



A contextual analysis of the impact of managerial expectations on asymmetric cost behavior

Jason V. Chen¹ · Itay Kama² · Reuven Lehavy³ 

Published online: 27 March 2019

© Springer Science+Business Media, LLC, part of Springer Nature 2019

Abstract

We examine the effect of managerial expectations on asymmetric cost behavior in the context of resource adjustment costs and unused resource constraints. Our results show that the incremental impact of managerial expectations on cost asymmetry is the strongest when adjustment costs and unused resources are high. Conversely, when both are low, expectations have no impact on the degree of cost asymmetry. Furthermore, when the degree of unused resources is high, managerial pessimism is associated with anti-sticky cost behavior but managerial optimism reverses this relation and results in cost stickiness. Finally, we find the strongest cost stickiness under the following: a low degree of unused resources, a high magnitude of adjustment costs, and optimistic managerial expectations; by contrast, the strongest cost *anti-stickiness* occurs when all three drivers operate in the opposite direction. Our study suggests that additional economic determinants should be considered when assessing the impact of managerial expectations on cost behavior.

Keywords Cost asymmetry · Cost stickiness · Cost anti-stickiness · Forward-looking statements · Managerial expectations · Managerial decisions · Adjustment costs · Unused resources

✉ Itay Kama
kamaitay@tauex.tau.ac.il

Jason V. Chen
jchen19@uic.edu

Reuven Lehavy
rlehavy@umich.edu

¹ University of Illinois at Chicago, 601 S. Morgan Street, UH2311, Chicago, IL 60607, USA

² Coller School of Management, Tel Aviv University, Tel Aviv 6997801, Israel

³ Ross School of Business, University of Michigan, 701 Tappan Avenue, Ann Arbor, MI 48109, USA

1 Introduction

In their pivotal 2003 study, Anderson, Banker and Janakiraman document the finding that costs behave asymmetrically to an increase versus decrease in demand. Since then, a number of researchers have sought to understand the drivers of this asymmetric cost behavior. This body of research is based on the conjecture that cost asymmetry is due to asymmetric managerial resource adjustment decisions in response to increases versus decreases in current demand. Researchers further assert that these decisions are based on managerial expectations of future demand while considering the role of two other economic drivers of the cost asymmetry: the cost of adjusting resources in response to changes in demand and the availability of unused resources carried across the current period. A number of empirical studies provide evidence consistent with the effect of managerial expectations on asymmetric resource adjustment decisions.¹ However, while this research examines the effect of managerial expectations in general, less is known about (1) how the *incremental* effect of expectations on managers' asymmetric resource adjustment decisions is impacted by constraints imposed by resource cost adjustments and the availability of unused resources, and (2) the *distinct* and *combined* role of these three economic drivers in determining the existence, size, and magnitude of the cost asymmetry.

To fill this gap in the literature, our study presents an empirical analysis of the contextual impact of managerial expectations on a firm's cost structure that considers the tension between the effect of these expectations and both resource adjustment costs and unused resources. This analysis is important because it promotes understanding of the building blocks of the sign and magnitude of asymmetric cost behavior, which, in turn, affects reported earnings. Our insights may also inform various firm stakeholders as well as academic studies that show that the sign and magnitude of cost asymmetry affect a variety of financial variables, such as analyst forecasts, models of future earnings, conservatism, credit risk, and accounting fundamentals, all of which are important to internal as well as external financial statement users (e.g., Banker and Chen 2006; Weiss 2010; Homburg et al. 2018).

To measure managerial expectations, we use the tone of management's forward-looking statements in the management discussion and analysis section (MD&A) of 10-K reports. Forward-looking statements have been shown to predict both current and future firm performance (e.g., Li 2010a, 2010b; Wang and Hussainey 2013). This measure is appropriate in our setting as it exhibits both firm and time variability, has been validated as a robust measure

¹ These studies document an association between asymmetric cost behavior and a number of financial variables, including prior period revenue decrease and the change in gross national product (Anderson et al. 2003), CEO's option exercising behavior (a measure of managerial overconfidence) (Chen et al. 2013), the 2008–2009 economic downturn (Banker, Fang, and Mehta 2013), and changes in prior period sales, gross domestic product and order backlog (Banker et al. 2014).

of managerial expectations, and is based on management self-reported expectations of their firms' prospects.² To determine whether a forward-looking statement has a favorable or unfavorable tone, we use a set of word dictionaries validated by previous research.

We begin our analysis by documenting that, as the forward-looking statement tone becomes more optimistic, managers, on average, increase costs to a *greater* extent when sales rise and decrease costs by a *lesser* extent when sales fall by an equivalent amount (this behavior is termed sticky cost). This finding establishes a positive and significant relation between the favorableness of forward-looking statement tone and the degree of cost stickiness and confirms evidence in prior literature. In addition, it validates our use of forward-looking statement tone as a measure of managerial expectations.

Our main analyses and the primary innovation of this study focus on an examination of the tension between managerial expectation-driven resource adjustment decisions and the constraints imposed on these decisions by adjustment costs and the availability of unused resources. In our study, we first examine the impact of managerial expectations on the degree of cost stickiness, when there are *fewer* unused resources available at the beginning of the period. Consistent with the argument in prior research, we find a positive and significant relation between forward-looking statement tone and the degree of cost stickiness when there are fewer unused resources. We then extend previous findings by examining the effect of a *greater* degree of unused resources on the sign of cost asymmetry and find that pessimistic managerial expectations result in anti-sticky cost behavior, while optimistic expectations reverse this relation, resulting in a sticky cost behavior.³ These findings are new to the literature, are consistent with our hypotheses and demonstrate that expectation-driven decisions can either attenuate or reverse the previously documented anti-sticky cost behavior associated with a greater amount of unused resources. These findings thus give greater insight into the role that managerial decisions play in shaping a firm's cost structure.

An assumption underlying predictions regarding asymmetric cost behavior is that the cost of adjusting resources in response to changes in demand is nonnegligible.⁴ By contrast, if adjustment costs were negligible, the fully variable nature of these costs would imply a symmetric management response to both increases and decreases in

² These properties also differentiate our measure of managerial expectations from those of studies that rely on historical realizations of variables (e.g., change in GDP, order backlog, and change in prior sales). Furthermore, GDP as a proxy for managerial expectations does not capture the variation in these expectations across firms. Order backlog captures only one dimension of managerial expectations and results in a significant loss of data. Finally, as discussed by Banker and Byzalov (2014) and Banker et al. (2014), change in prior period sales likely captures both the amount of unused resources and managerial expectations. In our study, we show the incremental explanatory power of forward-looking statement tone over and above that of other measures used in prior studies.

³ Anti-sticky costs are those that show less of an increase when sales rise than a decrease when sales fall by an equivalent amount (e.g., Kama and Weiss 2013; Banker et al. 2014).

⁴ The current and future costs of adjusting resources (e.g., severance payments, training costs and other employee-related expenses, rent, utilities, and insurance) in response to changes in demand as well as the availability of unused resources carried over the current period have both been shown to impact the sign and magnitude of the cost asymmetry and to exacerbate or moderate asymmetric cost behavior (e.g., Noreen and Soderstrom 1997; Balakrishnan et al. 2004; Banker, Byzalov, and Chen 2013; Cannon 2014).

demand. Furthermore, the lack of current or future adjustment costs would imply that managerial expectations should have little to no impact on cost behavior, because there are no adjustment costs that managers need to consider when making resource allocation decisions. By contrast, if adjustment costs are nonnegligible, managerial expectations should play a more significant role in their resource allocation decisions, as these decisions impact both current and future adjustment costs. Moreover, since managerial flexibility in making resource allocation decisions increases with the degree of unused resources, expectations should play a more significant role when the degree of these unused resources is higher.⁵

Following this discussion, we predict that the impact of managerial expectations on the degree of cost asymmetry is strongest when *both* the magnitude of adjustment costs and the degree of unused resources are high. We find evidence consistent with this prediction. Conversely, we find that, when the magnitude of adjustment costs and the degree of unused resources are both low, managerial expectations have no impact on the degree of cost asymmetry. These results are new to the literature and provide insight for both researchers and managers by demonstrating the contextual impact of managerial expectations. Specifically, our results support one of the main inferences of this study and suggest that expectations matter the most for managers who are concerned about the costs of resource adjustment *and* who have flexibility, due to a greater degree of unused resources. By contrast, expectations are less relevant in decision-making when the cost of adjusting resources is low *and* managers have fewer unused resources.

In our final set of analyses, we examine the combined effect of managerial expectations, the degree of unused resources, and adjustment costs on the overall sign and magnitude of our observed cost asymmetry. Here, we find the strongest cost stickiness when there are fewer unused resources, greater adjustment costs, and more optimistic management expectations; we find the strongest cost *anti-stickiness* under the opposite conditions. Our finding of a combined effect has not been previously documented and validates the individual and incremental effect of specific drivers on a firm's cost structure.

These findings provide several contributions to the literature. First, our results validate empirical findings on the effect of managerial expectations in shaping cost asymmetry. In doing so, we provide further evidence for the theoretical prediction that expectations motivate managerial decisions regarding a firm's cost structure. Our findings also contribute to the literature by providing new evidence of the impact of specific drivers on cost structure decisions. These findings complement the results of Banker et al. (2014), who find that, when prior period sales fall (rise), costs are on average anti-sticky (sticky) in the current period. Our results differ from theirs, as they examine the combined effect of *both* unused resources and managerial expectations (Banker et al. 2014; Banker and Byzalov 2014), while we separately analyze the distinct incremental effects of unused resources and managerial expectations.⁶ Doing

⁵ When the degree of unused resources available at the beginning of the period is high, managers may use these resources in responding to an increase in sales, thereby reducing the need to acquire additional resources. Conversely, managers who begin the current period with a *low* degree of unused resources will need to increase resources proportionally in the current period in response to an increase in demand.

