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Market Reaction to Quantitative and Qualitative Order Backlog Disclosures.

Ronen Feldman
Jerusalem School of Business Administration, ronen.feldman@huji.ac.il

Suresh Govindaraj
Rutgers University - Newark, suresh@business.rutgers.edu

Joshua Livnat
New York University, jlivnat@stern.nyu.edu

Kate Suslava
ks063@bucknell.edu, ks063@bucknell.edu

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Ronen Feldman [a], Suresh Govindaraj [b], Joshua Livnat [c,1], Kate Suslava [d,*]

[a] Data & Text Mining Laboratory, Jerusalem School of Business Administration, Israel
[b] Rutgers Business School – Newark and New Brunswick, Rutgers University, Department of Accounting and Information Systems, United States
[c] Stern School of Business Administration, New York University and, QMA LLC, United States
[d] Freeman College of Management, Bucknell University, United States

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ABSTRACT

Analysts and practitioners have long sought information on order backlog (OB) as indicators of future sales, and in turn, of future earnings and stock returns. OB disclosures, though mandatory for annual reports, are voluntarily included in some quarterly reports and are sometimes presented only in textual narration. Given that the required annual OB data may be partially preempted by voluntary quarterly disclosures, we test whether quarterly OB disclosures are used by market participants, especially the qualitative OB disclosures, which were not tested before. We show that OB growth is helpful in forecasting future sales and thus assign a positive tone to qualitative OB disclosures that indicate OB growth. Both quarterly quantitative OB increases and positive qualitative tone are associated with immediate and drift returns, after controlling for other disclosures during the quarterly earnings announcements and variables that affect voluntary disclosure. Our results indicate that regulators may need to consider requiring OB disclosures in quarterly intervals when OB is sufficiently material.

1. Introduction

The importance of order backlog (OB) for investors and financial analysts is easily gauged by the numerous searching questions and clarifications relating to OB in the popular press (Assis, 2020; Josephs, 2020; Manfredi, 2020) and conference calls (see Appendix A for examples). This depth of interest suggests that market participants view OB information as a predictor of future sales, future earnings, and stock (equity) returns; and accordingly, such information is also of immense importance in the macroeconomic literature (see, for example, Lahiri and Moore, 1992). OB disclosures are mandatory in annual financial statements but voluntary for quarterly or preliminary earnings announcements, and are either quantitative or qualitative. Like all financial disclosures, OB information should be interpreted contextually. An increase in OB may signify

* Corresponding author.
E-mail addresses: Ronen.Feldman@huji.ac.il (R. Feldman), suresh@business.rutgers.edu (S. Govindaraj), jlivnat@stern.nyu.edu (J. Livnat), kate.suslava@bucknell.edu (K. Suslava).

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greater demand (good news) or production and supply issues (bad news); and conversely, decreases in OB could signify better production (good news) or decreased demand (bad news).

The academic research on OB to date has investigated only quantitative annual disclosures and has not provided a clear picture about what constitutes "expected" OB. There are two main problems with this prior research. First, if a firm discloses quarterly OB information prior to the mandatory annual 10-K filing, some of the annual OB information may be predicted by market participants based on earlier OB disclosures, rendering the annual OB disclosures less relevant. Second, investors typically react to the surprise in disclosures, e.g., earnings or sales surprises. Yet, it is far from clear what is "unexpected" OB. Some prior studies used the level of OB, implying that expected OB is zero (Rajgopal et al, 2003). Others used the growth in OB in excess of sales growth (Lev and Thiagarajan, 1993), whereas others used the change in OB as an OB surprise (Gu and Huang, 2010) who use the change in scaled OB). The choice of the "expected" OB signal is even more crucial for categorization of qualitative OB disclosures. Is the mere existence of OB relevant to investors? Is the implied direction of OB change important for investors?

The purpose of the current study is twofold. It first establishes that the change in OB is useful for predicting future sales growth, implying that a proper OB signal is likely the change in OB. This is useful in interpreting qualitative OB disclosures. Second, it also examines market reactions to quarterly OB disclosures, both quantitative and qualitative, extending the prior literature, which had used the (possibly partially stale) annual OB and enabling us to examine short-window market reactions around the quarterly earnings disclosure dates. However, quarterly OB disclosures are voluntary, requiring us to control for those factors that affect the decision to disclose OB earlier than the mandatory annual date. Thus, we also study the potential determinants of earlier voluntary OB disclosure.

The main benefits of our study are that we investigate the more timely quarterly OB disclosures and their market effects, and are also able to use qualitative OB disclosures that we obtain through Natural Language Processing (NLP) of quarterly earnings announcements. We find that market participants react favorably to quarterly OB increases after controlling for other information released in earnings announcements and such variables that affect the decision to voluntarily provide the quarterly OB data. We find that immediate market reactions are also significantly and positively associated with positive qualitative OB disclosures, not only quantitative OB data.

We contribute to the OB literature along several dimensions. First, we expand the investigation of the information content of OB disclosures from potentially stale annual data to those of quarterly and qualitative OB disclosures. Second, we provide justification for using OB change as the main variable for analysis, which is useful for classifying qualitative OB disclosures. Third, we are able to focus on short-window returns around the OB disclosures, as compared to annual returns using the annual OB disclosures in prior studies. Our study also contributes to the voluntary disclosure literature, providing another type of voluntary disclosure and its market consequences. Finally, we also contribute to the growing literature on the benefits of qualitative data in addition to the quantitative financial data.

The next section reviews the literature on OB disclosures and develops the predictions we examine. Section 3 describes the sample and our textual analysis approach. Section 4 discusses the empirical results. Section 5 presents our conclusions.

2. Previous literature and our study

OB consists of contractual orders that have not yet been fulfilled but are expected to be fulfilled and reported as sales in future periods. This metric is broadly accepted as a useful leading indicator of future sales and profits, both independently and in conjunction with other indicators. To illustrate, in Appendix A we present examples of backlog discussions in earnings conference calls. Our samples show that both managers and analysts discuss OB during the calls. Manager discussions in the presenter section include both positive news (Brian Jellison, Executive Chairman: "solid backlog, very strong backlog;" Jeffrey Mezger, Chairman, President & CEO: "better quality backlog") and negative news (Timothy Huffmyer, Vice President of Finance: "decreases in backlog, flat backlog"), as well as the implications of the news (Brian Jellison: "help sustain organic growth;" Jeffrey Mezger: "significant positive impact on our businesses"). Analysts question managers when backlog is down (Eric Hugel, Analyst: "We were thinking that the backlog will continue to grow sequentially and it was down a bit"), ask about the strength of orders in backlog (Joel Tiss, Analyst: "I wonder if you can talk a little bit about the value of what's in backlog"), and grill managers on the exact value of OB (Eric Hugel, Analyst: "Did you ever find that backlog number?").

