,392	0.092	0.180	-0.012	0.102	0.214
$\Delta lnSALE_{n,i,t}$	20,392	0.085	0.170	-0.018	0.098	0.207
$DEC_{n,i,t}$	20,392	0.280	0.449	0	0	1
$TURNOVER_{n,t}$	20,392	0.449	0.498	0	0	1
$GDP_{n,t}$	20,392	0.109	0.036	0.081	0.104	0.135
$UNEMP_{n,t}$	20,392	0.030	0.034	0.023	0.029	0.035
$lnANIT_{n,i,t}$	20,392	0.619	0.672	0.205	0.597	1.005
$lnEMPINT_{n,i,t}$	20,392	0.276	0.988	-0.261	0.356	0.897
$DEC_{n,i,t-1}$	20,392	0.251	0.433	0	0	1

4.2 Main Results

Table 4.3 presents the results of our main analysis. Prior to formally testing for the impact of political uncertainty on cost stickiness, we initially estimate Eq. (6) to provide some preliminary evidence of asymmetric cost behaviour as reported by Anderson et al. (2003). The test results are reported in column 1. Consistent with the sticky cost hypothesis, the coefficient of the interaction term between $\Delta lnSALE_{n,i,t}$ and $DEC_{n,i,t}$ is negative and significant at the 1% level (-0.042 with t = -5.178), suggesting that the operating costs of Chinese firms are sticky on average. In column 2, we present the results of testing the effect of political uncertainty with our baseline model. The main parameter of interest is β_8, which captures the association between political uncertainty and the degree of cost stickiness. The coefficient estimate for β_8 is significantly negative at the 1% level (-0.028 with t = -2.761). This result is consistent with **H1**, indicating that the degree of cost stickiness increases when political turnover arises. In other words, political uncertainty and cost stickiness have a positive relationship. Additionally, we find that the results for the control variables are generally consistent with expectations. The degree of cost stickiness increases with city's GDP growth, asset intensity and employee intensity while decreases with city's unemployment rate. Furthermore, managers tend to regard sales decreases in two consecutive years as permanent and therefore adjust committed resources downward to a larger degree.

In addition to being statistically significant, our test results are also economically material. Recall that the coefficient estimate for β_8 is -0.028. In our sample, the average sales revenue is 5,011.83 million RMB and the average operating cost is 4,325.97 million RMB. The coefficient estimate implies that a 1% (corresponding to 50.12 million RMB) decrease in sales revenue leads to a 1,211,272 RMB increase in sticky operating costs in turnover years relative to non-turnover years. This estimation reveals that political uncertainty is economically significant to sticky cost behaviour, and thus illustrates the economic materiality of our baseline results.

In November of 2012, China initiated the largest and most pervasive anti-corruption regulation in the history of modern China (Pan & Tian, 2020), creating a significant increase in political uncertainty (Stanfield et al., 2019).[11] To conduct a sub-period analysis, we split our sample into two shorter time periods, 2000-2012 and 2013-2018 and re-estimate baseline model separately for each subsample. The results are reported in columns 3 and 4 of Table 4.3. The coefficient estimates for β_8 are significantly negative in both subsamples, suggesting no particular episode or outlier drives our baseline results.

[11] The anti-corruption campaign was initiated shortly after the conclusion of the 18th National Congress of the Communist Party of China on the 14th November 2012. We therefore use 2012 as the cut-off year to define pre- and post-anti-corruption campaign.

Table 4.3
Political Uncertainty and Asymmetry of Operating Costs
This table presents the results of testing the impact of political uncertainty on the asymmetric behaviour of operating costs. The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. The dependent variable is $\Delta lnXOPR$, the log-change in deflated operating costs. Column 1 presents the basic results of testing the presence of cost stickiness. Column 2 adds the key variable, prefecture-city official turnover $TURNOVER$, into the analysis. $TURNOVER$ is a dummy variable that takes the value of one if either the city head or mayor is changed in year t, and zero otherwise. Columns 3 and 4 report the results on the subsamples of pre- and post- China's anti-corruption campaign, which was launched in November 2012. $\Delta lnSALE$ is the log-change in deflated sales. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. Control variables include firm characteristics and local economic factors. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

		Full Sample		Pre Anti-Corruption Campaign	Post Anti-Corruption Campaign
	Exp.sign	(1)	(2)	(3)	(4)
$\Delta lnSALE_t$	+	0.995***	0.987***	1.005***	1.040***
		(144.039)	(76.564)	(59.382)	(46.898)
$\boldsymbol{\Delta lnSALE_t \times DEC_t}$	−	**-0.042*****	-0.102***	-0.032***	-0.208***
		(-5.178)	(-4.285)	(-2.773)	(-4.698)
$\Delta lnSALE_t \times TURNOVER_t$			-0.007	-0.018***	0.005
			(-1.531)	(-2.782)	(0.777)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t}$	−		**-0.028*****	**-0.020****	**-0.037*****
			(-2.761)	(-2.148)	(-2.563)
$\Delta lnSALE_t \times GDP_t$			0.136*	0.104	0.210**
			(1.815)	(0.933)	(2.066)
$\Delta lnSALE_t \times UNEMP_t$			-0.063	-0.085	-1.757***
			(-0.740)	(-0.974)	(-3.271)
$\Delta lnSALE_t \times lnANIT_t$			0.005	0.011**	0.000
			(1.261)	(2.110)	(0.658)
$\Delta lnSALE_t \times lnEMPINT_t$			0.001	0.001	-0.002
			(0.476)	(0.447)	(-0.485)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	−		-0.551**	-0.434	-0.999***
			(-2.380)	(-1.530)	(-3.196)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	+		0.938*	0.653***	3.159***
			(1.716)	(2.881)	(3.133)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	−		-0.025***	-0.002	-0.043***
			(-3.379)	(-0.177)	(-3.954)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	−		-0.038***	-0.035***	-0.051***
			(-7.275)	(-5.103)	(-6.345)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	+		0.044***	0.023*	0.074***
			(4.808)	(1.672)	(5.941)
$Intercept$		0.004***	0.004***	0.006***	0.002*
		(5.368)	(5.493)	(6.111)	(1.840)
Year fixed effect		YES	YES	YES	YES
Firm fixed effect		YES	YES	YES	YES
Observations		20,392	20,392	10,372	10,020
Adjusted R^2		0.857	0.778	0.775	0.777

4.3 Endogeneity and Robustness Checks

In this section, we conduct a set of robustness tests to reinforce the consistency and reliability of the baseline results. Our tests involve an instrumental variable approach,

placebo tests, using alternative specifications and measures of explanatory variables and dependent variables, and controlling the national election effect.