⁶ Note that using a single measure of the combined effect of *both* the degree of initial unused resources and managerial expectations captures only a subset of cases when a high degree of unused resources (prior period sales decrease) is accompanied by managerial pessimism or when a low degree of unused resources (prior period sales increase) is accompanied by managerial optimism.

so allows us to examine the existence and magnitude of the cost asymmetry for all possible cases, including when a high degree of unused resources (a prior period sales decrease) is accompanied by managerial optimism (a positive forward-looking statement tone) as well as when a low degree of unused resources (a prior period sales increase) is accompanied by managerial pessimism (a negative forward-looking statement tone). These scenarios, which represent 58% of our sample observations, capture circumstances in which the two economic drivers of cost asymmetry operate in an opposite direction. Examining the individual and incremental effect of each driver facilitates understanding of the role of each in the overall impact on cost structure decision-making.⁷

In addition, our findings provide evidence that the sign of the cost asymmetry (i.e., sticky or anti-sticky) depends on whether managerial expectations are optimistic or pessimistic, after controlling for a *high* degree of initial unused resources. This evidence is new to the literature and highlights the importance of managerial expectations in determining the sign of cost asymmetry. Moreover, our study is the first, to our knowledge, to provide empirical evidence that cost anti-stickiness arises only when both the initial amount of unused resources is high and managerial expectations are pessimistic. Having only one of these economic elements is not sufficient to result in cost anti-stickiness. Furthermore, we provide evidence that the impact of managerial expectations on the sign and magnitude of cost asymmetry depends on both the degree of unused resources and the magnitude of the adjustment costs. This evidence enriches understanding of the drivers of the sign of cost asymmetry and indicates that other economic determinants need to be considered when assessing the relevance of deliberate resource allocation decisions. Finally, our study contributes to the emerging body of literature that integrates managerial and financial research topics (e.g., Banker and Chen 2006; Weiss 2010; Chen et al. 2012; Dierynck et al. 2012; Kama and Weiss 2013; Holzacker et al. 2015; Banker et al. 2016). Specifically, we contribute to this field by examining the relation between management forward-looking statement tone in corporate financial reports and internal resource allocation decisions as well as by introducing textual analysis into a managerial accounting research topic.

The remainder of our paper is organized as follows. Section 2 develops our hypotheses. Section 3 describes the sample and our variable definitions. Section 4 describes our empirical results. Section 5 concludes.

2 Hypotheses development

2.1 The impact of managerial expectations on the degree of cost asymmetry

Research on cost asymmetry is based on the idea that this asymmetry is driven by managerial expectations of future demand. This idea relies on the notion that any changes in current demand require management to decide whether and by how much to

⁷ While prior period sales change may capture some aspects of managerial expectations, even after controlling for forward-looking statement tone, our finding that both measures are incrementally significant supports the ability of prior period changes in sales to proxy for the amount of unused resources and the ability of forward-looking statement tone to capture managerial expectations. This reasoning is further supported by the relatively low correlation between prior period sales decrease and forward-looking statement tone of -0.09 .

adjust resources. This decision depends on both the cost of doing so as well as managerial expectations of future demand. Specifically, when demand increases and managers expect future demand to remain high, they are willing to bear the costs of increasing resources, because they assume additional resources are likely to be needed in the future. Accordingly, when sales rise, managers with optimistic expectations are likely to increase resources more aggressively. Conversely, when current demand falls, managers must decide whether to cut or retain unused resources. When managers expect demand to bounce back, they are likely to cut unused resources by less, thereby reducing both the current and future costs of adjusting these resources.⁸

Taken together, these scenarios suggest that optimistic managers should attenuate their downward resource adjustments when demand falls and accelerate their upward resource adjustments when demand rises, resulting in greater cost stickiness.⁹ This discussion leads to our first hypothesis.

- *H1: The degree of cost stickiness should increase with the favorableness of managerial expectations*

As noted previously, while this prediction has been examined previously, it provides validation of our empirical measure of managerial expectations and motivates our subsequent contextual analyses.

2.2 The impact of managerial expectations on cost asymmetry under unused resource constraints

The degree of unused resources carried over into the current period is another instrumental determinant of the variation in cost asymmetry (e.g., Balakrishnan et al. 2004; Cannon 2014). Accordingly, we next consider the tension between the impact of managerial expectations and that of the degree of unused resources on cost asymmetry.

2.2.1 Case 1: A high degree of unused resources

We first consider the case with a high degree of unused resources. In this case, managers may use the available resources in responding to an increase in sales, thereby reducing the need to acquire additional resources. However, in the case of a future sales decrease, the combination of existing and newly created unused resources may exceed acceptability thresholds, causing managers to reduce these resources. Accordingly, managers with a higher degree of unused resources should be more likely to adjust resources downward with sales decline than to adjust upward with sales increases. This

⁸ The traditional view that variable and fixed costs mechanistically determine the relation between costs and activity level assumes that adjustment costs are either zero or infinite (Balakrishnan et al. 2014). By contrast, the revised view in the academic literature is based on the notion that the drivers of cost behavior are resource adjustment costs and *deliberate* management resource allocation decisions. Under this view, significant, yet finite, adjustment costs would result in asymmetric cost behavior (Banker and Byzalov 2014).

⁹ Note that the relative impact of managerial expectations on costs is likely to be stronger when demand rises than when demand falls. When demand falls and managers cut unused resources, the cost savings resulting from the reduction in resources is partly offset by the adjustment costs. However, when demand rises, the decision to increase resources results in adjustment costs, such as installation costs of new equipment, which in turn intensify the increase in total costs.

tendency has been found to be, on average, associated with anti-sticky cost behavior (e.g., Balakrishnan et al. 2004; Banker et al. 2014). Notably, however, the incremental impact of managerial expectations, conditional on the degree of unused resources, has not been examined in the literature. Using this reasoning, we contribute to the literature by controlling for the degree of unused resources in studying the impact of managerial expectations on cost behavior.¹⁰

Specifically, we assert that the previously documented association between a high degree of unused resources and cost anti-stickiness should be stronger with more pessimistic expectations. In this case, an increase in demand should lead managers to be *less* willing to incur adjustment costs associated with additional resources, because they do not anticipate using these resources. They will also be more aggressive in further decreasing unused resources when demand falls. By contrast, optimistic managers will assume they can use unused resources in the future and will thus be less likely to make aggressive cuts when demand falls and more likely to increase resources beyond the available amount, when demand rises. Consequently, the decisions of optimistic managers should reduce the previously documented anti-stickiness and may lead to sticky cost behavior, *even when the degree of unused resources is high*. This discussion leads us to our next hypothesis.

- *H2a: Managerial optimistic (pessimistic) expectations diminish (intensify) the anti-sticky costs imposed by a high degree of unused resources*

2.2.2 Case 2: A low degree of unused resources

We next consider the case when managers are faced with a low degree of unused resources carried over into the current period. In this case, an increase in demand means managers need to increase resources proportionally and can better afford to retain unused resources when demand falls. As a result, when the degree of unused resources is low, managers should exhibit *slower* resource adjustments when demand falls than when demand rises, leading to greater cost stickiness (e.g., Anderson et al. 2007; Cannon 2014). We extend this reasoning by predicting and empirically testing whether managerial expectations impacts their resource allocation decisions when the degree of unused resources is low. Specifically, when managers have optimistic expectations, we expect greater cost stickiness. Since these managers expect to eventually use unused resources, they will thus be less likely to cut them when demand falls and more likely to pursue aggressive resource increases when demand rises. By contrast, managers with pessimistic expectations should be more likely to accelerate their cost savings when activity levels fall and to refrain from adding resources when activity levels rise. The behavior in the first situation is likely to intensify the degree of cost stickiness, whereas that in the latter should reduce the degree of cost stickiness and may even induce anti-stickiness. This discussion leads to our next hypothesis.

¹⁰ As noted previously, we extend the findings of Banker et al. (2014), who use a single measure to capture the combined effect of *both* the degree of initial unused resources and managerial expectations, by empirically examining the individual and incremental impact of each determinant.

- *H2b: Managerial optimistic (pessimistic) expectations intensify (diminish) the cost stickiness associated with a low degree of unused resources.*

2.3 When do managerial expectations matter the most?

As mentioned, we assume that the costs of adjusting resources in response to a change in demand are nonnegligible, thus creating a role for managerial expectations in their resource allocation decisions.¹¹ We further expect that managerial expectations play a more (less) prominent role when the degree of unused resources is high (low). That is, when demand increases, a manager with a high degree of unused resources should place more emphasis on her expectations to determine whether resources, beyond those available, are necessary. By contrast, a manager with a low degree of unused resources has less discretion in making resource allocation decisions and therefore will not need to rely as heavily on her expectations of demand.¹² The above discussion implies that managerial expectations will impact resource allocations decisions *more* when adjustment costs are high and that these decisions will impact cost asymmetry more when the degree of unused resources is high. Combining this argument with the discussion in sections 2.1 and 2.2 leads to our final hypothesis.

- *H3: The impact of managerial expectations on the degree of cost asymmetry is the strongest (weakest) when both the magnitude of adjustment costs and the degree of unused resources are high (low).*

The hypotheses above further suggest that the highest degree of cost stickiness (anti-stickiness) should be observed when management optimistic (pessimistic) expectations are accompanied by a low (high) degree of unused resources and a high (low) magnitude of adjustment costs. In our subsequent analyses, we empirically test these relations.

3 Sample, variables, and descriptive statistics

3.1 Sample selection

To obtain our sample, we first identify the set of all public firms covered by Compustat from 1994 to 2014. From this sample, we then exclude financial institutions and public utilities (firms with four-digit SIC codes 6000–6999 and 4900–4999), as these types of firms and their respective financial reporting requirements are subject to industry-specific regulations. Note that we estimate the yearly inflation rates for our sample using monthly inflation data from the CRSP U.S. Treasury and Inflation database and

¹¹ As mentioned, if adjustment costs were fully negligible, then management would exhibit a symmetric response to rises and falls in demand. Furthermore, negligible costs would imply that management expectations should have little to no impact on cost behavior as managers would not need to consider current or future adjustment costs when making resource allocation decisions.

¹² At the extreme, when the degree of unused resources is insignificant and current demand rises, a manager who needs to meet current demand will acquire additional resources, regardless of her expectations.

use these rates to adjust our variables for inflation. We next merge the above set of firms with data obtained from 10-K and 10-K405 (hereafter 10-K) filings covered by the SEC EDGAR online filings website from 1994 to 2014.¹³ From this newly merged sample, we delete any observations with missing data for our estimated variables as well as any observations with nonpositive values for sales; selling, general, and administrative (SG&A) expenses; or total assets. Following prior studies, we also exclude any firm-year observations with an SG&A expenses-to-sales ratio greater than one. Finally, to limit the effect of extreme observations, we rank the firms in our sample, according to each of the estimated variables in our regressions by year, and remove the extreme 1% of observations on each side. Our final sample includes 45,048 firm-year observations. Table 1 provides the details of our sample selection procedure.