OB is economically significant: it is estimated to be about 30 percent of total assets for the median sample firm that reports this metric (Rajgopal et al., 2003). Therefore, it should be useful to market participants. The past literature on the implications of OB for future sales at the firm level is limited: Behn (1996) uses a small sample of 90 firms and provides some evidence that OB provides useful information about future earnings. Recall that our main goal in the current study is to investigate both quantitative and qualitative **quarterly** OB disclosures, which were not studied before. To the extent that quarterly OB disclosures are used by market participants, they may actually preempt some of the required annual OB information which was used in the prior literature. However, we need to first establish a measure of OB that can be used for both the quantitative and qualitative quarterly OB disclosures. We decided to focus on the simplest and most intuitive measure—the change in OB from a prior period. Our first set of tests extends Behn's study and examines the relevance of annual OB growth for firm sales, using a large comprehensive dataset from Compustat. We predict that OB change serves as a leading indicator of future sales for market participants and that increases (decreases) in backlog levels are positively (negatively) and significantly associated with future sales.

Companies face several disclosure choices when reporting OB. First, firms have discretion over the *frequency* of disclosures. OB is mandated by the Securities and Exchange Commission (SEC) only in the annual Form 10-K, but some companies actually choose to disclose it in quarterly filings (Form 10-Q) or in the preliminary earnings press release (which since 2004 must be filed in a Current Report, Form 8-K), or both. Second, for the unregulated quarterly disclosures firms have further discretion over the *format*. Firms can choose to disclose the current dollar or unit level of OB, the dollar or percentage change from a previous reporting period, changes at the consolidated or segment level, or the overall direction of change stated qualitatively. For example, on September 21, 2004, KB Homes disclosed backlog in dollars as well as in units in its third fiscal quarter and compared the results to the preceding year: "The dollar value of backlog at August 31, 2004 totaled approximately $4.82 billion, up 42% from August 31, 2003, and represents a strong pipeline of future revenues for the remainder of 2004 and into 2005. The Company's unit backlog at August 31, 2004 stood at 21,928, an increase of 5,356 units or 32% from 16,572 units at August 31, 2003." In a Form 8-K dated November 9, 2006, Imax Corp chose to disclose only unit information: "At the present time, the Company has 24 systems in backlog scheduled for installation in 2007 and an additional eight systems that could be installed as early as December of that year." In an 8-K dated April 23, 2012, Texas Instruments noted the direction of the backlog change only, without quantifying it: "our backlog is growing again." And in an 8-K dated July 24, 2006, Caterpillar Inc. disclosed qualitative information about the backlogs of its segments: "Shipyards have healthy order backlogs, which should increase marine engine sales. Order backlogs at truck manufacturers currently cover nearly all production slots available through year-end. . .. we have some of the strongest order backlogs we've had in modern history in the larger end of our machine and engine and turbine product line." To the best of our knowledge, no prior OB studies have examined such disclosure choices. However, we must control in our tests of the effects of the OB change on market participants for variables that affect the voluntary decision to release quarterly or qualitative OB.

Given that quarterly OB disclosures are voluntary, managers might use them either to communicate their knowledge of the firm's performance or to manage reported performance for opportunistic reasons (Healy and Palepu, 2001). We expect that sheer magnitude might motivate managers to disclose OB sooner than at year-end because it is material to investors and stakeholders. But we also predict that managers should also report OB more frequently when the backlog is growing, as firms tend to report good news more promptly (Givoli and Palmon, 1982). As for format, we expect that managers should tend to report OB numerically when the news is good, as studies find that managers offer more quantitative information when operating performance is improving (Zhou, 2018). Finally, given that disclosure choices tend to be sticky (Bozanic et al., 2018), we predict that once a firm chooses a certain OB disclosure frequency or format, it will continue to follow this pattern in the future.[2]

Studies have found a positive association between increasing annual backlog levels and immediate market returns. Behn (1996) shows that the change in annual OB provides investors with useful information about contemporaneous stock returns. Lev and Thiagarajan (1993) identify annual, quantitative OB disclosures as one of 12 fundamental signals commonly used by analysts to determine the value of a firm's stock, and show that a larger (smaller) increase in OB relative to the increase in sales is associated with increases (decreases) in the value of the firm's stock. Accordingly, we predict a positive and significant association between quarterly increases in OB levels and immediate stock returns. With accounting textual analysis studies showing that corporate verbal disclosures are also informative to the stock market (Feldman et al., 2010; Loughran and McDonald, 2011), we further predict a significant and positive association between the tone of OB disclosures and immediate stock returns.

Prior studies find conflicting results regarding the implications of annual OB disclosures for subsequent market returns. Using Mishkin's (1983) test of market efficiency, Rajgopal et al. (2003) show that the market overestimates the association between annual OB disclosures and future earnings and consequently misprices the firm. They further corroborate this finding by using Fama and Macbeth's (1973) method of constructing zero-investment portfolios, using short and long positions in deciles of OB levels, and show that OB signal and future returns are **negatively** related. However, a working paper by Gu et al. (2008) finds the opposite—that investors tend to underestimate the value relevance of the change in annual OB, thus generating a positive association between OB and subsequent returns. Francis et al. (2003) find little evidence that the scaled OB level contains information about future performance. Gu and Huang (2010) use annual scaled OB changes to construct an OB factor at the portfolio level and show that this factor can be used to explain portfolio momentum returns. Extending these studies to quarterly OB disclosures, we attempt to provide more evidence that might reconcile these contradictory findings. Following Rajgopal et al. (2003) and Gu et al. (2008), we predict a significant association between subsequent market returns and quarterly OB disclosures, but we refrain from predicting the direction of this association. It is possible that some of the negative associations between annual OB disclosures and returns are due to preemption of annual OB by quarterly disclosures.

Toynbee uses annual 10-K disclosures of OB and shows that usefulness of OB varies cross-sectionally with the expected relevance of backlog information. Backlog is a less relevant signal of demand when a firm produces inventory in advance (make-to-stock business model) rather than when a firm begins production after receiving a customer order (make-to-order model). Given Toynbee's (2018) findings for annual backlog disclosures, we expect that investors will react more strongly to quarterly changes in backlog and in disclosure tone that are driven by demand. We therefore examine whether reactions to OB disclosures vary for make-to-stock and make-to-order firms.

[2] In fact, using recent quarterly data from Compustat, we find that 98.5% of firms that had annual OB data at the end of the fourth fiscal quarter also had OB data for the prior three fiscal quarters. Thus, the decision to provide quantitative quarterly OB data is a "sticky" one.