4.3.1 Addressing Potential Endogeneity Concern

Although we have controlled a number of variables in the baseline regression, endogeneity is still possible between political uncertainty and cost stickiness. As Rodrik (1991) notes, it is very difficult to find strong empirical support for uncertainty-driven predictions because political instability and uncertainty are likely endogenous to other factors that affect firms' investment and operating decisions. Estimating the direction of causality between political uncertainty and economic outcomes requires employing a variable or event that is correlated with political uncertainty but uncorrelated with the economic conditions that drive cost stickiness. Typically, prefecture-city official turnover is an unpredictable political event, which is not affected by local economic conditions. However, it is still a concern that both government official turnover and sticky cost behaviour may be driven by unobservable time-varying local economic factors. In such a case, the observed relationship between political uncertainty and cost stickiness could be spurious.

To address the potential endogeneity issue, we first apply an instrumental variable (IV) approach. Referring to the study by Ni (2019), we use two IVs for local official turnover: local government officials' age (AGE) and mean value of official turnover of other cities in the same province ($TURNOVER\_PEER$). These variables affect the probability of government official turnover but are not directly related to the changing of the firm-level behaviour of operating costs. We first introduce two dummy variables: $TURNOVER\_HEAD$ and $TURNOVER\_MAYOR$. $TURNOVER\_HEAD$ is equal to one if the city head is replaced in year t, and zero otherwise; $TURNOVER\_MAYOR$ is equal to one if the city mayor is replaced in year t, and zero otherwise. Next, we regress $TURNOVER\_HEAD_{n,t}$ ($TURNOVER\_MAYOR_{n,t}$) on the two IVs and control variables used in the baseline model. Columns 1 and 2 of Table 4.4 report the first-stage regression results. These two IVs are significantly related to local government official changes at the 1% level, which shows that the IVs are relevant. The Wald F statistics of AGE and $TURNOVER\_PEER$ as a group is 226.780 (111.811)

for city heads (mayors) regression, suggesting that the IVs are not weak.

In the second-stage regression, we replace $TURNOVER$ by the predicted value of $TURNOVER\_HEAD_{n,t}$ ($TURNOVER\_MAYOR_{n,t}$) form the first-stage regression and re-run the baseline regression. The results are reported in columns 3 and 4. The coefficients on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER\_HEAD_{n,t}$ and $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER\_MAYOR_{n,t}$ are significantly negative, implying that the positive relationship between political uncertainty and cost stickiness continues to hold after correcting for the endogeneity bias.

To further ensure the causality between political uncertainty and cost stickiness, we conduct placebo tests to verify whether the results remain the same in the absence of prefecture-city official turnover. Following Xu et al. (2016), for each political uncertainty event due to prefecture-city official turnover, we assume that the event recurs for the same firm in the next three years in the same city. We set up a simulated dummy variable for each year (using the same procedure as for $TURNOVER$). The three dummy variables are denoted $TURNOVER1$, $TURNOVER2$, and $TURNOVER3$ for years $t+1$, $t+2$, and $t+3$, respectively. Then, we use these simulated variables to replace $TURNOVER$ and re-regress the baseline model for each of the three simulated variables. If political uncertainty is the cause of the increase in the degree of cost stickiness, we expect that the coefficients of $TURNOVER1$, $TURNOVER2$, and $TURNOVER3$ are statistically insignificant. It is because in years $t+1$, $t+2$, and $t+3$, political uncertainty arising from local official turnover no longer exists and thus there is no significant change in cost stickiness. The regression results are presented in Table 4.5. We find that the coefficients on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER1_{n,t}$, $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER2_{n,t}$, and $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER3_{n,t}$ are insignificant, which is consistent with our expectation. We can therefore conclude that political uncertainty due to prefecture-city official turnover has impact on cost stickiness.

Table 4.4

Political Uncertainty and Asymmetry of Operating Costs: Instrumental Variable Approach

This table presents the results of 2SLS regressions. We use local officials' age (AGE) and mean value of official turnover of other cities in the same province ($TURNOVER\_PEER$) as instrumental variables. In the first stage, we regress $TURNOVER\_HEAD_{n,t}$ ($TURNOVER\_MAYOR_{n,t}$) on the two IVs and control variables used in the baseline model. In the second stage, we replace $TURNOVER$ by the predicted value of $TURNOVER\_HEAD_{n,t}$ ($TURNOVER\_MAYOR_{n,t}$) form the first-stage regression and re-run the baseline regression. The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. The dependent variable is $\Delta lnXOPR$, the log-change in deflated operating costs. $\Delta lnSALE$ is the log-change in deflated sales. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. $TURNOVER\_HEAD$ is a dummy variable that takes the value of one if the city head is changed in year t, and zero otherwise. $TURNOVER\_MAYOR$ is a dummy variable that takes the value of one if the city mayor is changed in year t, and zero otherwise. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	First Stage		Second Stage	
	$TURNOVER\_HEAD$	$TURNOVER\_MAYOR$	$\Delta lnXOPR$	
	(1)	(2)	(3)	(4)
Age	**-1.302*****	**-1.681*****		
	(-18.014)	(-28.691)		
TURNOVER_PEER	**0.126*****	**0.057*****		
	(8.761)	(3.839)		
$\Delta lnSALE_t$	0.187	0.491***	0.972***	0.977***
	(1.584)	(4.096)	(92.681)	(93.815)
$\Delta lnSALE_t \times DEC_t$	-0.634**	-0.951***	-0.092***	-0.112***
	(-2.163)	(-3.198)	(-3.475)	(-4.352)
$\Delta lnSALE_t \times TURNOVER\_HEAD_t$			0.021**	
			(1.966)	
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER\_HEAD_t}$			**-0.095*****	
			(-3.875)	
$\Delta lnSALE_t \times TURNOVER\_MAYOR_t$				0.014
				(1.243)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER\_MAYOR_t}$				**-0.058****
				(-2.429)
$\Delta lnSALE_t \times GDP_t$	-1.465	-4.249***	0.111*	0.090
	(-1.422)	(-4.641)	(1.733)	(1.329)
$\Delta lnSALE_t \times UNEMP_t$	-0.823	0.234	0.064	0.061
	(-0.974)	(0.273)	(0.761)	(0.726)
$\Delta lnSALE_t \times lnANIT_t$	0.003	-0.060	0.004	0.004
	(0.054)	(-1.077)	(1.019)	(0.996)
$\Delta lnSALE_t \times lnEMPINT_t$	0.022	0.028	0.001	0.001
	(0.607)	(0.781)	(0.432)	(0.399)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	-0.239	9.701***	-0.579***	-0.557***
	(-0.126)	(5.048)	(-3.993)	(-3.743)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	19.300***	-5.486	1.079*	1.390**
	(3.042)	(-0.852)	(1.901)	(2.501)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	0.021	0.040	-0.022***	-0.022***
	(0.198)	(0.368)	(-2.884)	(-2.820)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	-0.051	0.013	-0.040***	-0.041***
	(-0.706)	(0.174)	(-7.542)	(-7.637)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	-0.054	-0.015	0.046***	0.048
	(-0.557)	(-0.147)	(4.867)	(5.024)
$Intercept$	5.401***	6.883**	0.004***	0.004***
	(18.892)	(24.704)	(5.568)	(5.498)
Year fixed effect	YES	YES	YES	YES
Firm fixed effect	YES	YES	YES	YES
Observations	20,392	20,392	20,392	20,392
Adjusted R^2	0.229	0.221	0.680	0.680