3.2 Measuring managerial expectations

To measure the favorableness of managerial expectations, we use the tone exhibited in managers' forward-looking statements included in the management discussion and analysis section (MD&A) of a firm's 10-K reports.¹⁴ Studies have shown that forward-looking statements provide a comprehensive view of managerial expectations, regarding various aspects of the business that ultimately impact future sales. In addition to explicit statements related to sales, the MD&A section includes managerial statements related to consumer demand, market conditions, competition, liquidity, production, income, pricing, and investments, all of which may directly or indirectly impact expectations of sales (See Li 2010a for a complete classification of forward-looking statements).^{15,16}

To identify the tone in each firm's forward-looking statements, we begin by extracting the MD&A section of each 10-K filing using Perl. We then follow prior research and identify the forward-looking statements using a dictionary-based approach (Li 2010a; Bozanic et al. 2018). Specifically, we identify an forward-looking statements as any sentence in the MD&A section that contains one or more forward-looking words and does not contain any word or sequence of words that suggest that the sentence

¹³ The SEC mandate for U.S. public companies to file through the EDGAR online system began in 1994.

¹⁴ Management earnings guidance can also be used as a measure of management expectations. However, there are several limitations associated with this measure: (1) issuing earnings guidance is not a pervasive practice. For example, Hamm et al. (2018) document that during 1997–2012 23.6% of their sample issue guidance (see also Ball and Shivakumar 2008; Beyer et al. 2010; Rogers and Van Buskirk 2013). (2) Prior literature (e.g., Houston et al. 2010; Chen et al. 2011) has documented that firms that stop providing guidance have poorer prior performance, more uncertain operating environments, and fewer informed investors; accordingly, using earnings guidance might lead to a biased sample. (3) Managers may strategically use their guidance to manage analysts' earnings expectations (e.g., Cotter et al. 2006; Koh et al. 2008; Kim and Park 2012; Ciconte et al. 2014). (4) Earnings guidance is a quantitative, short-term aggregate measure that does not indicate earnings components.

¹⁵ In a robustness test, we re-run our main tests using a measure of forward-looking statement tone based on the identification of words that more explicitly relate to demand (e.g., "sales," "revenues," "pricing"). Our results from this analysis are similar to those reported using the tone of the entire set of forward-looking statements.

¹⁶ Further validation of the ability of forward-looking statements to capture future events is provided by Muslu et al. (2015), who find that firms with poor information environments provide more forward-looking statements in their MD&As that investors find useful in predicting future earnings, and by Bozanic et al. (2018), who find evidence that suggests that the forward-looking statements in MD&A are positively associated with both market reactions and changes in analyst forecast accuracy.

Table 1 Sample Selection

	Observations
Initial sample: Firm-year observations available on Compustat, 1994–2014	238,801
Excluding financial institutions and public utilities	(35,524)
(1) Compustat sample	203,277
(2) 10-K MD&A, SEC EDGAR online filing, 1994–2014	118,752
Number of observations after merging (1) and (2)	76,212
Excluding observations without valid data	(31,164)
Full sample	45,048

The initial sample includes all public firms covered by Compustat. We exclude financial institutions and public utilities (four-digit SIC codes 6000–6999 and 4900–4999). In the second step, we include all 10-K filings covered by the SEC EDGAR online filings website and merge the data with the data obtained from Compustat in the first step. We then delete observations without valid data on the estimated variables as well as firm-year observations with SG&A expenses-to-sales ratio higher than one and the extreme 1% of the estimated variables in the regression models

pertains to the past or is legal boilerplate. Note that we exclude sentences that pertain to the past, as some of these may otherwise be classified as forward-looking, even though they do not indicate current expectations. To identify our forward-looking statements, we use the forward-looking words, exclusion n-grams, and legal exclusion words identified by Li (2010a) and Bozanic et al. (2018).

After identifying our set of forward-looking statements, we then identify the respective numbers of optimistic and pessimistic words, using the financial tone dictionaries provided by Loughran and Mcdonald (2011) (see also Gurun and Butler 2012; Mayew and Venkatachalam 2012; Huang et al. 2014).¹⁷ We determine whether the overall forward-looking statements tone in a 10-K report is positive or negative with the following procedure: the difference between the number of optimistic and pessimistic words divided by one plus the sum of the number of optimistic and pessimistic words.

Since management's expectations for year t may affect the tone of those forward-looking statements in the MD&A section of the 10-K for both the end of year $t-1$ and the end of year t , we calculate the average tone for firm i in year t as follows: *average Tone* $_{i,t} = (\text{Tone}_{i,t-1} + \text{Tone}_{i,t})/2$.¹⁸ After obtaining the *average Tone* for each forward-looking statements, we then use a scaled-quintile format to rank all observations, according to the value of the *average Tone*, and assign each observation to a quintile. We next transform our tone variable into a scaled-quintile variable with values ranging from zero to one, following the procedure of Rajgopal et al. (2003) and Amir et al.

¹⁷ For the lists of optimistic and pessimistic words, see http://www3.nd.edu/~mcdonald/Word_Lists.html. The use of the Loughran and Mcdonald (2011) word lists is pervasive in the literature. These lists are based on the word usage in a large sample of 10-K reports, which makes them particularly appropriate in the context of our study. As noted by Loughran and Mcdonald (2016), applying other dictionaries (such as those of Henry 2008, Harvard's GI, or Diction) that are based on other types of financial disclosures (e.g., earnings press releases, conference calls) to 10-K reports can produce spurious results.

¹⁸ We repeat our analysis using the tone at either the beginning or the end of the year (instead of an average) as well as the lagged values of average tone and obtain similar results. Additionally, results using the abnormal tone measure developed by Huang et al. (2014) in the context of earnings press releases are qualitatively the same. As discussed by Davis and Tama-Sweet (2012), earnings press releases are subject to fewer regulations, compared to MD&A, and are thus more likely to be used strategically.

(2015): “0” in the bottom quintile, “0.25” in the second quintile, “0.50” in the third quintile, “0.75” in the fourth quintile, and “1” in the highest quintile. We denote this scaled-quintile measure of managerial expectations as EXP .¹⁹

Using the tone of forward-looking statements to measure the favorableness of managerial expectations is motivated by the recent stream of literature examining the relation between the tone in management’s forward-looking statements and a firm’s current and future performance. Within this body of research, Li (2010a, 2010b) finds that the tone of forward-looking statements is positively associated with a firm’s future performance, consistent with the idea that forward-looking statements provide forward-looking information about a firm.²⁰ In another study, Davis and Tama-Sweet (2012) find that a more pessimistic tone in the MD&A section of 10-K reports relates to lower future returns on assets, while Feldman et al. (2010) find that a change in MD&A tone is positively associated with an immediate stock price response. Furthermore, additional prior research validates the ability of tone to capture managerial view of the prospects of their business by showing that the tone conveyed in other types of firm disclosures (e.g., earnings release, newspaper articles, and various regulatory filings) impacts firm performance. For example, Tetlock (2007) finds that a pessimistic tone in the *Wall Street Journal*’s “Abreast of the Market” column is associated with lower subsequent stock returns and higher stock market volatility for a firm, even when the column does not provide any new fundamental information about the stock. In another study, Tetlock et al. (2008) find that a greater frequency of pessimistic words in *Wall Street Journal* and Dow Jones News Service stories related to a firm is associated with lower subsequent earnings for the firm. Similarly, Kothari et al. (2009) provide evidence that an optimistic tone in disclosures made by the firm, analysts, or the media is negatively related to both volatility and forecast dispersion. Additionally, Davis et al. (2012) find that managers use both optimistic and pessimistic tone in their earnings press releases to indicate expected future performance to investors. Finally, Price et al. (2012) find that an optimistic tone in the Q&A portion of a firm’s conference call is associated with a positive return in both three-day and two-month windows.²¹

While research provides ample evidence to support the use of forward-looking statement tone as a measure of the favorableness of managerial expectations, we further validate its ability to predict future sales in the context of our study by estimating the following regression model.

$$REV_{i,t+1} = \beta_0 + \beta_1 EXP_{i,t} + \beta_2 LMV_{i,t} + \beta_3 BTM_{i,t} + \beta_4 REV_{i,t} + \epsilon_{i,t}.$$

¹⁹ Approximately 54% of the firm-year observations in our sample change their quintile ranking from year $t-1$ to year t .

²⁰ This finding suggests that managerial expectations, as reflected in forward-looking statement tone, are on average, unbiased. However, even if these expectations are partially impacted by psychological biases (in addition to available information), all of our hypotheses and inferences remain the same. A similar argument is made in Banker et al. (2014) (footnote 17): “Managerial optimism and pessimism may reflect either rational inferences about future sales based on available (favorable or unfavorable) information, or managers’ psychological biases, such as dispositional optimism (Weinstein 1980). Both interpretations lead to the same predictions.”

²¹ As discussed in the comprehensive review of this nascent literature by Li (2010b) and Lougham and McDonald (2016), additional studies have used word lists to gauge tone in a variety of other contexts.

Note that we use three different specifications of revenue (*REV*): natural log of sales revenue, log change of sales revenue, and an indicator variable that equals 1 if sales revenue increases and 0 otherwise. LMV is the log of the market value of common equity at year-end. BTM is the book-to-market ratio at year-end. The results in Panel A of Table 2 show that the association between forward-looking statement tone (*EXP*) and future sales (β_1) for our sample is positive and significant at the 0.01 level in all specifications. The results in Panel B show that the frequency of observations associated with a rise in future sales ranges from 51.5% for the most pessimistic tone quintile to 57.7% for the most optimistic tone quintile. Combined, the findings in Panels A and B of Table 2 provide additional support for the use of forward-looking statement tone as a measure of the favorableness of managerial expectations of demand.

In sum, our use of forward-looking statement tone is supported by research as well as our own validation tests that indicate the ability of word lists and their associated tone measures to explain and, more importantly, predict various economic outcomes. This measure allows us to analyze specific firm data over time. In addition, it captures multiple aspects of the business and, most importantly, is extracted directly from statements managers provide regarding their own expectations of future business outcomes. Accordingly, it provides us with a more explicit identification of the role of managerial expectations in determining both the sign and magnitude of cost asymmetry, one that is distinct and incremental to our measures of the degree of unused resources (defined in the next section).