3. Extraction of OB disclosures from 8-K filings and test data used

We downloaded 102,440 preliminary earnings announcements (8-K filings) from the SEC website for the period 2004–2015. Our sample begins in 2004 because the SEC had revamped its Form 8-K reporting requirements, expanding the list of items that must be reported (Lerman and Livnat, 2010). Next, we wrote Natural Language Processing (NLP) rules to identify paragraphs that mentioned companies' order backlogs. To create the extraction rules, we downloaded 50 filings of earnings announcements for a random sample of firms that had annual backlog disclosures according to Compustat. If a filing was missing backlog discussions, we substituted another firm filing that had them. We used these documents to identify words and phrases, such as "backlog," "order backlog," and "unfilled orders." We were careful to avoid referring to "orders" in general, as managers might be using that term to describe past information, e.g., a decrease in customer orders last quarter. Our extraction engine was based on a parser that analyzed the full sentence and not just small fragments of it, so we could write fewer, more general rules with more accurate output. Using these rules, we identified 55,229 8-K paragraphs that mention order backlog, for each of which the extraction engine produced the following information: the 8-K filing date, company name, company CIK number, the text of the 8-K paragraph that mentions OB, current numerical OB disclosures (if any), previous numerical OB disclosures (if any), and percentage change of OB (if disclosed).

Next, a human rater read each paragraph, verified the numerical OB information extracted by the parser, and assigned each backlog disclosure a binary tone variable (BKL_TONE_{it}): 1 for a positive tone and 0 for a negative one. We used the same rater for all the order backlog disclosures to ensure comparability across all firms. We checked the rating process on a small sample of 300 disclosures using another rater, and found the raters' consistency to be over 96 percent. The following examples illustrate the ratings:

Positive BKL_TONE_{it} (assigned a value of 1):

- Steris Corp, 8-K, dated November 7, 2006: "Although Healthcare revenue growth for the quarter was modest, we have witnessed growing backlog and order trends that position us well for stronger second half performance."
- Magnetek, Inc., 8-K, dated October 29, 2008: "Given our recent book-to-bill ratio and strong backlog coming into the second quarter, we continue to remain cautiously optimistic about our prospects for the remainder of fiscal 2009."
- Titanium Metals Corp, 8-K, dated August 4, 2010: "We began to see strengthening demand for our products as our backlog and customer order levels began reflecting increased manufacturing activity, particularly in the commercial aerospace supply chain."

Negative BKL_TONE_{it} (assigned a value of 0):

- NCI, Inc., 8-K, dated February 16, 2012: "The expectations on derived revenue from much of those contracts has decreased, so we took some backlog down related to that."
- Layne Christensen Co, 8-K, dated June 5, 2012: "We expect backlog to decline in the short term due to our efforts to increase margins and profitability."
- Vectren Corp, 8-K, dated May 3, 2012: "The lower backlog reflects some slowing in the demand for performance contracting projects."

Finally, we aggregated the dataset at the company level, resulting in a sample of 10,406 firm-quarters. If a company had several paragraphs with backlog disclosures in its 8-K, we used the paragraph containing numerical information about backlog change for the most recent period. If no quantitative information was available, we used the paragraph with the qualitative tone variable. Our final dataset of Form 8-K paragraphs with backlog disclosures consisted of the information extracted by the engine, plus the human-assessed tone of the disclosure.

We complement our 8-K dataset with annual OB disclosures from the Charter Oak Compustat Point-In-Time database (PIT).[3] We obtain additional accounting information from Compustat PIT, analyst data from I/B/E/S, and stock price information from CRSP.

4. Empirical results

4.1. Using backlog disclosures to predict future sales growth

Our first set of tests examines the usefulness of OB in predicting future firm sales, proxied as next-period sales (historical information) and as analyst sales forecasts. The following regression models are used to test this relation (see Appendix B for variable definitions); the standard errors are clustered by industry and year following Petersen (2009) and Gow et al. (2010):

[3] The Charter Oak Compustat Add-On Database reports preliminary, un-restated, first-reported earnings filed with the SEC. This eliminates the discontinuities that result from subsequent restatements and provides a more accurate picture of what fundamentals the firm disclosed to investors at a particular point in time.

$$SalesGr_{jt+1} = \gamma_1 SalesGr_{jt} + \gamma_2 BKL\_Up_{jt} + \gamma_3 BKL\_Down_{jt} + \gamma_4 BKL\_NA_{jt} + \gamma_5 Inv CH_{jt} + \gamma_6 Large_{jt} + \gamma_7 Log(Assests_{jt}) + \varphi_{it} \quad (1)$$

$$SalesGrAnalyst_{jt+1} = \gamma_1 SalesGr_{jt} + \gamma_2 BKL\_Up_{jt} + \gamma_3 BKL\_Down_{jt} + \gamma_4 BKL\_NA_{jt} + \gamma_5 Inv CH_{jt} + \gamma_6 Large_{jt} + \gamma_7 Log(Assests_{jt}) + \varphi_{it} \quad (2)$$

We use two dependent variables for next-period sales growth: $SalesGr_{jt+1}$, the percentage change in sales in the next year using Compustat data, and analysts' predictions of firms' sales growth in year *t + 1* per I/B/E/S ($SalesGrAnalyst_{jt+1}$). Our main variables of interest—BKL_Up_{jt} and BKL_Down_{jt}—are indicator variables equal to one if the firm's annual OB increases or decreases, respectively. We also include a dummy variable, BKL_NA_{jt}, that is equal to one if a firm does not report OB. If the annual OB disclosures are useful in predicting future sales growth, we expect to see a significant and positive coefficient on BKL_Up_{jt} and a significant and negative coefficient on BKL_Down_{jt} in Regression (1). If analysts use OB disclosures for their sales forecasts, we expect to see similar associations in Regression (2). We include controls for the current-period growth in sales ($SalesGr_{jt}$) and inventory ($InvCH_{jt}$). Following Sun (2009), we also control for disproportionate inventory increases using an indicator variable equal to one if a firm's number of days in inventory changes by more than 20 percent from the previous year ($Large_{jt}$). Finally, we control for size with $Log(Assests_{jt})$ and include industry and year fixed effects. Our sample for Regression (1) includes all firms in Compustat for the period 1989–2015 that have positive annual inventory and cost of goods sold in the current and preceding year. For Regression (2), we merge our Compustat sample with analyst sales forecasts from I/B/E/S for 1996–2015, requiring that analyst forecasts be made at least 200 calendar days before the next fiscal period-end (analyst forecasts close to year-end have the advantage of known quarterly sales, which we wish to study subsequently).