Table 4.5
Political Uncertainty and Asymmetry of Operating Costs: Placebo Tests
This table presents the results of placebo tests. For each political uncertainty event, we assume that the event happens again in the next three years and set up a simulated dummy variable for each year. The three dummy variables are denoted as $TURNOVER1$, $TURNOVER2$ and $TURNOVER3$, respectively. The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. The dependent variable is $\Delta lnXOPR$, the log-change in deflated operating costs. $\Delta lnSALE$ is the log-change in deflated sales. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. $TURNOVER$ is a dummy variable that takes the value of one if either the city head or mayor is changed in year t, and zero otherwise. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Exp.sign	(1)	(2)	(3)
$\Delta lnSALE_t$	+	0.962***	0.964***	0.965***
		(69.915)	(70.168)	(70.154)
$\Delta lnSALE_t \times DEC_t$	−	-0.145***	-0.143***	-0.153***
		(-3.063)	(-3.013)	(-3.223)
$\Delta lnSALE_t \times TURNOVER1_t$		0.017*		
		(1.801)		
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER1_t}$		**0.009**		
		(0.443)		
$\Delta lnSALE_t \times TURNOVER2_t$			0.006	
			(0.373)	
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER2_t}$			**-0.025**	
			(-1.169)	
$\Delta lnSALE_t \times TURNOVER3_t$				0.008
				(0.704)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER3_t}$				**-0.037**
				(-1.063)
$\Delta lnSALE_t \times GDP_t$		0.053	0.054	0.057
		(0.367)	(0.373)	(0.393)
$\Delta lnSALE_t \times UNEMP_t$		-0.095	-0.093	-0.094
		(-0.673)	(-0.656)	(-0.666)
$\Delta lnSALE_t \times lnANIT_t$		0.006	0.006	0.006
		(0.728)	(0.720)	(0.725)
$\Delta lnSALE_t \times lnEMPINT_t$		-0.028***	0.003*	0.001
		(-4.879)	(1.834)	(0.908)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	−	-1.076***	-0.991***	-1.020***
		(-3.531)	(-3.577)	(-3.512)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	+	2.178	1.223	1.275
		(0.100)	(0.216)	(0.199)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	−	-0.025	-0.025*	-0.024
		(-1.464)	(-1.703)	(-1.408)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	−	-0.011	-0.010	-0.010
		(-0.934)	(-0.847)	(-0.893)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	+	0.049***	0.049***	0.048***
		(3.109)	(3.117)	(3.079)
$Intercept$		0.008***	0.008***	0.008***
		(6.508)	(6.508)	(6.466)
Year fixed effect		YES	YES	YES
Firm fixed effect		YES	YES	YES
Observations		20,392	20,392	20,392
Adjusted R^2		0.777	0.777	0.777

4.3.2 Alternative Specifications of Explanatory Variables

We also use alternative specifications of political turnover for robustness. In a Chinese municipality, the city head and the city mayor could have a different impact on local businesses. In China, party secretary is the highest-ranking official, followed by the administrative head like mayor. Such hierarchical head structure is designed to ensure the full control of CCP, resulting in community party secretary having more power than mayor. In such a case, the turnover of city heads may have greater impact on local firms than the turnover of city mayors. To examine different effects of city heads and mayors, we re-regress the baseline model in terms of different explanatory variables: $TURNOVER\_HEAD$, $TURNOVER\_MAYOR$ and $TURNOVER\_BOTH$. $TURNOVER\_HEAD$ and $TURNOVER\_MAYOR$ are defined as earlier, and $TURNOVER\_BOTH$ is equal to one if both the city head and mayor are replaced in year t, and zero otherwise. We expect that the parameter of interest, β_8, is still significantly negative in new estimations. The test results are reported in Panel A of Table 4.6. From the table, we can see that the coefficient estimation for β_8 is significantly negative when using different political turnover variables, confirming the positive relationship between political uncertainty and cost stickiness. Moreover, the coefficient on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER\_HEAD_{n,t}$ is more negative than the coefficient on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER\_MAYOR_{n,t}$, evidence that the turnover of city heads has much greater influence on local firms than the turnover of city mayors.

4.3.3 Alternative Measures of Dependent Variables

The analysis thus far has been focused on operating costs. To reinforce our baseline results, we then study whether the supportive results can be found in other cost categories, i.e. selling, general and administrative ($SG\&A$) costs, cost of goods sold ($COGS$), and total costs (TC). Hence, we re-estimate the baseline model by using different dependent variables and examine the coefficient on the variable of interest, $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER_{n,t}$ (β_8). The results are reported in Panel B of Table 4.6. We find that the coefficient estimates for β_8 are consistently significantly negative, implying that the impact of political uncertainty on operating costs are

applicable to other cost accounts as well. More interestingly, the political uncertainty has greater effect on SG&A costs (β_8= -0.105) than other cost categories. We attribute this to the fact that SG&A costs are more difficult to reverse than COGS and total costs, and thus are more sensitive to political uncertainty. To some extent, this finding demonstrates that irreversibility is an important channel through which political uncertainty affects real economic decisions, supporting Julio and Yook's (2016) argument.