3.3 Variable definitions

Our dependent variable is the log change of SG&A expenses (SGA) for firm i in year t ($\Delta \ln SGA_{i,t}$; $\Delta \ln SGA_{i,t} = \log(SGA_{i,t} / SGA_{i,t-1})$). Consistent with the literature, we focus on SGA to capture those managerial choices that affect the costs associated with providing services, marketing and distribution, and other administrative overhead costs. Other key variables in our regression models are sales revenue (*REV*), the log change of sales revenue ($[\Delta \ln REV_{i,t} = \log(REV_{i,t} / REV_{i,t-1})]$), and an indicator variable that equals 1 if $REV_{i,t} < REV_{i,t-1}$ and 0 otherwise ($REVDEC_{i,t}$).

Following previous studies (e.g., Banker et al. 2014), we use prior-period sales change as the primary measure of the degree of unused resources available at the beginning of the period. We define *LowUnusedResources* $_{i,t}$ as an indicator variable that equals 1 if REV_i in year $t-1$ is higher than in year $t-2$ and 0 otherwise. This measure assumes that a prior-period sales increase may have exhausted existing resources, whereas a prior-period sales decrease likely led to the retention of some resources (for a similar argument see Cannon 2014). The former (latter) case results in a lower (higher) amount of unused resources at the beginning of the current period.²² As a supportive evidence of the distinct nature of the forward-looking statement tone, relative to prior-period sales change, we find a relatively low correlation between prior-period sales decreases and forward-looking statement tone (-0.09) and report in Panel B of Table 3 that the frequency of observations associated with the most

²² By including prior-period change in sales and the forward-looking statement tone as proxies for the degree of unused resources and management expectations, respectively, we can assess the incremental and distinct effect of each driver on cost asymmetry while controlling for the effect of the other driver.

Table 2 The Association between the Tone of Forward-Looking Statements and Future Sales

Panel A: Regression analysis		Measures of Future Sales Revenues (REV)			
Coefficient	Description	ln(REV _{t+1}) (1)	ΔlnREV _{t+1} (2)	REV Increase _{t+1} (3)	REV Increase _{t+1} (4)
β_1	Managerial Expectations	0.016*** (3.04)	0.012** (2.49)	0.117*** (3.05)	0.070*** (3.05)
β_2	LMV	0.053*** (14.54)	0.008*** (6.91)	0.104*** (13.90)	0.064*** (14.36)
β_3	BTM	-0.047*** (-6.41)	-0.108*** (-14.64)	-0.931*** (-18.55)	-0.558*** (-18.85)
β_4	ln(REV) _t	0.948*** (248.92)			
β_4	ΔlnREV _t		0.177*** (5.99)		
β_4	REV Increase _t			0.824*** (28.68)	0.500*** (28.87)
β_0	Constant	0.124*** (3.36)	0.113*** (3.00)	0.494 (1.57)	0.304* (1.65)
	Estimation Type	OLS	OLS	Probit	Logit
	Fixed Effects	Ind., Year	Ind., Year	Ind., Year	Ind., Year
	Adj-R ²	0.982	0.136	-	-
	Pseudo R ²	-	-	0.121	0.121
	Pearson (Prob > Chi ²)	-	-	0.551	0.369
	AUROC	-	-	0.732	0.732
	N	35,656	35,656	35,646	35,646

Table 2 (continued)

Panel B: Frequency of future sales increases by quintiles of forward-looking statement tone

Most pessimistic tone	51.5%
Q2	54.1%
Q3	54.5%
Q4	55.5%
Most optimistic tone	57.7%

1. Panel A presents the coefficients and the associated t-statistics (in parentheses) for the following regression model:

$$\text{Measures of Sales Revenue}_{i,t+1} = \beta_0 + \beta_1 \text{EXP}_{i,t} + \beta_2 \log(\text{LMV})_{i,t} + \beta_3 \text{BTM}_{i,t} + \beta_4 \text{Measures of Sales Revenue}_{i,t} + \epsilon_{i,t}$$

2. Panel B presents the frequency of future sales increases by quintiles of forward-looking statement tone.

3. EXP is the tone variable transformed into a scaled-quintile format with values ranging from 0 to 1. LMV is the log of market value of common equity at year end; BTM is the book-to-market ratio;

Measures of sales revenue are (i) $\ln(\text{REV})_{i,t}$; log annual sales revenue of firm i in year t (ii) $\Delta \ln \text{REV}_{i,t}$; the log change of sales revenue [$\Delta \ln \text{REV}_{i,t} = \log(\text{REV}_{i,t} / \text{REV}_{i,t-1})$] (iii) REV Increase; _{i,t} an indicator variable that equals 1 if $\text{REV}_{i,t} > \text{REV}_{i,t-1}$ and 0 otherwise.

3. *, **, **** - Significantly different from zero at the 0.10, 0.05, and 0.01 levels, respectively. Standard errors are clustered by firm and year for specifications (1) and (2) and clustered by firm for specifications (3) and (4).

pessimistic tone quintile and an increase in prior-period sales is 18%, while those associated with the most optimistic tone quintile and a decrease in prior period sales is 16%. Note that these cases cannot be captured by prior-period sales changes as a combined measure of managerial expectations and unused resources. Furthermore, these frequencies are close to the expected frequency of 20%, and, importantly, are significantly and economically greater than zero, which is the frequency expected if prior-period sales changes *completely* capture managerial expectations. Overall, the results of our validation tests further support the distinct and incremental nature of forward-looking statement tone, relative to prior-period sales change used by Banker et al. (2014), as a combined measure of the degree of unused resources and managerial expectations.

As a robustness test of this measure, we estimate our main regressions using two alternative measures of unused resources. The first alternative measure classifies an observation as indicating a high degree of unused resources when REV in year $t-1$ is lower than in year $t-2$ and the change in the prior period SG&A (i.e., SGA_{t-1}/SGA_{t-2}) is greater than or equal to the change in prior period sales (i.e., REV_{t-1}/REV_{t-2}), and a low degree of unused resources otherwise. The second alternative measure defines an observation as indicating a high degree of unused resources when REV in year $t-1$ is lower than in year $t-2$ and the prior-period change in the number of employees is greater than or equal to the change in prior-period sales and a low degree of unused resources otherwise. We examine these alternative measures, as they may be able to identify firm-year observations associated with a high degree of unused resources at the beginning of the period as those that experienced a decrease in prior-period sales that *was not* accompanied by a proportional decrease in capacity. Finally, previous studies (e.g., Chen et al. 2012; Kama and Weiss 2013) argue that adjustment costs are higher for firms whose sales require a higher amount of assets, as there is less flexibility in changing the amount of assets. Consequently, we use asset intensity, measured as the log of the ratio of total assets to sales revenues, to determine adjustment costs, $ASINT_{i,t} = \log (Assets_{i,t} / REV_{i,t})$.²³

3.4 Descriptive statistics

Table 3 provides the descriptive statistics for the main variables used in our analysis. Consistent with prior studies, we find that the respective distributions of REV and SGA are skewed to the right, with mean values larger than their respective median values (REV = \$2.239 billion mean, compared to \$249 million median; SGA = \$377 million mean, compared to \$53 million median). The statistics in Table 3 also show that the ratio between SGA and REV (mean = 0.28) and the log change of both REV and SGA (mean = 0.06) resemble those documented in prior studies. In addition, our sample's sales decline frequency of 36% is similar to the 37% found in Banker et al. (2014). Finally, our median Tone of -0.21 is equal to that documented by Li (2010a).

²³ Some studies use employee intensity as an additional measure of adjustment costs. However, Kama and Weiss (2013) indicate that the coefficient estimate of employee intensity is insignificant for large firms. Furthermore, Chen et al. (2012) show that the sign and significance level of employee intensity are not stable over time, presumably due to the increase in temporary labor in recent years. Our results are statistically indistinguishable when we add employee intensity as an additional control variable.

Table 3 Descriptive Statistics

Panel A: Descriptive Statistics					
Variable	Mean	Std. Dev.	25th Pctl	Median	75th Pctl
REV	2239.0	11,998	70.3	248.5	992.6
SGA	376.7	1899	17.5	52.5	181.9
$\Delta \ln REV$	0.06	0.25	-0.05	0.05	0.16
$\Delta \ln SGA$	0.06	0.21	-0.04	0.05	0.15
SGA/REV	0.28	0.19	0.13	0.24	0.38
ASINT	0.18	0.87	-0.37	0.03	0.54
REVDEC	0.36	0.48	0.00	0.00	1.00
FLS Tone	-0.19	0.23	-0.35	-0.21	-0.05
EXP	0.48	0.35	0.25	0.50	0.75
Panel B: Frequency of observations by the sign of prior sales change and quintiles of the tone of forward-looking statements					
	Most pessimistic tone	Q2	Q3	Q4	Most optimistic tone
Full Sample	20%	20%	20%	20%	20%
Prior sales decrease	24%	22%	21%	18%	16%
Prior sales increase	18%	19%	20%	21%	22%

Rev_{it} is the annual sales revenue of firm i in year t (in millions of dollars); SGA_{it} is annual sales, general, administrative expenses (in millions of dollars); $\Delta \ln REV_{it}$ is the log change of sales revenue [$\Delta \ln REV_{it} = \log(REV_{it} / REV_{i,t-1})$]; $\Delta \ln SGA_{it}$ is the log change of SGA [$\Delta \ln SGA_{it} = \log(SGA_{it} / SGA_{i,t-1})$]; $ASINT_{it}$ is the log ratio of assets to REV [$ASINT_{it} = \log(Assets_{it} / REV_{it})$]; $REVDEC_{it}$ is an indicator variable that equals 1 if $REV_{it} < REV_{i,t-1}$ and 0 otherwise; FLS Tone is the tone of management forward-looking statements (FLS) included in the *management discussion and analysis* section (MD&A) of 10-K reports; EXP is the tone variable transformed into a scaled-quintile format with values ranging from 0 to 1. The number of observations is equal to 45,048

4 Empirical results

4.1 The impact of managerial expectations on the degree of cost asymmetry

We test the impact of managerial expectations on the degree of cost asymmetry (H1) by estimating the following regression model.²⁴

$$\begin{aligned} \Delta \ln SGA_{i,t} = & \beta_0 + \gamma_0 EXP_{i,t} + \{\beta_1 + \gamma_1 EXP_{i,t}\} \Delta \ln REV_{i,t} \\ & + \{\beta_2 + \gamma_2 EXP_{i,t}\} REVDEC_{i,t} \Delta \ln REV_{i,t} \\ & + \{\delta_1 + \delta_2 \Delta \ln REV_{i,t} + \delta_3 REVDEC_{i,t} \Delta \ln REV_{i,t}\} ASINT_{i,t} + \epsilon_{i,t}. \end{aligned} \quad (1)$$

Table 4, Column (1), reports the results from estimating the basic cost asymmetry model.