Table 1 shows the descriptive statistics for our sample. There are 97,504 year-firms in Compustat from 1989 to 2015 that satisfy our sample selection criteria of positive annual inventory and cost of goods sold. About 13% of these observations report annual OB increases (the mean for BKL_Up_{jt} is 0.13), 9% report annual OB decreases (the mean for BKL_Down_{jt} is 0.09), and the remaining companies do not report OB (the mean for BKL_NA_{jt} is 0.77). Our sample of sales predictions based on analyst forecasts ($SalesGrAnalyst_{jt+1}$) has 361,819 observations, almost four times more than the Compustat sample because it includes all analyst forecasts for a given firm-year that are issued at least 200 calendar days before the next fiscal period-end. Panel B reports that increasing OB levels tend to be positively and significantly associated with next-period sales and analyst forecasts (correlations are 0.07 with $SalesGr_{jt+1}$ and 0.02 with $SalesGrAnalyst_{jt+1}$). Firms with decreasing OB levels (BKL_Down_{jt}) exhibit the opposite correlations: −0.11 with $SalesGr_{jt+1}$ and −0.05 with $SalesGrAnalyst_{jt+1}$. Backlog increases (decreases) are also significantly and positively (negatively) associated with inventory growth and large inventory increases: correlations are 0.12 (-0.07) with $InvCH_{jt}$ and 0.01 (-0.04) with $Large_{jt}$.

Table 1
Descriptive Statistics: Predicting Sales with OB. This table presents descriptive statistics for our key variables used to predict next-period sales. Panel A shows the summary statistics for the variables used in the tests of market reactions. Financial information is from Compustat, and analyst sales prediction information is from the I/B/E/S database. Panel B shows the Spearman correlation coefficients between the variables used in the analyses. Boldface represents a significance level of 0.01. See Appendix B for variable definitions.

Panel A: Summary Statistics

Variables	N	Mean	Median	Std Dev	Q1	Q3
BKL_Up_{jt}	97,504	0.13	0.00	0.33	0.00	0.00
BKL_Down_{jt}	97,504	0.09	0.00	0.29	0.00	0.00
BKL_NA_{jt}	97,504	0.77	1.00	0.42	1.00	1.00
$InvCh_{jt}$	97,504	0.01	0.00	0.07	0.00	0.02
$Large_{jt}$	97,504	0.01	0.00	0.04	0.00	0.00
$ASSETS_{jt}$	97,492	6819.84	361.34	61517.03	81.46	1733.82
$SalesGr_{jt}$	97,504	0.15	0.09	0.30	−0.01	0.24
$SalesGrAnalyst_{jt+1}$	361,819	0.01	0.01	0.07	−0.01	0.01

Panel B: Spearman Correlations

		1	2	3	4	5	6	7	8
1	BKL_Up_{jt}	1.00							
2	BKL_Down_{jt}	**−0.12**	1.00						
3	BKL_NA_{jt}	**−0.71**	**−0.58**	1.00					
4	$InvCh_{jt}$	**0.12**	**−0.07**	**−0.05**	1.00				
5	$Large_{jt}$	**0.01**	**−0.04**	**0.01**	**0.44**	1.00			
6	$ASSETS_{jt}$	**−0.10**	**−0.11**	**0.16**	**−0.07**	**−0.08**	1.00		
7	$SalesGr_{jt+1}$	**0.07**	**−0.11**	**0.02**	**0.40**	**0.05**	**−0.08**	1.00	
8	$SalesGrAnalyst_{jt+1}$	**0.02**	**−0.05**	**0.01**	**0.03**	**0.00**	**−0.03**	**0.04**	1.00

Source: Charter Oak PIT Compustat data, I/B/E/S. As of 7/3/2021.

Table 2
Predicting Sales with OB Disclosures. This table reports estimation results of the OLS regression of the next-year sales growth on the OB signals (BKL_UP_{jt}, BKL_DOWN_{jt}, and BKL_NA_{jt}). The sample in Panel A consists of all firms in Compustat during 1989–2015. The sample in Panel B consists of all analyst sales forecasts in I/B/E/S during 1996–2015. See Appendix B for variable definitions. Standard errors are clustered by industry and time (year-quarter) following Petersen (2009) and Gow et al. (2010). Industry- and time-fixed effects are included. Industries are defined using 4-digit SIC codes. Robust t-statistics are reported in parentheses. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

Panel A: Future Sales Growth Prediction Based on Historical Data				
Variables	Dependent Variable = $SalesGr_{jt+1}$			
	[1]	[2]	[3]	[4]
$SalesGr_{jt}$	0.1785***	0.1713***	0.1073***	0.0880***
	(10.21)	(9.63)	(3.89)	(3.04)
BKL_Up_{jt}		0.0581***		0.0761***
		(3.51)		(3.52)
BKL_Down_{jt}		−0.0671***		−0.0620***
		(−3.91)		(−3.13)
BKL_NA_{jt}		0.0281*		0.0448**
		(1.82)		(2.67)
$InvCh_{jt}$	0.4796***	0.4353***	0.5874***	0.4848***
	(9.40)	(8.96)	(12.37)	(9.72)
$Large_{jt}$	0.2059***	0.2236***	0.2134***	0.2489***
	(4.81)	(5.29)	(3.13)	(3.48)
$Log\ (ASSETS_{jt})$	−0.0036**	−0.0040***	−0.0037*	−0.0044**
	(−2.77)	(−3.02)	(−1.92)	(−2.15)
No. Obs.	97,481	97,481	20,548	20,548
Industry/ Year FE	Yes/ Yes	Yes/ Yes	Yes/ Yes	Yes/ Yes
Adjusted R-squared	0.46%	0.61%	0.33%	0.80%
Panel B: Future Sales Growth Prediction Based on Analyst Forecast				
Variables	Dependent Variable = $SalesGrAnalyst_{jt+1}$			
	[1]	[2]	[3]	[4]
$SalesGr_{jt}$	0.0019	0.0013	−0.0073*	−0.0082*
	(0.66)	(0.43)	(−1.69)	(−1.89)
BKL_Up_{jt}		0.0044*		0.0100***
		(1.68)		(2.88)
BKL_Down_{jt}		−0.0025		0.0032
		(−0.74)		(0.80)
BKL_NA_{jt}		0.0020		0.0055
		(0.70)		(1.46)
$InvCh_{jt}$	0.0379***	0.0339***	0.0789***	0.0719**
	(2.90)	(2.71)	(2.78)	(2.63)
$Large_{jt}$	−0.0285*	−0.0270	−0.0548	−0.0522
	(−1.68)	(−1.60)	(−1.65)	(−1.58)
$Log\ (ASSETS_{jt})$	0.0005	0.0005	0.0012*	0.0012*
	(1.59)	(1.53)	(1.84)	(1.77)
No. Obs.	360,475	360,475	81,811	81,811
Industry/ Year FE	Yes/ Yes	Yes/ Yes	Yes/ Yes	Yes/ Yes
Adjusted R-squared	0.04%	0.09%	0.19%	0.31%

Source: Charter Oak PIT Compustat data, I/B/E/S. As of 7/3/2021.