4.3.4 Controlling the National Election Year Effect

There were four national elections during our sample period (2002, 2007, 2012 and 2017). As shown in Panel B of Table 4.1, national election may influence prefecture-city official turnover. To alleviate the concern that firms may adjust their operational decisions in anticipation of these elections and of any resulting political turnover, we remove the observations in 2002, 2007, 2012 and 2017 and re-run the baseline model. Table 4.7 shows that the coefficient estimate for β_8 is still significantly negative (at the 5% level) in non-election years, reinforcing that political uncertainty stemming from local government official turnover increases cost stickiness for local firms.

Table 4.6

Alternative Specifications of Political Turnover and Alternative Dependent Variables

This table presents the results of testing the impact of political uncertainty on asymmetric behaviour of operating costs in terms of alternative specifications of political turnover (Panel A) and alternative dependent variables (Panel B). The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. $\Delta lnSALE$ is the log-change in deflated sales. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Alternative Explanatory Variables

	Exp.sign	$TURNOVER\_HEAD$ (1)	$TURNOVER\_MAYOR$ (2)	$TURNOVER\_BOTH$ (3)
$\Delta lnSALE_t$	+	0.984***	0.988***	0.986***
		(76.922)	(77.469)	(79.655)
$\Delta lnSALE_t \times DEC_t$	−	-0.104***	-0.116***	-0.117***
		(-4.437)	(-4.980)	(-5.103)
$\Delta lnSALE_t \times TURNOVER\_HEAD_t$		-0.006		
		(-1.214)		
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER\_HEAD_t}$	−	**-0.034****		
		(-3.078)		
$\Delta lnSALE_t \times TURNOVER\_MAYOR_t$			-0.013**	
			(-2.508)	
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER\_MAYOR_t}$	−		**-0.019***	
			(-1.741)	
$\Delta lnSALE_t \times TURNOVER\_BOTH_t$				-0.018***
				(-2.695)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER\_BOTH_t}$	−			**-0.035****
				(-2.474)
$\Delta lnSALE_t \times GDP_t$		0.073	0.085*	0.070
		(1.124)	(1.999)	(1.088)
$\Delta lnSALE_t \times UNEMP_t$		-0.062	-0.064	-0.064
		(-0.744)	(-0.749)	(-0.756)
$\Delta lnSALE_t \times lnANIT_t$		0.005	0.005	0.005
		(1.275)	(1.217)	(1.253)
$\Delta lnSALE_t \times lnEMPINT_t$		0.001	0.001	0.001
		(0.505)	(0.520)	(0.570)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	−	-0.566***	-0.565***	-0.585***
		(-4.011)	(-3.984)	(-4.151)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	+	0.856	1.059*	1.015*
		(1.563)	(1.940)	(1.859)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	−	-0.026***	-0.025***	-0.025***
		(-3.441)	(-3.352)	(-3.392)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	−	-0.038***	-0.037***	-0.037***
		(-7.240)	(-7.198)	(-7.054)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	+	0.043***	0.046***	0.045***
		(4.688)	(5.052)	(4.913)
$Intercept$		0.004***	0.004***	0.004***
		(5.512)	(5.442)	(5.459)
Year fixed effect		YES	YES	YES
Firm fixed effect		YES	YES	YES
Observations		20,392	20,392	20,392
Adjusted R^2		0.777	0.778	0.778

Panel B: Alternative Dependent Variables

		Dependent Variable		
	Exp.sign	$\Delta lnSG\&A_t$ (1)	$\Delta lnCOGS_t$ (2)	$\Delta lnTC_t$ (3)
$\Delta lnSALE_t$	+	0.677***	0.999***	0.973***
		(21.901)	(63.775)	(84.958)
$\Delta lnSALE_t \times DEC_t$	−	-0.440***	-0.024***	-0.100***
		(-5.646)	(-2.912)	(-5.124)
$\Delta lnSALE_t \times TURNOVER_t$		0.003	-0.011**	0.001
		(0.228)	(-2.090)	(0.288)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t}$	−	**-0.105*****	**-0.015***	**-0.043*****
		(-4.468)	(-1.830)	(-2.967)
$\Delta lnSALE_t \times GDP_t$		0.080	0.103	0.090*
		(0.291)	(1.415)	(1.684)
$\Delta lnSALE_t \times UNEMP_t$		-0.880***	0.053	-0.015
		(-4.151)	(0.557)	(-0.221)
$\Delta lnSALE_t \times lnANIT_t$		0.052***	0.013***	0.015***
		(4.196)	(2.937)	(4.781)
$\Delta lnSALE_t \times lnEMPINT_t$		0.086***	-0.002	0.002
		(10.380)	(-0.574)	(0.958)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	−	-0.241***	-0.301***	-0.389***
		(-0.522)	(-3.491)	(-3.347)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	+	3.467**	0.231	1.010**
		(1.949)	(1.454)	(2.256)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	−	-0.097***	-0.047***	-0.018***
		(-4.032)	(-5.517)	(-2.958)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	−	-0.064***	-0.028***	-0.047***
		(-3.791)	(-4.750)	(-11.149)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	+	0.217***	0.030***	0.039***
		(7.271)	(2.950)	(5.188)
$Intercept$		0.050***	0.002**	0.005***
		(22.237)	(2.172)	(8.574)
Year fixed effect		YES	YES	YES
Firm fixed effect		YES	YES	YES
Observations		20,392	20,392	20,392
Adjusted R^2		0.235	0.766	0.718

Table 4.7
Political Uncertainty and Asymmetry of Operating Costs in Non-Election Years
This table presents the results of testing the impact of political uncertainty on asymmetric behaviour of operating costs after excluding observations in four national election years (2002, 2007, 2012 and 2017). The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. The dependent variable is $\Delta lnXOPR$, the log-change in deflated operating costs. $\Delta lnSALE$ is the log-change in deflated sales. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. $TURNOVER$ is a dummy variable that takes the value of one if either the city head or mayor is changed in year t, and zero otherwise. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Exp.sign	(1)
$\Delta lnSALE_t$	+	0.991***
		(68.681)
$\Delta lnSALE_t \times DEC_t$	−	-0.094***
		(-3.397)
$\Delta lnSALE_t \times TURNOVER_t$		-0.005
		(-0.940)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t}$	−	**-0.024****
		(-2.049)
$\Delta lnSALE_t \times GDP_t$		0.297
		(1.386)
$\Delta lnSALE_t \times UNEMP_t$		-0.058
		(-0.672)
$\Delta lnSALE_t \times lnANIT_t$		0.009**
		(1.964)
$\Delta lnSALE_t \times lnEMPINT_t$		-0.000
		(-0.993)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	−	-0.449***
		(-2.742)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	+	1.142*
		(1.817)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	−	-0.058***
		(-6.769)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	−	-0.035***
		(-5.842)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	+	0.046***
		(4.444)
$Intercept$		0.004***
		(4.514)
Year fixed effect		YES
Firm fixed effect		YES
Observations		16,026
Adjusted R^2		0.775

4.4 Cross-sectional Variation

So far in the analyses, we document a positive effect of political uncertainty on cost stickiness. However, this effect may vary with different local institutional environments, firms' ownership structure, firm size, and turnover types. Thus, in this section, we deepen the analysis by conducting a set of cross-sectional analyses and examine **H2-**

H5.