Consistent with previous studies, we find that the coefficient estimate on β_1 is 0.667 and significant, while that of β_2 is -0.263, also significant. These results suggest that a 1 % increase in sales results in a 66.7 basis points (bps) increase in SG&A expenses,

²⁴ In estimating all our regression models, we cluster observations by firm and year to provide standard errors that are robust to autocorrelation and heteroscedasticity, as suggested by Petersen (2009).

Table 4 The Impact of Managerial Expectations on Cost Asymmetry

Coefficient	Description	(1)	(2)
Benchmark Model			
β_1	Sales Increase	0.667*** (21.06)	0.588*** (19.06)
β_2	Cost Asymmetry	-0.263*** (-6.26)	-0.128*** (-3.31)
<i>The Impact of Managerial Expectations</i>			
γ_1	Sales Increase		0.152*** (5.61)
γ_2	Cost Asymmetry		-0.204*** (-7.60)
<i>Asset Intensity</i>			
δ_1	Main Effect		0.013*** (3.79)
δ_2	$x \Delta \ln REV$		-0.016 (-1.54)
δ_3	$x REVDEC x \Delta \ln REV$		-0.106*** (-6.69)
<i>Intercepts</i>			
β_0		0.008** (2.19)	-0.001 (-0.20)
γ_0	Managerial Expectations		0.015** (2.56)
Adj-R ²		0.442	0.456
N		45,048	45,048

1. The table presents the coefficient estimates and the associated t-statistics (in parentheses) for the following regression model.

$$\Delta \ln SGA_{i,t} = \beta_0 + \gamma_0 EXP_{i,t} \beta_1 + \gamma_1 EXP_{i,t} \Delta \ln REV_{i,t} + \beta_2 + \gamma_2 EXP_{i,t} REVDEC_{i,t} \Delta \ln REV_{i,t} + \delta_1 + \delta_2 \Delta \ln REV_{i,t} + \delta_3 REVDEC_{i,t} \Delta \ln REV_{i,t} ASINT_{i,t} + \epsilon_{i,t}$$

2. See Table 3 for variable definitions.

3. *, **, *** - Significantly different from zero at the 0.10, 0.05, and 0.01 levels, respectively.

while a 1 % decrease in sales results in only a 40.4 (=66.7–26.3) bps decrease in SG&A expenses.

The difference between these, β_2 , captures the degree of cost stickiness.

Continuing with Table 4, the results in Column (2) show a negative and significant coefficient for γ_2 , the interaction between EXP and $REVDEC * \Delta \ln REV$. This coefficient indicates that, when management has the most pessimistic expectations (the lowest quintile of EXP), the degree of cost stickiness, $\beta_2 + \delta_3 ASINT$, is -0.147 (= $-0.128 - 0.106 * 0.18$), negative and significant. By contrast, when management has the most optimistic expectations (the highest quintile of EXP), the degree of cost stickiness significantly intensifies by 0.204 to -0.351 (= $-0.147 - 0.204$). The results further show that, when managers have the most optimistic expectations, a 1 % increase in current

sales results in an incremental increase in SG&A expenses of 15.2 bps (γ_1). Conversely, the results show that, when sales fall, managerial expectations attenuate the reduction in expenses by 5.2 bps ($\gamma_1 + \gamma_2 = 0.152 - 0.204 = -0.052$, significant at the 0.02 level). Combined, the findings in Table 4 validate both the results of previous research as well as our prediction that the degree of cost stickiness increases with the favorableness of managerial forward-looking statement tone.

To further validate the evidence in Table 4, we examine whether the impact of expectations on cost asymmetry is monotonic and pervasive throughout its distribution. To do so, we estimate the benchmark model in Column 1 of Table 4 within *EXP* quintiles and depict the coefficient estimates for β_1 and β_2 . As can be seen in Fig. 1, both β_1 and β_2 are *monotonically* associated with managerial expectations. Specifically, we see that β_1 increases monotonically from 0.585 in the lowest *EXP* quintile to 0.741 in the highest *EXP* quintile. Furthermore, β_2 , our measure of cost stickiness, decreases monotonically from -0.168 in the most pessimistic *EXP* quintile to -0.339 in the most optimistic *EXP* quintile. The differences in β_1 and β_2 between these quintiles are both economically and statistically significant. Interestingly, our finding that the most pessimistic tone has a significantly negative β_2 suggests that managerial pessimism, by itself, does not lead to cost anti-stickiness. In sum, the evidence presented in Table 4 and Fig. 1 support the role manager expectations play in shaping a firm's cost structure and validate our empirical measure of managerial expectations.²⁵

4.2 The impact of managerial expectations on cost asymmetry in the presence of constraints imposed by the degree of unused resources

We next examine the results from estimating regression model (1) for our unused resources subsamples (*LowUnusedResources*_{*i,t*} = 0 or 1, respectively). The results in Panel A of Table 5 show a negative and significant coefficient estimate for γ_2 , our measure of the impact of managerial expectations on cost asymmetry for both the primary and alternative measures of unused resources. Using the coefficient estimates in Panel A, Panel B of Table 5 reports our results for the total level of cost asymmetry, according to the degree of unused resources and managerial expectations. Specifically, the results in Column (1) of Panel B indicate that, when the degree of unused resources is high *and* managers have the most pessimistic expectations, costs exhibit *anti-stickiness* (the degree of cost asymmetry equals 0.108). Consistent with H2a, this anti-stickiness significantly diminishes by 0.216 when managers have the most optimistic expectations, leading to a significant cost stickiness of -0.108 . Consistent with H2b, when the level of unused resources is low, we find, in Column (2), that the degree of cost stickiness ranges from -0.318 when managers have the most pessimistic expectations to -0.443 when managers have the most optimistic expectations. (The mean *ASINT*

²⁵ In an untabulated analysis, we find no evidence of a systematic industry clustering within forward-looking statement tone quintiles. For example, the most pessimistic tone quintile has a slightly higher representation of energy, business equipment, and telecommunications, while the most optimistic quintile has a slightly higher representation of consumer nondurables, consumer durables, manufacturing, chemicals, and retail. Importantly, no industry has less than 15% representation in any given quintile. (The only exception is chemicals, with 11% of its observations in the lowest quintile.)

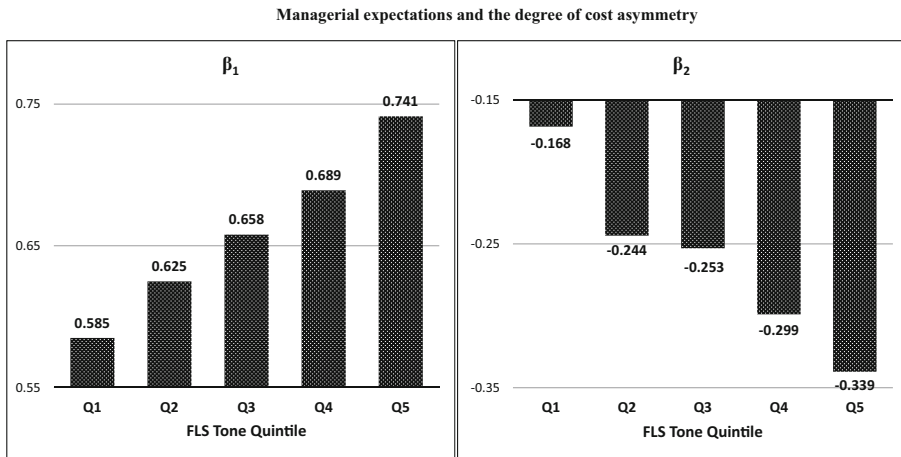


Fig. 1 Managerial expectations and the degree of cost asymmetry. The figure presents regression results for subsamples formed based on the tone of forward-looking statements (each subsample includes, on average, 9390 observations). First, we rank all firm-year observations according to the value of forward-looking statement tone and assign them into quintiles. Then we estimate the following Anderson, Banker and Janakiraman (2003) benchmark model within each quintile and depict the coefficient estimates of β_1 and β_2 : $\Delta \ln SGA_{i,t} = \beta_0 + \beta_1 \Delta \ln REV_{it} + \beta_2 \text{REVDEC}_{it} \Delta \ln REV_{it} + \epsilon_{it}$

for the subsamples of high and low degrees of unused resources equals 0.12 and 0.22, respectively.)

Examining the findings for our two alternative measures of unused resources, we find similar results. Specifically, we find that the degree of cost *anti-stickiness* associated with a high degree of unused resources is positive and significant when managers have the most pessimistic expectations (Columns 3 and 5). By contrast, when managers have the most optimistic expectations, the cost anti-stickiness reverses to a significant cost stickiness of -0.157 for the alternative measure based on prior period change in sales and the number of employees (Column 5) and an insignificant cost stickiness of -0.031 for the alternative measure based on prior period change in sales and SG&A (Column 3). The results in Column 4 (Column 6) indicate that the degree of cost stickiness associated with a low degree of unused resources significantly intensifies by -0.169 (-0.162) when managers have the most optimistic expectations.

Overall, we conclude that the findings in Table 5 support our second hypothesis. That is, when the level of unused resources is high, managerial optimism reverses cost anti-stickiness associated with pessimism. On the other hand, when the level of unused resources is low, we find that managerial optimism (pessimism) increases (decreases) cost stickiness. These findings add to the literature by showing that managers' expectation-driven decisions can not only eliminate but also cause a reversal in the anti-sticky cost behavior imposed by a high degree of unused resources. They further reinforce our conjecture that management expectations impact cost structure decisions differentially, depending on the level of unused resources.