Panel A of Table 2 shows the results of estimating Regression (1).[4] In column 1, we run our baseline regression without OB indicators, and in column 2, we add them to the regression. As a result, the adjusted R-squared increases from 0.46% to 0.61%, suggesting that OB disclosures increase the explanatory power of the model. The coefficients on OB indicators in column 2 are consistent with our predictions: positive and significant at 0.0581 (t-statistic = 3.51) for BKL_Up_{jt} and negative and significant at −0.0671 (t-statistic = 3.91) for BKL_Down_{jt}. The control variables suggest that firms with higher current sales and inventory growth experience higher next-period sales as well. In columns 3 and 4, our sample is limited to firms in backlog-intensive industries (industries in which more than 50% of firms in a given year report OB). The results confirm the results for the full sample: BKL_Up_{jt} (BKL_Down_{jt}) is positive (negative) and significant at 1 percent. In Panel B, we estimate Regression (2) to see if these associations also hold for the analysts' forecasts of sales growth. As we add OB indicators in column 2, the explanatory power increases from 0.04% to 0.09%, as it did in Panel A. The coefficient on BKL_Up_{jt} loads positively and significantly at 0.0044 (t-statistic = 1.68) and is negative but not significant for BKL_Down_{jt}. When we limit our sample to firms in backlog-heavy industries in columns 3 and 4, the coefficient on BKL_Up_{jt} remains positive and improves its statistical significance to 1 percent (t-statistic = 2.88).

[4] As a robustness check, we reperform our tests using Fama-MacBeth style regressions (Fama and MacBeth, 1973); the results remain qualitatively unchanged.

Table 3
Descriptive Statistics: OB Disclosure Choices. This table presents summary statistics for variables used to test the determinants of backlog disclosure choices. Panel A tabulates the frequencies of the two disclosure choices: (1) disclose OB on quarterly vs. annual basis and (2) disclose OB in quantitative vs. qualitative form in 8-K filings. The first set of variables in Panel B that is used to examine the determinants of quarterly disclosures consists of all firms in Compustat that have OB in 2004–2015. The second set of variables consists of all firms that have OB disclosures in Form 8-K in 2004–2015. The correlation column reports correlations between the backlog disclosure choice variable (*Q* or *Quant*) and other variables. See Appendix B for variable definitions. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

Panel A: Management Discretion over Backlog Disclosure Choices		
Backlog Disclosure Choices	Number of Firms	%
Quarterly vs. Annual Disclosures:		
Disclose on Quarterly Basis	2855	32%
Disclose on Annual Basis	6015	68%
Total	8870	100%
Quantitative vs. Qualitative Disclosures:		
Disclose Quantitative Information	7347	71%
Disclose Qualitative Information	3059	29%
Total	10,406	100%

Panel B: Descriptive Statistics							
Variables	N	Mean	Median	Std Dev	Q1	Q3	Correlation
Quarterly Backlog Disclosures							
Q_{jt}	8870	0.32	0.00	0.47	0.00	1.00	
BKL_{jt}	8870	0.54	0.28	0.69	0.13	0.64	0.268***
BKL_Surp_{jtt}	8870	0.06	0.01	1.17	−0.02	0.08	0.095***
Inv_Surp_{jt}	8870	0.01	0.00	0.06	−0.01	0.03	0.068***
$Earn\_Vol_{jt}$	8870	2.96	0.94	7.39	0.41	2.37	−0.061***
SUE_{jt}	8870	0.01	0.06	0.34	−0.28	0.28	0.001
BM_{jt}	8870	0.62	0.52	0.42	0.33	0.78	−0.023**
Lag_XRET_{jt}	8870	−0.01	−0.01	0.22	−0.12	0.10	0.033***
ROE_{jt}	8870	0.01	0.08	0.38	−0.01	0.15	0.090***
Quantitative Backlog Disclosures							
$Quant_{jt}$	10,406	0.71	1.00	0.45	0.00	1.00	
BKL_{jt}	10,406	0.67	0.37	0.94	0.15	0.79	0.459***
BKL_Direct_{jt}	10,406	0.75	1.00	0.43	1.00	1.00	−0.168***
Inv_Surp_{jt}	6,506	0.02	0.01	0.07	0.00	0.04	0.059***
$Earn\_Vol_{jt}$	10,406	2.86	0.83	6.96	0.37	2.34	−0.034***
SUE_{jt}	10,406	0.01	0.06	0.33	−0.28	0.28	−0.013
BM_{jt}	10,406	0.23	0.24	0.03	0.24	0.24	0.000
Lag_XRET_{jt}	10,406	0.00	0.00	0.15	−0.09	0.08	−0.005
ROE_{jt}	10,406	0.01	0.03	0.09	0.01	0.04	0.035***

Source: Charter Oak PIT Compustat data, I/B/E/S, CRSP, Form8-K and authors' analysis. As of 7/3/2021.

Overall, our evidence suggests that annual backlog disclosures are useful in predicting next-period sales. Increasing (declining) OB levels tend to be positively (negatively) associated with future sales growth and analyst sales forecasts.

4.2. Choice of order backlog disclosure

As section 2 explains, managers make the following choices when it comes to OB disclosures: (1) disclose OB only at year end or more frequently (in the first, second, or third quarter); (2) in a preliminary earnings announcement, disclose numeric data or only qualitative information. Our dataset allows us to explore the determinants of these choices. Panel A of Table 3 shows the distribution of OB disclosure choices for our sample. It appears that most annual OB disclosers refrain from disclosing OB in their quarterly filings: only 32% of our annual sample firms disclose OB quarterly[5]. But most of those firms prefer quantitative backlog disclosures to solely qualitative ones: 7347 (71% of our sample) firm-quarters have quantitative OB disclosures compared to 3059 with only qualitative ones (29% of our sample).[6]

Panel B of Table 3 provides descriptive statistics for the variables used in the tests in this section. We create two indicator variables for the OB disclosure choices. The first variable (Q_{jt}) is equal to one if, in a given year, a firm disclosed OB in either the first, second, or third quarter and zero otherwise and is drawn from our 8-K dataset of OB disclosures. Our second variable ($Quant_{jt}$) measures the format of quarterly OB disclosures and is equal to one if OB disclosures were quantitative and zero if they were only qualitative. We note that both disclosure choices are positively correlated with the magnitude of OB (the correlation with BKL_{jt} is 0.27 for Q_{jt} and 0.46 for $Quant_{jt}$), inventory increases (the correlations with $Inv_{Surp_{jt}}$ of 0.07 for Q_{jt} and 0.06 for $Quant_{jt}$) and firm profitability (the correlations with ROE_{jt} of 0.09 for Q_{jt} and 0.04 for $Quant_{jt}$).

[5] The number of observations used in this test drops to 2855 from 10,406 observations in our main dataset because of the way we merge our dataset to the annual Compustat OB numbers. We match firms in Compustat with the firms in our 8-K sample on year and firm identifiers and limit it to one observation per firm per year.

[6] For the sample that examines the format of OB disclosures we include all 10,406 observations in our 8-K sample.