4.4.1 The Effect of Local Institutional Environment

To test **H2** showing that the relationship between political uncertainty and cost stickiness depends on the local institutional environment, we add the interaction terms of institutional environment into the baseline model. While it is usually difficult for a single country study to identify such impacts, China offers a rare opportunity as significant variations in institutional environments exist both across regions and over time. We use the National Economic Research Institute (NERI) Marketization index as a proxy for local institution environment. The index measures the levels of institutional development in the 31 provinces of China and the institutional development level is assessed in five fields by a total of 23 indicators. The five fields of the index are: (1) relation between government and market; (2) the market development of the non-state enterprise sectors; (3) product marketization; (4) factor market development; (5) the development of market intermediaries and the legal framework (Fan et al., 2011). The NERI Marketization index has been extensively used in prior studies within economics, finance and business (e.g. Feng et al., 2014; Feng & Johansson, 2017; Jia et al., 2019), which guarantees the validity and reliability of data. In every year over the 2000 to 2018 period, we rank firms based on the Marketization index of their registration location (provincial level) and assign to the weak (strong) institutional environment group those firms below (above) the median value of the Marketization index distribution. The median value is set according to the distribution of the actual NERI Marketization index of the regions that the firms are located in and thus generates an unequal number of observations being assigned to each of the groups. This approach is to ensure that we do not assign firms located in regions with a low Marketization index to the strong institutional environment group, and that firms located in regions with same index are always assigned to the same group. We then construct a dummy variable, $LMKTIDX$, and interact $LMKTIDX$ with the political uncertainty measure and other variables. $LMKTIDX$ is equal to one if the firm belongs to the weak institutional environment group, and zero otherwise.

The results are presented in Table 4.8. The estimates on the full sample are reported in

column 1 and the estimates on the subsamples split by institutional environment are reported in columns 2 and 3. As shown in column 1, the coefficient on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER_{n,t} \times LMKTIDX_{n,t}$ is significantly negative at the 5% level (-0.013 with t = -2.161), suggesting that the impact of political uncertainty on cost stickiness is stronger in regions with weak institutional environment. Interestingly, the coefficient on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times LMKTIDX_{n,t}$ is also significantly negative at the 10% level (-0.021 with t = -1.761), implying that the degree of cost stickiness increases when a firm is located in a region with a weak institutional environment. This result is consistent with findings in Calleja et al. (2006) that weak corporate governance and institutions strengthen cost stickiness. In columns 2 and 3, we find that our main parameter of interest, β_8, is significantly negative in both regions with weak institutional environment and regions with strong institutional environment, indicating that political uncertainty increases the degree of cost stickiness after controlling for local institutional environment. Moreover, the absolute value of β_8 is greater in the subsample of weak institutional environment relative to that of the strong institutional environment, reinforcing the finding in the full sample. Altogether, the institutional environment should be taken into consideration when analyzing the relationship between political uncertainty and cost stickiness. More importantly, the weak institutional environment amplifies the effect of political uncertainty stemming from prefecture-city official turnover on cost stickiness.

Table 4.8
Institutional Environment: Weak Institutions vs. Strong Institutions
This table presents the results of testing the impact of institutional environment on the relation between political uncertainty and asymmetric behaviour of operating costs. The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. The dependent variable is $\Delta lnXOPR,$ the log-change in deflated operating costs. Column 1 adds the key variable $LMKTIDX$. $LMKTIDX$ is a dummy variable that takes the value of one if a firm is located in a region with weak institutional environment, and zero otherwise. Columns 2 and 3 report the results on the subsamples of weak institutional environment and strong institutional environment, respectively. $\Delta lnSALE$ is the log-change in deflated sales. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. $TURNOVER$ is a dummy variable that takes the value of one if either the city head or mayor is changed in year t, and zero otherwise. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

		Full Sample	By Institutional Environment	
			Weak Institutions	Strong Institutions
	Exp.sign	(1)	(2)	(3)
$\Delta lnSALE_t$	+	0.992***	0.960***	1.009***
		(70.173)	(69.004)	(71.171)
$\Delta lnSALE_t \times DEC_t$	−	-0.106***	0.013	-0.198***
		(-4.288)	(0.337)	(-6.040)
$\Delta lnSALE_t \times TURNOVER_t$		-0.013**	0.002	-0.015**
		(-2.146)	(0.232)	(-2.523)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t}$	−	**-0.023****	**-0.032****	**-0.014****
		(-2.068)	(-2.115)	(-2.016)
$\Delta lnSALE_t \times LMKTIDX_t$		-0.012**		
		(-1.982)		
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times LMKTIDX_t}$		**-0.021***		
		(-1.761)		
$\Delta lnSALE_t \times TURNOVER_t \times LMKTIDX_t$		0.014		
		(1.511)		
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t \times LMKTIDX_t}$		**-0.013****		
		(-2.161)		
$\Delta lnSALE_t \times GDP_t$		0.167	0.222**	0.388
		(1.017)	(2.389)	(1.024)
$\Delta lnSALE_t \times UNEMP_t$		0.070	0.065	-0.145**
		(0.823)	(0.695)	(-2.418)
$\Delta lnSALE_t \times lnANIT_t$		0.005	0.000	0.008
		(1.396)	(0.908)	(1.523)
$\Delta lnSALE_t \times lnEMPINT_t$		0.001	-0.002	0.003
		(0.469)	(-0.448)	(0.907)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	−	-0.441***	-0.530***	-0.854***
		(-3.029)	(-2.661)	(-3.540)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	+	1.828***	0.653	1.603***
		(3.100)	(1.261)	(3.083)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	−	-0.023***	-0.036***	-0.011
		(-3.116)	(-3.171)	(-1.143)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	−	-0.038***	-0.020**	-0.052***
		(-7.242)	(-2.500)	(-7.502)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	+	0.044***	0.016	0.080***
		(4.847)	(1.187)	(6.185)
$Intercept$		0.004***	0.005***	0.003***
		(5.533)	(4.264)	(3.663)
Year fixed effect		YES	YES	YES
Firm fixed effect		YES	YES	YES
Observations		20,392	9,098	11,294
Adjusted R^2		0.678	0.671	0.683