Table 5 The Impact of Managerial Expectations on Cost Behavior in the Presence of High versus Low Degree of Unused Resources

Coefficient	Description	Primary Measure of Unused Resources		Alternative Measures of Unused Resources			
		(Prior period change in sales)		(Prior period changes in sales & SG&A)		(Prior period changes in sales & employees)	
		High (1)	Low (2)	High (3)	Low (4)	High (5)	Low (6)
Panel A - Regression Results							
<i>Benchmark Model</i>							
β_1	Sales Increase	0.410*** (22.40)	0.642*** (18.60)	0.400*** (14.04)	0.650*** (22.67)	0.402*** (16.23)	0.653*** (20.87)
β_2	Cost Asymmetry	0.117*** (4.05)	-0.303*** (-6.37)	0.128*** (3.88)	-0.260*** (-6.36)	0.107*** (2.87)	-0.219*** (-4.96)
<i>The Impact of Managerial Expectations</i>							
γ_1	Sales Increase	0.169*** (5.54)	0.114*** (3.47)	0.127*** (2.76)	0.133*** (6.75)	0.172*** (4.05)	0.128*** (5.81)
γ_2	Cost Asymmetry	-0.216*** (-3.93)	-0.125*** (-3.54)	-0.153*** (-2.68)	-0.169*** (-5.29)	-0.257*** (-3.12)	-0.162*** (-4.65)
<i>Asset Intensity</i>							
δ_1	Main Effect	0.017*** (3.23)	0.012*** (3.53)	0.023*** (3.94)	0.017*** (5.18)	0.020*** (3.31)	0.017*** (5.58)
δ_2	$x \Delta \ln REV$	-0.022 (-0.77)	-0.026** (-2.29)	-0.037 (-1.13)	-0.035** (-2.06)	-0.029 (-0.92)	-0.036** (-2.20)
δ_3	$x REVDEC \times \Delta \ln REV$	-0.079* (-1.94)	-0.069*** (-3.21)	-0.049 (-1.15)	-0.072*** (-3.14)	-0.060 (-1.28)	-0.083*** (-3.74)
<i>Intercepts</i>							
β_0		-0.024***	0.014**	-0.024***	0.006	-0.014***	0.003

Table 5 (continued)

Coefficient	Description	Primary Measure of Unused Resources		Alternative Measures of Unused Resources			
		(Prior period change in sales)		(Prior period changes in sales & SG&A)		(Prior period changes in sales & employees)	
		High (1)	Low (2)	High (3)	Low (4)	High (5)	Low (6)
γ_0	Managerial Expectations	(-4.46) 0.020**	(2.46) 0.009	(-4.16) 0.020***	(1.29) 0.012**	(-3.12) 0.013	(0.62) 0.014**
Adj-R ²		(2.49)	(1.31)	(2.60)	(2.56)	(1.58)	(2.33)
N		0.372	0.470	0.378	0.480	0.362	0.487
		14,861	30,187	9822	31,082	9774	31,130

Panel B - The Degree of Cost Asymmetry

Pessimistic Expectations (EXP = 0) $\beta_2 + \delta_3 * ASINT$

The Effect of Optimistic Expectations γ_2

Optimistic Expectations (EXP = 1) $\beta_2 + \gamma_2 + \delta_3 * ASINT$

1. Panel A presents the regression results for the sub-samples of high and low degree of unused resources. Specifically, it presents the coefficients and associated t-statistics (in parentheses) for the following regression model.

$$\Delta \ln SGA_{i,t} = \beta_0 + \gamma_0 EXP_{i,t} + \beta_1 + \gamma_1 EXP_{i,t} \Delta \ln REV_{i,t} + \beta_2 + \gamma_2 EXP_{i,t} \Delta \ln REV_{i,t} + \delta_1 + \delta_2 \Delta \ln REV_{i,t} + \delta_3 REVDEC_{i,t} \Delta \ln REV_{i,t} + ASINT_{i,t} + \epsilon_{i,t}$$

2. Using the coefficient estimates in Panel A, Panel B quantifies the degree of cost asymmetry according to the degree of unused resources and managerial expectations.

3. We use three alternative measures of unused resources. The primary measure (columns 1-2) defines observations as a high degree of unused resources when REV in year t-1 is lower than in year t-2, and a low degree of unused resources otherwise. The second measure (columns 3-4) defines observations as a high degree of unused resources when REV in year t-1 is lower than in year t-2 and the change in the prior SG&A (i.e., SGA_{t-1}/SGA_{t-2}) is greater than or equal to the change in prior sales (i.e., REV_{t-1}/REV_{t-2}), and a low degree of unused resources otherwise. The third measure (columns 5-6) defines observations as a high degree of unused resources when REV in year t-1 is lower than in year t-2 and the prior change in the number of employees is greater than or equal to the change in prior sales, and a low degree of unused resources otherwise. See Table 3 for the definitions of other variables.

4. *, **, *** - Significantly different from zero at the 0.10, 0.05, and 0.01 levels, respectively.

Table 6 The Contextual Role of Managerial Expectations in Determining the Cost Asymmetry

Coefficient	Description	Full Sample (1)	Adjustment Costs	
			High (2)	Low (3)
<i>The Incremental Effect on Sales Increase of:</i>				
β_1		0.357*** (19.26)	0.367*** (12.66)	0.430*** (11.48)
γ_1	EXP	0.165*** (5.10)	0.210*** (5.71)	0.115*** (2.59)
λ_1	Low Unused Resources	0.326*** (12.03)	0.316*** (7.93)	0.349*** (9.15)
ν_1	EXP*Low Unused Resources	-0.071* (-1.84)	-0.089* (-1.89)	-0.069 (-1.36)
<i>The Incremental Effect on Cost Asymmetry of:</i>				
β_2	$\Delta \ln \text{REV}$	0.228*** (8.17)	0.220*** (4.57)	0.179*** (3.33)
γ_2	EXP	-0.208*** (-4.36)	-0.312*** (-4.26)	-0.100** (-1.97)
λ_2	Low Unused Resources	-0.606*** (-20.08)	-0.593*** (-12.97)	-0.644*** (-11.71)
ν_2	EXP*Low Unused Resources	0.112** (2.19)	0.178** (2.03)	0.071 (0.97)
<i>Asset Intensity</i>				
δ_1	Main Effect	0.015*** (4.16)	0.017*** (2.94)	0.003 (0.64)
δ_2	$x \Delta \ln \text{REV}$	-0.033*** (-3.04)	-0.053*** (-3.91)	0.112*** (2.79)
δ_3	$x \text{REVDEC} x \Delta \ln \text{REV}$	-0.063*** (-4.06)	-0.041 (-1.59)	-0.155*** (-2.93)
<i>Intercepts</i>				
β_0		-0.001 (-0.27)	0.000 (0.04)	-0.011** (-2.13)
γ_0	Tone	0.016*** (2.77)	0.008 (1.11)	0.026*** (4.61)
Adj-R ²		0.478	0.449	0.508
N		45,048	22,526	22,522

1. The table presents the regression results for the full sample as well as for the sub-samples of a high (low) magnitude of adjustment costs (ASINT above (below) the median, respectively). Specifically, it presents the coefficients and associated *t*-statistics (in parentheses) for the following regression model.

$$\Delta \ln SGA_{i,t} = \beta_0 + \gamma_0 EXP_{i,t} + \beta_1 + \gamma_1 EXP_{i,t} + \lambda_1 LowUnusedResources_{i,t} + \nu_1 EXP_{i,t} LowUnusedResources_{i,t} \Delta \ln REV_{i,t} + \beta_2 + \gamma_2 EXP_{i,t} + \lambda_2 LowUnusedResources_{i,t} + \nu_2 EXP_{i,t} LowUnusedResources_{i,t} REVDEC_{i,t} \Delta \ln REV_{i,t} + \delta_1 + \delta_2 \Delta \ln REV_{i,t} + \delta_3 REVDEC_{i,t} \Delta \ln REV_{i,t} ASINT_{i,t} + \mu_{i,t}$$

2. *LowUnusedResources_{i,t}* is an indicator variable that equals 1 if *REV_i* in year t-1 is higher than in year t-2 and 0 otherwise. See Table 3 for definitions of the other variables.

3. *, **, *** - Significantly different from zero at the 0.10, 0.05, and 0.01 levels, respectively.

4.3 When do managerial expectations matter the most?

We now turn to our results for our analysis of the *joint* impact of the degree of unused resources and the magnitude of adjustment costs on the relation between managerial expectations and cost asymmetry (H3). We begin by estimating the following regression model.

$$\begin{aligned} \Delta \ln SGA_{i,t} = & \beta_0 + \gamma_0 EXP_{i,t} + \{\beta_1 + \gamma_1 EXP_{i,t} + \lambda_1 LowUnusedResources_{i,t} \\ & + \nu_1 EXP_{i,t} LowUnusedResources_{i,t}\} \Delta \ln REV_{i,t} + \{\beta_2 + \gamma_2 EXP_{i,t} \\ & + \lambda_2 LowUnusedResources_{i,t} + \nu_2 EXP_{i,t} LowUnusedResources_{i,t}\} REVDEC_{i,t} \\ & \Delta \ln REV_{i,t} + \{\delta_1 + \delta_2 \Delta \ln REV_{i,t} + \delta_3 REVDEC_{i,t} \Delta \ln REV_{i,t}\} ASINT_{i,t} + \mu_{i,t} \end{aligned} \quad (2)$$

Column (1) of Table 6 reports the results of the above estimation for our full sample.²⁶ The findings in Column (1) indicate that the impact of managerial expectations on cost asymmetry is significant for both high and low degrees of unused resources. Specifically, we find that the impact of managerial expectations on cost asymmetry when the degree of unused resources is high is equal to -0.208 (γ_2) and is significantly lower by 0.112 (ν_2) when this degree is low.²⁷ Columns (2) and (3) of Table 6 present the results for our adjustment cost subsamples (*ASINT* above and below the median, respectively). Consistent with H3, the results show that the impact of managerial expectations on the degree of cost asymmetry is strongest when *both* the magnitude of the adjustment costs and the degree of unused resources are high (γ_2 in Column 2 is equal to -0.312 , p value < 0.01).²⁸ By contrast, when both the magnitude of adjustment costs and the degree of unused resources are low, we find *no impact* of managerial expectations on cost asymmetry; that is, $\gamma_2 + \nu_2$ in Column 3 is equal to -0.029 ($-0.100 + 0.071$), p value of 0.6 . These results are striking and underscore the importance of considering the relative magnitude of other economic drivers when analyzing the contextual impact of managerial expectations on a firm's cost structure.

4.4 The combined effect of managerial expectations, unused resources, and adjustment costs on the degree of cost asymmetry

Thus far, we have documented the impact of managerial expectations on the cost asymmetry, *conditional* on degree of unused resources and adjustment costs. In our final set of analyses, we examine the *collective* impact of managerial expectations, unused resources, and adjustment costs on the overall sign and magnitude of cost asymmetry. To do so, we rely on the coefficient estimates from Table 6 and report the results of this analysis in Table 7.

²⁶ For brevity, we report only our findings using our primary measure of unused resources (prior-period change in sales). We obtain similar results using the two alternative measures of unused resources.

²⁷ The combined effect for a low degree of unused resources is $\gamma_2 + \nu_2 = -0.96$, which is significantly different from zero at the 0.01 level.