Next, we test the determinants of OB disclosure choices in a multivariate setting using the following Fama-MacBeth style Logit regressions specifications:

$$Q_{jt} = \gamma_0 + \gamma_1 BKL_{jt} + \gamma_2 Q_{jt-1} + \gamma_3 BKL_{Surp\,jt} + \gamma_4 Inv_{Surp\,jt} + \gamma_5 Earn\_Vol_{jt} + \gamma_6 SUE_{jt} + \gamma_7 BM_{jt} + \gamma_8 Lag\_XRET_{jt} + \gamma_9 ROE_{jt} + \gamma_{10} Log(Assests_{jt}) + \varphi \quad (3)$$

$$Quant_{jt} = \gamma_0 + \gamma_1 BKL_{jt} + \gamma_2 Quant_{jt-1} + \gamma_3 BKL_{Direct\,jt} + \gamma_4 Inv\_Surp_{jt} + \gamma_5 Earn\_Vol_{jt} + \gamma_6 SUE_{jt} + \gamma_7 BM_{jt} + \gamma_8 Lag\_XRET_{jt} + \gamma_9 ROE_{jt} + \gamma_{10} Log(Assests_{jt}) + \varphi \quad (4)$$

We expect that our proxy for OB materiality, OB scaled by sales (BKL_{jt}), is positively associated with firms' decisions to disclose OB more frequently during quarterly filings and quantitatively. We include proxies for OB disclosure habits, measured as lagged indicator variables (Q_{jt-1} and $Quant_{jt-1}$), and expect them to be positively associated with the dependent variable, as firms' disclosures tend to be sticky (Bozanic et al., 2018). We use two proxies for OB news (BKL_Surp_{jt} for Regression (3) and BKL_Direct_{jt} for Regression (4)); we expect that increases of OB are positively associated with more frequent and quantitative disclosures. Since OB should be understood contextually (Livnat and Ryan, 2011), we add controls for operating performance (SUE_{jt}, ROE_{jt}, Inv_Surp_{jt}, Lag_XRET_{jt}), growth (BM_{jt}), uncertainty ($Earn\_Vol_{jt}$), and size ($Assets_{jt}$).

Table 4 presents the results of our tests of the determinants of OB disclosures: Panel A reports the determinants of multiple (quarterly) versus single (annual) disclosures and Panel B shows the determinants of disclosure format. Consistent with our expectations and correlations results, in both tests, the materiality of OB (BKL_{jt}) and the firm's disclosure habits have positive and significant relations with firms' disclosure choices. Firms with more significant backlogs are more likely to voluntarily disclose OB information in earlier quarters (as shown in Panel A results) and to prefer quantitative over qualitative OB disclosures (refer to Panel B). OB disclosure choices are very sticky: if a firm makes any of these two choices, it is likely to stick to this practice in future periods, as evidenced by positive and significant coefficients for Q_{jt-1} and $Quant_{jt-1}$.

The nature of OB news (BKL_Surp_{jt})seems to drive the decision to disclose OB in the interim quarters. Firms with better OB news are more likely to report OB in their quarterly filings, as indicated by positive and significant coefficients on BKL_Surp_{jt} in Panel A. This behavior is consistent with findings that firms tend to rush the reporting of good news (Givoli and Palmon, 1982). However, when it comes to the choice of quarterly OB format, the results do not confirm our predictions. The coefficient on BKL_Direct_{jt} (OB increase or positive OB tone) is negative and significant, indicating that firms with bad backlog news are more likely to have quantitative disclosures. Other dependent variables that are significant for the voluntary backlog disclosure decisions are BM_{jt}, ROE_{jt}, and $Log(Assets_{jt})$.

Table 4
Determinants of OB Disclosure Choices. This table presents the results of Fama-MacBeth style logistic regressions of the determinants of OB disclosures: quarterly disclosures in Panel A and quantitative OB disclosures in Panel B. In Panels A, we run the regressions annually and in Panel B – quarterly. See Appendix B for variable definitions. The averages are time-series means with t-statistics (in parentheses) corresponding to the standard error of the mean. Industry fixed effects are included. Industries are defined using 4-digit SIC codes. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

Panel A: Quarterly Backlog Disclosure			Panel B: Quantitative Backlog Disclosures		
	Dependent Variable = Q_{jt}			Dependent Variable = $Quant_{jt}$	
	[1]	[2]		[1]	[2]
$Intercept_{jt}$	−1.9273***	−1.9212***	$Intercept_{jt}$	0.0216	0.5495*
	(−9.02)	(−7.69)		(0.06)	(1.96)
BKL_{jt}	0.1633***	0.1751***	BKL_{jt}	1.8836***	0.6834***
	(4.09)	(4.56)		(9.16)	(6.86)
Q_{jt-1}	2.6370***	2.6673***	$Quant_{jt-1}$	2.8326***	2.8432***
	(10.82)	(10.78)		(28.08)	(22.00)
BKL_Surp_{jtt}	0.4652**	0.4477**	BKL_Direct_{jt}	−0.9059***	−0.9895***
	(2.56)	(2.43)		(−6.82)	(−6.56)
Inv_Surp_{jt}		0.6649	Inv_Surp_{jt}		1.8886
		(0.40)			(1.61)
$Earn\_Vol_{jt}$		−0.0011	$Earn\_Vol_{jt}$		0.0021
		(−0.68)			(0.33)
SUE_{jt}	−0.0278	−0.0218	SUE_{jt}	0.0955	−0.0376
	(−0.37)	(−0.31)		(0.64)	(−0.20)
BM_{jt}	−0.1989*	−0.2265*	BM_{jt}	0.0471	−0.0725
	(−1.65)	(−1.84)		(0.42)	(−0.47)
Lag_XRET_{jt}	0.0212	−0.0516	Lag_XRET_{jt}	0.5451	0.5871
	(0.08)	(−0.18)		(1.24)	(1.46)
ROE_{jt}	0.3861***	0.3801***	ROE_{jt}	0.2199	−0.5759
	(2.98)	(3.15)		(0.37)	(−0.54)
$Log\ (ASSETS_{jt})$	0.0437	0.0376	$Log\ (ASSETS_{jt})$	−0.1079***	−0.0816**
	(1.27)	(0.98)		(−2.98)	(−2.68)
No. Obs.	8380	8380	No. Obs.	9052	6506
Industry FE	Yes	Yes	Industry FE	Yes	Yes

Source: Charter Oak PIT Compustat data, I/B/E/S, CRSP, Form8-K and authors' analysis. As of 7/3/2021.

Table 5
Descriptive Statistics: Market Reactions to OB Disclosures. This table presents descriptive statistics for the sample of 8-K disclosures. Panel A shows the summary statistics for the variables used in the tests of market reactions. Panel B shows the Spearman correlation coefficients between the variables used in the analyses. Boldface represents a significance level of 0.01. See Appendix B for variable definitions.