4.4.2 The Effect of Firms' Ownership Structure

Next, we examine **H3,** whether the cross-sectional variation in firms' ownership structure affects the relationship between political uncertainty and cost stickiness. To conduct the analysis, we create a dummy variable, SOE. SOE is equal to one if a firm's ultimate controller is the state, and zero otherwise. We then interact SOE with the political uncertainty measure and add relative interaction terms into the baseline model. The results are shown in Table 4.9. Again, the estimates on the full sample are reported in column 1 and the estimates on the subsamples split by ownership are reported in columns 2 and 3. In Table 4.9, we consistently find that the coefficient on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER_{n,t}$ is negative and statistically significant, which strengthens the baseline results. Moreover, as reported in column 1, the coefficient on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER_{n,t} \times SOE_{n,i,t}$ is significantly positive at the 5% level (0.046 with t = 2.275), implying that the state ownership weakens the effect of political uncertainty on cost stickiness. The results displayed in the subsamples (columns 2 and 3), where the coefficient estimate for β_8 is more negative for POEs than for SOEs, also confirm the finding. These results support **H3** that ownership is an important factor that influences the relationship between political uncertainty and cost stickiness. Specifically, the impact of political uncertainty is stronger for POEs, suggesting that POEs are more sensitive to local official turnover than SOEs.

Table 4.9
Ownership Structure: SOE vs. POEs
This table presents the results of testing the impact of firm ownership on the relation between political uncertainty and asymmetric behaviour of operating costs. The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. The dependent variable is $\Delta lnXOPR$, the log-change in deflated operating costs. Column 1 adds the key variable SOE. SOE is a dummy variable that takes the value of one for a state-owned enterprise, and zero otherwise. Columns 2 and 3 report the results on the subsample of SOEs and the subsample of POEs, respectively. $\Delta lnSALE$ is the log-change in deflated sales. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. $TURNOVER$ is a dummy variable that takes the value of one if either the city head or mayor is changed in year t, and zero otherwise. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

		Full Sample	By Ownership	
			SOEs	POEs
	Exp.sign	(1)	(2)	(3)
$\Delta lnSALE_t$	+	0.984***	0.980***	0.992***
		(70.628)	(68.533)	(62.695)
$\Delta lnSALE_t \times DEC_t$	−	-0.085***	-0.067*	-0.117***
		(-3.473)	(-1.876)	(-3.434)
$\Delta lnSALE_t \times TURNOVER_t$		-0.000	-0.014**	-0.002
		(-0.725)	(-2.057)	(-0.245)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t}$	−	**-0.050****	**-0.004****	**-0.039****
		(-3.555)	(-2.272)	(-2.718)
$\Delta lnSALE_t \times SOE_t$		0.009		
		(1.394)		
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times SOE_t}$		**-0.030****		
		(-2.208)		
$\Delta lnSALE_t \times TURNOVER_t \times SOE_t$		-0.015		
		(-1.615)		
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t \times SOE_t}$		**0.046****		
		(2.275)		
$\Delta lnSALE_t \times GDP_t$		0.107	0.174*	0.317
		(0.839)	(1.876)	(0.479)
$\Delta lnSALE_t \times UNEMP_t$		-0.061	-0.061	-0.083
		(-0.713)	(-0.729)	(-0.791)
$\Delta lnSALE_t \times lnANIT_t$		0.005	0.010*	0.000
		(1.262)	(1.873)	(0.110)
$\Delta lnSALE_t \times lnEMPINT_t$		0.001	-0.001	0.004
		(0.464)	(-0.366)	(1.080)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	−	-0.570***	-1.104***	-0.423**
		(-3.955)	(-2.785)	(-1.996)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	+	0.846	0.691***	1.124***
		(1.534)	(3.472)	(3.409)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	−	-0.027***	-0.028**	-0.061***
		(-3.580)	(-2.702)	(-5.551)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	−	-0.038***	-0.060***	-0.013*
		(-7.285)	(-8.468)	(-1.676)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	+	0.043***	0.033***	0.051***
		(4.628)	(2.653)	(3.761)
$Intercept$		0.004***	0.003***	0.005***
		(5.488)	(3.198)	(4.529)
Year fixed effect		YES	YES	YES
Firm fixed effect		YES	YES	YES
Observations		20,392	9,971	10,421
Adjusted R^2		0.728	0.688	0.683

4.4.3 The Effect of Firm Size

We further examine **H4**, whether the relationship between political uncertainty and cost stickiness is more pronounced for small firms. Following Haveman et al. (2017), we classify a firm as small (denoted by *SMALL*) in year *t* if its total assets is below the sample median in year *t*, and zero otherwise. We then interact $SMALL$ with the political uncertainty measure and add relative interaction terms into the baseline model. The estimation results are reported in Table 4.10. Consistent with **H4**, the coefficient on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER_{n,t} \times SMALL_{n,i,t}$ in column 1 is significantly negative at the 1% level (-0.077 with t = -3.846), indicating that the relationship between political uncertainty and cost stickiness is significantly greater for small firms. In columns 2 and 3, we find that the coefficient estimate for β_8 is only negative and statistically significant in the subsample of small firms, supporting the results based on the full sample. Therefore, firm size is an important factor that mitigates the impact of political uncertainty on cost stickiness.