²⁸ The value of γ_2 associated with a high magnitude of adjustment costs (-0.312) is significantly more negative than (1) the value of γ_2 associated with a low magnitude of adjustment costs (-0.100 ; the difference between -0.330 and -0.100 is significant at the 0.01 level) and (2) the value of $\gamma_2 + \nu_2$ associated with a high magnitude of adjustment costs; ($-0.312 + 0.178 = -0.134$; the difference between -0.312 and -0.134 is significant at the 0.04 level).

The findings in Table 7 show that, when the degree of unused resources is high, cost asymmetry ranges from 0.248 (p value <0.01) to -0.126 (p value = 0.04), indicating that costs can be either anti-sticky or sticky. Conversely, when the degree of unused resources is low, costs are sticky, regardless of either adjustment costs or managerial expectations. Furthermore, we find the highest degree of cost *anti-stickiness*, 0.248, occurs when there is a high degree of unused resources, a low magnitude of adjustment costs, and pessimistic management expectations. By contrast, we find the highest cost *stickiness*, -0.541 , occurs when all three determinants operate to intensify cost stickiness, that is, a low degree of unused resources, a high magnitude of adjustment costs, and optimistic management expectations. Together, to our knowledge, our results are the first in the literature to document the unified effect of management expectations, unused resources, and adjustment costs in determining a firm's cost structure.

4.5 Practical implications

In addition to our contributions to the literature, our findings provide important practical insights for the stakeholders of a firm. First, our finding that optimistic (pessimistic) expectations result in cost stickiness (anti-stickiness) when resource adjustment costs and unused resources are *high* but do not impact the degree of cost asymmetry when they are *low* can help stakeholders better understand managerial resource adjustment decisions. This understanding can inform boards in assessing management's role in firm performance as well as suppliers in devising and executing contractual agreements with firms.

Our study can further assist resource providers, such as employees, labor unions, and facility lessors, in understanding the extent to which sales changes impact workforce and facility decisions that depend on a firm's level of resource adjustment costs and unused resources. Specifically, our findings show that employees of firms with greater adjustment costs and higher unused resources can expect that pessimistic (optimistic)

Table 7 The Combined Effect of Managerial Expectations, Unused Resources, and Adjustment Costs on the Degree of Cost Asymmetry

The Degree of Cost Asymmetry		Adjustment costs	
		High	Low
<i>High Unused Resources</i>			
Pessimistic Expectations	$\beta_2 + \delta_3$ * ASINT	0.186***	0.248***
Optimistic Expectations	$\beta_2 + \gamma_2 + \delta_3$ * ASINT	-0.126^{**}	0.148***
<i>Low Unused Resources</i>			
Pessimistic Expectations	$\beta_2 + \lambda_2 + \delta_3$ * ASINT	-0.407^{***}	-0.396^{***}
Optimistic Expectations	$\beta_2 + \lambda_2 + \gamma_2 + \nu_2 + \delta_3$ * ASINT	-0.541^{***}	-0.425^{***}

1. The table presents an interpretation of the results reported for regression 2 in Table 6. Using the coefficient estimates in Table 6, Table 7 reports the degree of cost asymmetry according to the degree of unused resources, magnitude of adjustment costs, and managerial expectations

2. See Table 3 for variable definitions

3. *, **, *** - Significantly different from zero at the 0.10, 0.05, and 0.01 levels, respectively

managers will exhibit more (less) aggressive employee reduction choices when sales fall, compared to their workforce expansion choices when sales rise. By contrast, employees of firms with low adjustment costs and unused resources need not consider managerial expectations when predicting the asymmetric effect of changes in sales on firms' workforce needs. Likewise, our findings suggest that facility lessors can expect similar patterns in space adjustment decisions from these firms when sales decrease versus increase.

Furthermore, our finding that firms with *low* resource adjustment costs and unused resource levels exhibit the same degree of cost stickiness, regardless of managerial optimism or pessimism, can be useful for boards in determining the extent to which managerial expectations impact firm performance when sales rise, compared to when they fall. In this case, while cost stickiness will still impact reported earnings, boards should be careful not to attribute its impact to the accuracy of managerial expectations. By contrast, boards of firms with *high* resource adjustment costs and unused resources can comfortably interpret firm performance as reflecting (at least in part) the accuracy of managerial expectations of future demand. In short, understanding how resource adjustment costs, unused resources, and managerial expectations impact resource allocation decisions can help boards in more clearly identifying and attributing drivers of firm profitability when determining managerial bonuses or other forms of compensation.

Our insights on cost asymmetry also have practical implications for investors in how they interpret analyst forecasts, as Weiss (2010) finds that the accuracy of analyst earnings forecasts is associated with the degree of cost asymmetry in a firm. In an untubulated analysis, we find that the association between managerial expectations and analyst forecast accuracy is strongest when both adjustment costs and unused resources are high. By contrast, when adjustment costs and unused resources are low—that is, when managerial expectations do not impact the degree of cost asymmetry—managerial expectations are unrelated to analyst forecast accuracy. This finding is relevant to investors who rely on analyst earnings forecasts in making investment decisions. These investors should incorporate in their decisions the effect of managerial expectations on cost asymmetry (which, in turn, impacts forecast accuracy) only for firms with high adjustments costs and unused resources, but less so for other firms.

Another implication of our study relates to our finding that cost stickiness increases with the favorableness of managerial expectations. Given that Banker and Chen (2006) find that earnings forecast models that incorporate cost stickiness improve the forecast accuracy of one-year-ahead return-on-equity, as compared with time-series models, our findings imply that optimistic managers should place greater weight on cost stickiness when forecasting one-year-ahead returns on equity, compared to pessimistic managers. By contrast, when both the magnitude of adjustment costs and the degree of unused resources are low, managers can pay less attention to the effect of their expectations on cost stickiness when forecasting earnings.

Finally, our study can inspire future research exploring the effect of cost asymmetry on other relevant financial and accounting variables. While Banker et al. (2016) suggest that earnings conservatism models should control for cost stickiness to avoid biased inference, our findings indicate that the effect of cost asymmetry on conservatism models may not hold across the entire distribution of firms and would depend on the favorableness of managerial expectations, the magnitude of adjustment costs, and the degree of unused resources. Furthermore, our research can inform credit rating agencies, lenders, and future academic

studies on the relationship between cost stickiness and default probability. Homburg et al. (2018) indicate that the degree of cost stickiness is positively associated with default probability and credit risk. Our study provides additional insight by suggesting that firms with higher adjustment costs and unused resources are likely to have a higher default probability and credit risk when managers are optimistic versus pessimistic (i.e., when costs exhibit stickiness compared to anti-stickiness, respectively).

4.6 Robustness tests

We test for the robustness of our main results by performing a number of additional analyses (untabulated for brevity). First, we re-run our regressions using several alternative tone measures: forward-looking statement tone above (below) the median as a measure of optimistic (pessimistic) management expectations; positive (negative) forward-looking statement tone as a measure of optimistic (pessimistic) management expectations, forward-looking statement tone transformed into a scaled-decile variable, forward-looking statement tone as a continuous variable, lagged values of forward-looking statement tone, and a tone measure that considers the proximity of negation terms to those words used to classify a statement as optimistic or pessimistic (Loughran and McDonald 2016). For this latter measure, we identify instances in which any of the three words preceding optimistic and pessimistic words are a negation word (e.g., “not”) and adjust the tone accordingly (4.6% percent of the sample). Each of the above analyses yields results similar to those of our main analyses.

We also consider the possibility that our results may reflect the effect of potential omitted variables. Consequently, in another set of robustness tests, we re-run our analyses including interaction terms for the degree of cost asymmetry (measured as $REVDEC^* \Delta \ln REV$) and both the real change in gross domestic product and the log change in order backlog. Doing so yields similar results.²⁹ Additionally, following Homburg et al. (2018), we re-run our analyses controlling for the degree of financial risk (measured as whether the ratio of debt to assets is above or below the sample median) and find that our results are unchanged. We further find that our results are robust to the inclusion of the number of forward-looking statement sentences (Muslu et al. 2015) as a measure of business complexity (the number of business segments). To address the potential impact of empire-building managers on cost stickiness, we follow Chen et al. (2012) and re-run our analyses, controlling for the impact of the level of scaled free cash flow, and find our results unchanged. Our results are further unchanged when we use a fully interactive model, including all explanatory variables as standalone variables as well as all interactions between the explanatory variables (i.e., $\Delta \ln REV$, $REVDEC$, EXP , $LowUnusedResources$, and $ASINT$). To address the possibility that our results are driven by industry-specific characteristics, we control for potential industry-specific effects, using the Fama-French industry classification to identify industries for the firms in our sample and find similar results. Finally, we run our regressions for manufacturing (Fama-French industry portfolio number 3 of 12) and nonmanufacturing

²⁹ We find that, incremental to EXP , the degree of cost stickiness increases with the real change in GDP but is unrelated to the change in order backlog. Similar to prior studies, order backlog is available for only 25% of our sample. Anecdotally, Apple Inc. notes in its 2016 10-K filing that “In the Company’s experience, the actual amount of product backlog at any particular time is not a meaningful indication of its future business prospects.” It further indicates that “backlog should not be considered a reliable indicator of the Company’s ability to achieve any particular level of revenue or financial performance.”

subsamples and find that our results persist. Together, the findings from our additional analyses lead us to conclude that our main results are robust.

5 Conclusion

This study contributes to the literature by examining the documented asymmetric cost response to changes in demand and providing empirical evidence in support of the contextual role of managerial expectations in shaping this asymmetric cost behavior. Using the tone of management's forward-looking statements as a measure of their optimistic or pessimistic expectations, we find a positive and significant relation between the favorableness of management's forward-looking statement tone and the degree of cost stickiness exhibited. Furthermore, when we examine the role of unused resources, we find that when the degree of unused is high, pessimistic expectations result in anti-stickiness, while optimistic expectations is associated with stickiness. This evidence suggests that managerial expectations can reverse the anti-sticky cost behavior imposed by a high degree of unused resources. This result is new and underscores the importance of managerial decisions in shaping a firm's cost structure.

Our results also show that the impact of managerial expectations on the degree of cost asymmetry is strongest when both the magnitude of adjustment costs and the degree of unused resources are high. Conversely, when both the magnitude of adjustment costs and the degree of unused resources are low, we find that managerial expectations have no impact on the degree of cost asymmetry. Finally, we find the highest degree of cost stickiness occurs when there is a low degree of unused resources, a high magnitude of adjustment costs, and optimistic management expectations. By contrast, the highest cost anti-stickiness occurs when all three drivers operate in the opposite direction.