Panel A: Summary Statistics

Variables	N	Mean	Median	Std Dev	Q1	Q3
CH_BKL_{jt}	6301	0.18	0.08	0.53	−0.02	0.25
BKL_TONE_{jt}	5243	0.88	1.00	0.32	1.00	1.00
BKL_{jt}	10,406	0.67	0.37	0.94	0.15	0.79
SUE_{jt}	10,169	−0.21	−0.02	2.86	−0.76	0.68
Inv_Surp_{jt}	7177	0.02	0.01	0.07	0.00	0.04
ROE_{jt}	10,406	0.02	0.03	0.08	0.01	0.04
$ASSETS_{jt}$	10,406	8638.65	699.30	62255.08	209.32	2512.52
$Earn\_Vol_{jt}$	10,406	2.80	0.80	6.90	0.36	2.28
Lag_XRET_{jt}	10,406	0.00	0.00	0.15	−0.09	0.08
BM_{jt}	10,406	0.58	0.50	0.36	0.33	0.73
$XRET\_PRELIM_{jt}$	10,362	0.00	0.00	0.09	−0.04	0.05
$XRET\_DRIFT_{jt}$	10,362	0.00	0.00	0.19	−0.10	0.10

Panel B: Spearman Correlations

		1	2	3	4	5	6	7	8	9	10
1	CH_BKL_{jt}	1.00									
2	BKL_TONE_{jt}	**0.42**	1.00								
3	SUE_{jt}	**0.15**	**0.08**	1.00							
4	Inv_Surp_{jt}	**0.18**	**0.08**	−0.01	1.00						
5	ROE_{jt}	**0.10**	**0.05**	**0.27**	**0.19**	1.00					
6	$ASSETS_{jt}$	**−0.07**	−0.02	0.01	0.01	**0.27**	1.00				
7	$Earn\_Vol_{jt}$	**−0.07**	**−0.05**	**−0.02**	**−0.14**	**−0.39**	**−0.25**	1.00			
8	Lag_XRET_{jt}	**0.11**	**0.06**	**0.09**	**−0.04**	**0.08**	**0.02**	0.00	1.00		
9	BM_{jt}	**−0.18**	**−0.09**	**−0.09**	**−0.08**	**−0.44**	**−0.10**	**0.31**	**−0.11**	1.00	
10	$XRET\_PRELIM_{jt}$	**0.12**	**0.08**	**0.22**	0.01	**0.16**	**0.02**	**−0.02**	0.01	**−0.02**	1.00
11	$XRET\_DRIFT_{jt}$	**0.04**	**0.05**	**0.06**	**−0.04**	**0.04**	**0.02**	0.00	0.00	0.01	**0.04**

Source: Charter Oak PIT Compustat data, I/B/E/S, CRSP, Form8-K and authors' analysis. As of 7/3/2021.

In sum, managers' OB disclosure choices are associated with the magnitude of backlog levels and changes, as well as certain firm characteristics. We will control for these variables in the subsequent tests of market reactions to quarterly OB disclosures. Finally, managers are persistent in their voluntary disclosure decisions, which is hardly surprising given the perceived costs of holding back signals to market participants.

4.3. Market reactions to OB disclosures

If investors perceive OB increases as good news about future sales, earnings and cash flows, we expect to see positive associations between quarterly OB changes (both quantitative and qualitative) and immediate market returns. We also predict a significant association between backlog disclosures and subsequent stock returns if investors underreact to the initial OB signal. Our measure for abnormal stock returns is the characteristic-adjusted excess return computed using the method of Daniel, Grinblatt, Titman, and Wermers (1997).[7] Short-window excess returns ($XRET\_PRELIM_{jt}$) are calculated for the three-day window [−1, +1] around the disclosure date (day 0),[8] and abnormal drift returns ($XRET\_DRIFT_{jt}$) are calculated for a window that begins two days after the disclosure date (day 0), and lasts through one day after the preliminary earnings announcement for the subsequent quarter (EA + 1) (or 90 days if that announcement is unavailable). We use the following regression models to test these relations:

$$XRET\_PRELIM_{jt} = \gamma_1 CH_{BKLjt}(\gamma_1 BKL\_TONE_{jt}) + \gamma_2 BKL_{jt} + \gamma_3 SUE_{jt} + \gamma_4 BM_{jt} + \gamma_5 Log(Assests_{jt}) + \gamma_6 ROE_{jt} + \gamma_7 Earn\_Vol_{jt} + \gamma_8 Lag\_XRET_{jt} + \gamma_9 Inv\_Surp_{jt} + \varphi \quad (5)$$

$$XRET\_DRIFT_{jt} = \gamma_1 CH_{BKLjt}(\gamma_1 BKL\_TONE_{jt}) + \gamma_2 BKL_{jt} + \gamma_3 SUE_{jt} + \gamma_4 BM_{jt} + \gamma_5 Log(Assests_{jt}) + \gamma_6 XRET\_PRELIM_{jt} + \gamma_7 ROE_{jt} + \gamma_8 Earn\_Vol_{jt} + \gamma_9 Lag\_XRET_{jt} + \gamma_{10} Inv\_Surp_{jt} + \varphi \quad (6)$$

Our variables of interest are CH_BKL_{jt}, calculated as the percentage change in the OB level reported in the 8-K (for firms with quantitative OB disclosures), and BKL_TONE_{jt}, our textual measure of backlog tone (for firms with qualitative disclosures). We expect to see positive and significant coefficients for both variables in Regression (5); we also expect to observe

[7] The characteristic-adjusted excess return is the buy-and-hold return on a security minus the capitalization-weighted average buy-and-hold return on a portfolio of firms with similar size (three groups), B/M (three groups), and 11-month momentum (three groups).
[8] Day 0 is the preliminary earnings announcement date from Compustat (RDQ variable).

significant associations in Regression (6) if investors under-react to the initial news. Our regressions control for the known determinants of voluntary backlog disclosures and other information that is available to investors around the earnings announcement date and is associated with the market reaction to the call (Huang et al., 2014). We control for the significance of firm backlog with BKL_{jt}, which is order backlog scaled by sales (for firms that do not disclose the amount of backlog in their quarterly filings, we use the most recent annual number from Compustat). SUE_{jt}, ROE_{jt}, Inv_Surp_{jt}, and Lag_XRET_{jt} control for operating performance. $Earn\_Vol_{jt}$ proxies for the uncertainty of firm operations, book-to-market ratio (BM_{jt}) controls for company growth opportunities, and total assets ($Log(Assets)_{jt}$) proxies the firm's operating complexity and size. All variables are winsorized at 1 and 99 percent. Finally, the regressions include industry fixed effects to control for disclosure styles and year-quarter fixed effects to control for intertemporal variations (the standard errors are clustered by industry and year-quarter).