Table 4.10

Firm Size: Small Firms vs. Large Firms

This table presents the results of testing the impact of firm size on the relation between political uncertainty and asymmetric behaviour of operating costs. The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. The dependent variable is $\Delta lnXOPR,$ the log-change in deflated operating costs. Column 1 adds the key variable $SMALL$. $SMALL$ is a dummy variable that takes the value of one for a small firm, and zero otherwise. A firm is defined as small in year *t* if the total assets is below the median of all the firms in year *t*, and vice versa. Columns 2 and 3 report the results on the subsamples of small firms and large firms, respectively. $\Delta lnSALE$ is the log-change in deflated sales. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. $TURNOVER$ is a dummy variable that takes the value of one if either the city head or mayor is changed in year t, and zero otherwise. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

		Full Sample	By Firm Size	
			Small Firms	Large Firms
	Exp.sign	(1)	(2)	(3)
$\Delta lnSALE_t$	+	0.980***	0.986***	0.971***
		(75.908)	(65.688)	(68.301)
$\Delta lnSALE_t \times DEC_t$	−	-0.133***	-0.120***	-0.128***
		(-5.258)	(-3.512)	(-3.656)
$\Delta lnSALE_t \times TURNOVER_t$		-0.014**	-0.001	-0.013**
		(-2.184)	(-0.080)	(-2.113)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t}$	−	**-0.013***	**-0.059*****	**0.010**
		(-1.822)	(-3.987)	(0.699)
$\Delta lnSALE_t \times SMALL_t$		0.009		
		(1.364)		
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times SMALL_t}$		**0.051*****		
		(3.647)		
$\Delta lnSALE_t \times TURNOVER_t \times SMALL_t$		0.015*		
		(1.643)		
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t \times SMALL_t}$	−	**-0.077*****		
		(-3.846)		
$\Delta lnSALE_t \times GDP_t$		0.089	0.083	0.161*
		(1.364)	(0.761)	(1.725)
$\Delta lnSALE_t \times UNEMP_t$		0.065	0.047	0.613
		(0.767)	(0.503)	(0.716)
$\Delta lnSALE_t \times lnANIT_t$		0.005	0.017**	-0.002
		(1.334)	(2.551)	(-0.469)
$\Delta lnSALE_t \times lnEMPINT_t$		-0.001	-0.008*	0.003
		(-0.361)	(-1.621)	(0.897)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	−	-0.517***	-0.309	-0.948***
		(-3.642)	(-1.442)	(-4.926)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	+	1.121**	3.490***	-1.301
		(2.051)	(4.467)	(-1.550)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	−	-0.024***	-0.045***	0.008
		(-3.209)	(-3.858)	(0.815)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	−	-0.040***	-0.032***	-0.051***
		(-7.446)	(-3.786)	(-7.163)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	+	0.044***	0.042***	0.056***
		(4.802)	(3.197)	(4.324)
$Intercept$		0.004***	0.004***	0.004***
		(5.469)	(4.036)	(3.906)
Year fixed effect		YES	YES	YES
Firm fixed effect		YES	YES	YES
Observations		20,392	10,202	10,190
Adjusted R^2		0.677	0.671	0.684

4.4.4 The Effect of Turnover Type

Finally, we test whether the impact of political uncertainty on cost stickiness varies with respect to turnover type. As stated in **H5**, we expect that the effect of political uncertainty on cost stickiness will be more pronounced if the new official belongs to the external appointment. To test the hypothesis, we construct a dummy variable $EXTERNAL$ and add interaction terms of $EXTERNAL$ into the baseline model. $EXTERNAL$ is equal to one if any of the two leaders in the city is replaced by external appointment and zero otherwise. Table 4.11 shows that the coefficient on $\Delta lnSALE_{n,i,t} \times DEC_{n,i,t} \times TURNOVER_{n,t} \times EXTERNAL_{n,t}$ is negative and significant at the 1% level (-0.025 with t = -3.163), which suggests that the degree of cost stickiness increases more when changes in prefecture-city officials are external. These results show that the effect of political uncertainty on cost stickiness is greater for external appointments, which generally represent a high degree of political uncertainty. Importantly, since the turnover types are naturally related to the degree of political uncertainty, to some extent this finding demonstrates that the baseline results actually stem from political uncertainty, not other potential channels through which local official turnover leads to changes in economic activity, including managers' resource adjustment decisions.

Table 4.11
Turnover Types: External Appointment vs. Local Promotion
This table presents the results of comparing the effect of change to government officials due to external appointment vs. local promotion. The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. The dependent variable is $\Delta lnXOPR$, the log-change in deflated operating costs. $\Delta lnSALE$ is the log-change in deflated sales. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. $EXTERNAL$ is a dummy variable that takes the value of one if an official is appointed from another city by a higher level of government, and zero otherwise. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Exp.sign	(1)
$\Delta lnSALE_t$	+	0.986***
		(73.158)
$\Delta lnSALE_t \times DEC_t$	−	-0.101***
		(-4.196)
$\Delta lnSALE_t \times TURNOVER_t$		-0.016*
		(-1.631)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t}$	−	**-0.016****
		(-3.304)
$\Delta lnSALE_t \times TURNOVER_t \times EXTERNAL_t$		0.011
		(1.030)
$\boldsymbol{\Delta lnSALE_t \times DEC_t \times TURNOVER_t \times EXTERNAL_t}$	−	**-0.025****
		(-3.163)
$\Delta lnSALE_t \times GDP_t$		0.071
		(1.086)
$\Delta lnSALE_t \times UNEMP_t$		-0.063
		(-0.741)
$\Delta lnSALE_t \times lnANIT_t$		0.005
		(1.250)
$\Delta lnSALE_t \times lnEMPINT_t$		0.001
		(0.505)
$\Delta lnSALE_t \times DEC_t \times GDP_t$	−	-0.531***
		(-3.723)
$\Delta lnSALE_t \times DEC_t \times UNEMP_t$	+	0.949*
		(1.737)
$\Delta lnSALE_t \times DEC_t \times lnANIT_t$	−	-0.025***
		(-3.350)
$\Delta lnSALE_t \times DEC_t \times lnEMPINT_t$	−	-0.038***
		(-7.298)
$\Delta lnSALE_t \times DEC_t \times DEC_{t-1}$	+	0.044***
		(4.754)
$Intercept$		0.004***
		(5.495)
Year fixed effect		YES
Firm fixed effect		YES
Observations		20,392
Adjusted R^2		0.754

Chapter 5: Conclusions

Using hand-collected data on prefecture-city official turnover for 260 cities in China, we examine the effect of political uncertainty on operational decisions evident in cost stickiness. We think this analysis is interesting for two reasons. First, it contributes to the literature on economic implications of political uncertainty by testing the relationship between political uncertainty and cost stickiness at the local government level. Second, we see this study as potentially useful to managers and financial analysts as understanding the impact of political uncertainty on asymmetric cost behaviour enables managers to make more appropriate resource adjustment decisions, and allows financial analysts interpreting the decisions made by managers thoroughly and issuing fairer and more comprehensive reports on the firms that they analyse.