While we have examined one feature of financial reporting in our study, we believe it would be of interest to consider additional features of financial reporting in examining how allocation decisions are made as well as the implications of those decisions for a firm's cost structure. Overall, our study presents an intriguing set of findings that advance understanding of the interplay between economic drivers in explaining cost asymmetry.

Acknowledgements We thank Stephen Penman (editor), two anonymous reviewers, Itai Ater, Feng Li, Dan Weiss, and seminar participants at ESSEC Business School, Northwestern University, the University of California – Irvine, University of Maryland, University of Michigan, Purdue University, Georgetown University, the 2016 American Accounting Association Meeting, the 2017 MIT Asia Conference in Accounting, and the 2017 Tel Aviv International Conference in Accounting for helpful discussions and suggestions. Itai Kama is grateful to the Henry Crown Institute of Business Research in Israel at Tel Aviv University for financial support.

References

- Amir, E., Kama, I., & Levi, S. (2015). Conditional persistence of earnings components and accounting anomalies. *Journal of Business Finance and Accounting*, 42(7–8), 801–825.
- Anderson, M., Banker, R. D., Huang, R., & Janakiraman, S. (2007). Cost behavior and fundamental analysis of SG&A costs. *Journal of Accounting, Auditing and Finance*, 22(1), 1–28.
- Anderson, M., Banker, R. D., & Janakiraman, S. (2003). Are selling, general, and administrative costs “sticky”? *Journal of Accounting Research*, 41(1), 47–63.

- Balakrishnan, R., Labro, E., & Soderstrom, N. S. (2014). Cost Structure and Sticky Costs. *Journal of Management Accounting Research*, 26(2), 91–116.
- Balakrishnan, R., Petersen, M. J., & Soderstrom, N. S. (2004). Does Capacity Utilization Affect the “Stickiness” of Costs? *Journal of Accounting, Auditing and Finance*, 19(3), 283–299.
- Ball, R., & Shivakumar, L. (2008). How much new information is there in earnings? *Journal of Accounting Research*, 46(5), 975–1016.
- Banker, R. D., Basu, S., Byzalov, D., & Chen, J. (2016). The confounding effect of cost stickiness on conservatism estimates. *Journal of Accounting and Economics*, 61(1), 203–220.
- Banker, R. D., & Byzalov, D. (2014). Asymmetric cost behavior. *Journal of Management Accounting Research*, 26(2), 43–79.
- Banker, R. D., Byzalov, D., & Chen, L. (2013). Employment protection legislation, adjustment costs and cross-country differences in cost behavior. *Journal of Accounting and Economics*, 55(1), 111–127.
- Banker, R. D., Byzalov, D., Ciftci, M., & Mashruwala, R. (2014). The moderating effect of prior sales changes on asymmetric cost behavior. *Journal of Management Accounting Research*, 26(2), 221–242.
- Banker, R. D., & Chen, L. (2006). Predicting earnings using a model based on cost variability and cost stickiness. *The Accounting Review*, 81(2), 285–307.
- Banker, R.D., D. Fang, and M.N. Mehta. (2013). Real cost management and anomalous financial performance ratios during economic Downturns. Working paper. Temple University.
- Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The Financial Reporting Environment: Review of the Recent Literature. *Journal of Accounting and Economics*, 50(2–3), 296–343.
- Bozanic, Z., Roulstone, D. T., & Van Buskirk, A. (2018). Management earnings forecasts and other forward-looking statements. *Journal of Accounting and Economics*, 65(1), 1–20.
- Cannon, J. N. (2014). Determinants of “Sticky Costs”: an analysis of cost behavior using United States air transportation industry data. *The Accounting Review*, 89(5), 1645–1672.
- Chen, C. X., T. Gores, and J. Nasev. (2013). Managerial overconfidence and cost stickiness. Working paper. University of Illinois at Urbana-Champaign.
- Chen, C. X., Lu, H., & Sougiannis, T. (2012). The agency problem, corporate governance, and the asymmetrical behavior of selling, general, and administrative costs. *Contemporary Accounting Research*, 29(1), 252–282.
- Chen, S., Matsumoto, D. A., & Rajgopal, S. (2011). Is silence golden? An empirical analysis of firms that stop giving quarterly earnings guidance. *Journal of Accounting and Economics*, 51(1–2), 134–150.
- Ciconte, W., Marcus, K., & Tucker, J. W. (2014). Does the midpoint of range earnings forecasts represent managers’ expectations? *Review of Accounting Studies*, 19(2), 628–660.
- Cotter, J., Tuna, I., & Wysocki, P. (2006). Expectations management and beatable targets: How do analysts react to explicit earnings guidance? *Contemporary Accounting Research*, 23(3), 593–624.
- Davis, A., Piger, J., & Sedor, L. (2012). Beyond the numbers: Measuring the information content of earnings press release language. *Contemporary Accounting Research*, 29(3), 845–868.
- Davis, A. K., & Tama-Swett, I. (2012). Managers’ Use of Language Across Alternative Disclosure Outlets: Earnings Press Releases Versus MD&A. *Contemporary Accounting Research*, 29, 804–837.
- Dierynck, B., Landsman, W., & Renders, A. (2012). Do managerial incentives drive cost behavior? Evidence about the role of the zero earnings benchmark for labor cost behavior in Belgian private firms. *The Accounting Review*, 78(4), 1219–1246.
- Feldman, R., Govindaraj, S., Livnat, J., & Segal, B. (2010). Management’s Tone Change, Post Earnings Announcement Drift and Accruals. *Review of Accounting Studies*, 15, 915–953.
- Gurun, G. G., & Butler, A. W. (2012). Don’t believe the hype: Local media slant, local advertising, and firm value. *The Journal of Finance*, 67(2), 561–597.
- Hamm S. J. W., E. X. Li., & J. Ng. (2018). Management Forecasts and Bad News Hoarding: Evidence from Stock Price Crashes. Working paper. The Ohio State University.
- Henry, E. (2008). Are investors influenced by how earnings press releases are written? *Journal of Business Communication*, 45(4), 363–407.
- Holzhaecker, M., Krishnan, R., & Mahlendorf, M. D. (2015). Unraveling the black box of cost behavior: an empirical investigation of risk drivers, managerial resource procurement, and cost elasticity. *The Accounting Review*, 90(6), 2305–2335.
- Homburg, C., A. Hoppe, J. Nasev, K. Reimer, & M. Uhrig-Homburg. (2018). How Cost Stickiness Affects Credit Risk? Working paper. University of Cologne.
- Houston, J. F., Lev, B., & Tucker, J. W. (2010). To guide or not to guide? Causes and consequences of stopping quarterly earnings guidance. *Contemporary Accounting Research*, 27(1), 143–185.
- Huang, X., Teoh, S. H., & Zhang, Y. (2014). Tone management. *The Accounting Review*, 89(3), 1083–1113.

- Kama, I., & Weiss, D. (2013). Do earnings targets and managerial incentives affect sticky costs? *Journal of Accounting Research*, 51(1), 201–224.
- Kim, Y., & Park, M. S. (2012). Are all management earnings forecasts created equal? Expectations management versus communication. *Review of Accounting Studies*, 17(4), 807–847.
- Koh, K., Matsumoto, D. A., & Rajgopal, S. (2008). Meeting or beating analyst expectations in the post-scandals world: changes in stock market rewards and managerial actions. *Contemporary Accounting Research*, 25(4), 1–39.
- Kothari, S. P., LI, X., & Short, J. E. (2009). The Effect of Disclosures by Management, Analysts, and Business Press on Cost of Capital, Return Volatility, and Analyst Forecasts: A Study Using Content Analysis. *The Accounting Review*, 84(2009), 1639–1670.
- Li, F. (2010a). The information content of forward-looking statements in corporate filings—A naïve Bayesian machine learning approach. *Journal of Accounting Research*, 48(5), 1049–1102.
- Li, F. (2010b). Textual analysis of corporate disclosures: a survey of the literature. *Journal of Accounting Literature*, 29, 143–165.
- Loughran, T., & McDonald, B. (2011). When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *The Journal of Finance*, 66(1), 35–65.
- Loughran, T., & McDonald, B. (2016). Textual analysis in accounting and finance: A Survey. *Journal of Research*, 54(4), 1187–1230.
- Mayew, W. J., & Venkatachalam, M. (2012). The power of voice: Managerial affective states and future firm performance. *The Journal of Finance*, 67(1), 1–43.
- Muslu, V., Radhakrishnan, S., Subramaniam, K. R., & Lim, D. (2015). Forward-looking MD&A disclosures and the information environment. *Management Science*, 61(5), 931–948.
- Noreen, E., & Soderstrom, N. (1997). The accuracy of proportional cost models: Evidence from hospital service departments. *Review of Accounting Studies*, 2(1), 89–114.
- Petersen, M. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *The Review of Financial Studies*, 22(1), 435–480.
- Price, S. M., Doran, J. S., Peterson, D. R., & Bliss, B. A. (2012). Earnings Conference Calls and Stock Returns: The Incremental Informativeness of Textual Tone. *Journal of Banking & Finance*, 36, 992–1011.
- Rajgopal, S., Shevlin, T., & Venkatachalam, M. (2003). Does the stock market fully appreciate the implications of leading indicators for future earnings? Evidence from order backlog. *Review of Accounting Studies*, 8(4), 461–492.
- Rogers, J. L., & Van Buskirk, A. (2013). Bundled forecasts in empirical accounting research. *Journal of Accounting and Economics*, 55(1), 43–65.
- Tetlock, P. C. (2007). Giving Content to Investor Sentiment: The Role of Media in the Stock Market. *Journal of Finance*, 62, 1139–1168.
- Tetlock, P. C., Saar-Tsechansky, M., & Macskassy, S. (2008). More than Words: Quantifying Language to Measure Firms' Fundamentals. *Journal of Finance*, 63, 1437–1467.
- Wang, M., & Hussainey, K. (2013). Voluntary forward-looking statement driven by corporate governance and their value relevance. *Journal of Accounting and Public Policy*, 32(3), 26–49.
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39(5), 806–820.
- Weiss, D. (2010). Cost behavior and analysts' earnings forecasts. *The Accounting Review*, 85(4), 1441–1471.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Reproduced with permission of copyright owner.
Further reproduction prohibited without permission.