According to the baseline results, we document that cost stickiness is greater in turnover years than in non-turnover years, suggesting that managers retain slack resources when political uncertainty is high. Our results are robust to instrumental variable analysis, placebo tests, alternative specifications of local official turnover, and other cost categories as well as after controlling the national election effect. In addition, we conduct a set of cross-sectional analyses and show that the positive relationship between political uncertainty and cost stickiness is more pronounced for privately owned firms, firms with small size, and firms located in regions with weak institutional environment. Furthermore, compared with local promotions, external appointments have a much stronger impact on the sticky cost behaviour. Overall, these findings imply that political uncertainty stemming from prefecture-city official turnover is an important channel through which local political process influences firms' cost behaviour, thus firms should take political uncertainty into account when setting their resource adjustment policies.

In this study, we provide a clear and dynamic picture of the cost behaviour of Chinese firms when faced with political uncertainty. However, our study provides the fundamental analysis of the relationship between political uncertainty and cost stickiness at the local government level and does not explore the specific channels

through which political uncertainty arising from local official turnover impacts firms' cost stickiness. Further, it does not provide general evidence on the behaviour of R&D costs due to data availability. Given the scarcity of empirical evidence on the effect of political uncertainty on corporate operational decisions, this could be a promising area for future research.

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Appendix

Table A.1
Variable Definitions

Variable	Definition
City-level variables	
$TURNOVER$	A dummy variable that takes a value of one if there is a change of head or mayor in year t for a city, and zero otherwise. If an official change occurs in the first (second) half of year t, the turnover is considered as occurring in year t (year $t+1$).
$TURNOVER\_HEAD$	A dummy variable that takes a value of one if there is a change of head in year t for a city, and zero otherwise. If an official change occurs in the first (second) half of year t, the turnover is considered as occurring in year t (year $t+1$).
$TURNOVER\_MAYOR$	A dummy variable that takes a value of one if there is a change of mayor in year t for a city, and zero otherwise. If an official change occurs in the first (second) half of year t, the turnover is considered as occurring in year t (year $t+1$).
$TURNOVER\_BOTH$	A dummy variable that takes a value of one if there is a change of head and mayor in year t for a city, and zero otherwise. If an official change occurs in the first (second) half of year t, the turnover is considered as occurring in year t (year $t+1$).
AGE	Natural log of prefecture-city officials' age prior to the turnover year.
$TURNOVER\_PEER$	Mean value of prefecture-city official turnover of other cities in the same province.
GDP	A city's real GDP growth rate.
$UNEMP$	A city's unemployment rate.
$EXTERNAL$	A dummy variable that takes a value of one if the city head or major is replaced with an external appointment, and zero otherwise.
$LMKTIDEX$	A dummy variable that takes a value of one if a firm is located in a region with below median Marketization index, and zero otherwise. Marketization index measures the levels of institution development, with a lower value indicating weaker institutional environment.
Firm-level variables	
$\Delta lnXOPR$	Log-change in deflated operating costs.
$\Delta lnSALE$	Log-change in deflated sales.
$lnAINT$	Log ratio of total assets to sales.
$lnEMPINT$	Log ratio of the number of employees to deflated sales.
DEC_t	A dummy variable that takes a value of one if deflated sales decreased in year t, and zero otherwise.
DEC_{t-1}	A dummy variable that takes a value of one if deflated sales decreased in year $t-1$, and zero otherwise.
SOE	A dummy variable that takes a value of one for a state-owned enterprise, and zero otherwise.
$SMALL$	A dummy variable that takes a value of one for a firm with total assets below the sample median in year *t*, and zero otherwise.

Table A.2

Alternative Specification of Asymmetric Cost Behaviour Model

This table presents the results of testing the impact of political uncertainty on the asymmetric behaviour of operating costs based on the linear specification. The subscript t denotes time index, while prefecture-city and firm indices are omitted for brevity. The dependent variable is $\Delta XOPR_{n,i,t}/SALE_{n,i,t-1}$. Column 1 presents the basic results of testing the presence of cost stickiness. Column 2 adds the key variable, prefecture-city official turnover $TURNOVER$, into the analysis. $TURNOVER$ is a dummy variable that takes the value of one if either the city head or mayor is changed in year t, and zero otherwise. DEC is a dummy variable that takes the value of one if sales decrease, and zero otherwise. Control variables include firm characteristics and local economic factors. The detailed definitions of all variables are provided in Appendix Table A.1. Regressions control for both firm and year fixed effects. Robust t-statistics reported in parentheses are based on standard errors clustered by firm. In this table, *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Exp.sign	(1)	(2)
$\Delta SALE_t/SALE_{t-1}$	+	0.793***	0.840***
		(108.200)	(75.428)
$\boldsymbol{\Delta SALE_t/SALE_{t-1} \times DEC_t}$	−	**-0.018****	-0.057***
		(-1.938)	(-2.464)
$\Delta SALE_t/SALE_{t-1} \times TURNOVER_t$			-0.008**
			(-2.013)
$\boldsymbol{\Delta SALE_t/SALE_{t-1} \times DEC_t \times TURNOVER_t}$	−		**-0.017***
			(-1.684)
$\Delta SALE_t/SALE_{t-1} \times GDP_t$			0.437***
			(8.363)
$\Delta SALE_t/SALE_{t-1} \times UNEMP_t$			-0.160**
			(-2.176)
$\Delta SALE_t/SALE_{t-1} \times ANIT_t$			0.004
			(1.271)
$\Delta SALE_t/SALE_{t-1} \times EMPINT_t$			-0.005
			(-0.692)
$\Delta SALE_t/SALE_{t-1} \times DEC_t \times GDP_t$	−		-0.032
			(-0.220)
$\Delta SALE_t/SALE_{t-1} \times DEC_t \times UNEMP_t$	+		1.099**
			(1.918)
$\Delta SALE_t/SALE_{t-1} \times DEC_t \times ANIT_t$	−		-0.016***
			(-6.200)
$\Delta SALE_t/SALE_{t-1} \times DEC_t \times EMPINT_t$	−		-0.008***
			(-7.880)
$\Delta SALE_t/SALE_{t-1} \times DEC_t \times DEC_{t-1}$	+		0.066***
			(6.882)
$Intercept$		0.004***	0.004***
		(5.273)	(6.942)
Year fixed effect		YES	YES
Firm fixed effect		YES	YES
Observations		20,392	20,392
Adjusted R^2		0.824	0.788