Table 5 reports descriptive data on the variables used in these tests. We are able to calculate quantitative OB signal (CH_BKL_{jt}) for 6301 observations and determine the tone of OB disclosures (BKL_TONE_{jt}) for 5243 observations.[9] Panel B of Table 5 reveals that both measures of OB disclosures are positively and significantly correlated with earnings surprises: the correlation coefficients are 0.15 between $SUE_{jt}$and CH_BKL_{jt}, and 0.08 between $SUE_{jt}$and BKL_TONE_{jt}. Firms that have OB increases and positive disclosure tone exhibit inventory increases (positive correlation with Inv_Surp_{jt}), higher ROE (positive correlation with ROE_{jt}), positive returns in the three months preceding the announcement (positive correlation with Lag_XRET_{jt}), and lower uncertainty (negative correlation with $Earn\_Vol_{jt}$). There is a significant positive correlation between the backlog measures and the immediate market reaction (the correlation coefficient with $XRET_PRELIM_{jt}$ranges from 0.08 to 0.12), and also between backlog and the return in the three months after the earnings announcement (the correlation coefficient with $XRET_DRIFT_{jt}$ranges from 0.04 to 0.05).

Panel A of Table 6 presents the results of estimating the relation between our backlog measures and the immediate market reaction to the earnings announcement (Regression (5)). In column 1 the coefficient on CH_BKL_{jt} is 0.0137 and is significant at 1 percent (t-statistic = 5.77). In column 2, as we add a control for inventory changes, the coefficient remains positive and significant. This suggests that investors interpret increases in quarterly OB levels as a positive signal, a finding consistent with some of the previous studies of annual OB. In columns 3 and 4 we note positive and significant coefficients on BKL_TONE_{jt} at 0.0177 and 0.0155 (t-statistics = 3.23 and 2.59). These results provide evidence that the stock market reacts to both quantitative and qualitative OB disclosures and treats increases in backlog and positive tone of backlog disclosures as good news. The control variables indicate that firms with positive earnings surprises and higher profitability have higher immediate abnormal returns, consistent with prior research.

In Panel B of Table 6, we examine the association between OB signals and future abnormal returns to test whether investors fully react to these disclosures at the time of the announcement. Columns 1 and 2 present the results of estimating Regression (6) for quantitative OB disclosures and report positive and significant coefficients on $CH_BKL_{jt}$of 0.0164 and 0.0220 (t-statistics = 2.01 and 2.06), suggesting that investors underreact to the quarterly *quantitative* OB disclosures. In columns 3 and 4 we observe a similar pattern for BKL_TONE_{jt}: the coefficient is positive at 0.0138 and 0.0233 (t-statistics is significant for the specification in column 4 at 2.15). This evidence seems to indicate that investors similarly underreact to *qualitative* backlog disclosures, causing a subsequent positive drift in returns. Regression controls show that firms with higher earnings surprises continue to experience higher drift returns, consistent with prior studies on the post earnings announcement drift (Bernard and Thomas 1990).

It seems that, beyond the effect of contemporaneous earnings surprises and other financial information, quarterly backlog disclosures also help explain both immediate and subsequent drift returns. Investors seem to use not only annual backlog disclosures but quarterly data as well and to use both qualitative and quantitative backlog disclosures.

4.4. The role of demand in investors' underreactions to OB disclosures

As we note above, changes in backlog can be driven by either demand fluctuation or supply constraints. While disruptions in supply chains often have already been reported, information about demand changes tends to be more forward-looking and therefore uncertain. Because disclosures with more uncertain content tend to elicit more marked underreactions (Francis et al., 2007), we predict that investors will underreact more to OB disclosures that signal changes in demand.

To test this prediction, we split our sample into two groups based on the proportions of finished goods inventory (FGI) for the quarter on the firms' balance sheets (from Compustat). The firms in the first group, make-to-order firms, have lower FGI and begin production when a purchase order is received, so their OB changes tend to signal demand changes. The second group, make-to-stock firms, have higher FGI and produce goods primarily to hold in inventory, so changes in their OB might signal stockout issues rather than demand. We exclude firms without inventory (3345 observations); if FGI is missing, we set it equal to zero. We assign firms to the make-to-stock group if they are in the top quartile of the finished goods proportion (more than 35% of their total inventory consists of finished goods); the remaining firms are assigned to the make-to-order group.

[9] The number CH_BKL_{jt} observations in Table 5 decreases compared to the number of quantitative disclosers in Table 3 because we could quantify only the change in backlog level if a firm disclosed its prior period OB in its Form 8-K. At the same time the number of observations for BKL_TONE_{jt} is higher than the number of strictly qualitative disclosers in Table 3 as it includes some companies that disclose both the tone and quantitative disclosures about their OB.

Table 6
Market Reactions to OB Disclosures. This table reports estimation results of the OLS regression of the abnormal market returns on the OB signals (CH_BKL_{jt} and BKL_TONE_{jt}) and other control variables. The sample for this test consists of all firm-quarters that have either qualitative or quantitative backlog disclosures in Form 8-K for the years 2004–2015. The dependent variables are the buy-and-hold returns adjusted for size, book-to-market ratio, and momentum for the interval [-1, +1] surrounding the earnings announcement date in Panel A ($XRET\_PRELIM_{jt}$) and for the interval from two days after the call date through the subsequent quarter's preliminary earnings announcement in Panel B ($XRET\_DRIFT_{jt}$). See Appendix B for variable definitions. Standard errors are clustered by industry and time (year-quarter) following Petersen (2009) and Gow et al. (2010). Industry and time fixed effects are included. Industries are defined using 4-digit SIC codes. Robust t-statistics are reported in parentheses. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

Panel A: Immediate Abnormal Market Returns

	Dependent Variable = $XRET\_PRELIM_{jt}$			
	[1]	[2]	[3]	[4]
CH_BKL_{jt}	0.0137***	0.0146***		
	(5.77)	(3.53)		
BKL_TONE_{jt}			0.0177***	0.0155**
			(3.23)	(2.59)
BKL_{jt}	−0.0001***	−0.0002	0.0000	0.0000
	(−14.44)	(−0.35)	(0.09)	(0.22)
SUE_{jt}	0.0570***	0.0563***	0.0479***	0.0502***
	(11.59)	(9.11)	(9.14)	(9.88)
BM_{jt}	0.0229***	0.0241***	0.0157***	0.0111*
	(4.32)	(4.07)	(2.62)	(1.95)
$Log\ (ASSETS_{jt})$	−0.0005	−0.0006	−0.0013	−0.0023
	(−0.53)	(−0.54)	(−1.06)	(−1.62)
ROE_{jt}	0.1328***	0.1459***	0.1168***	0.1040***
	(5.63)	(4.54)	(4.60)	(2.70)
$Earn\_Vol_{jt}$	−0.0002	−0.0003	0.0004*	0.0005*
	(−0.76)	(−0.94)	(1.72)	(1.97)
Lag_XRET_{jt}	−0.0206**	−0.0204	−0.0173	−0.0237
	(−2.07)	(−1.50)	(−1.43)	(−1.64)
Inv_Surp_{jt}		−0.0456**		0.0310
		(−2.47)		(1.30)
No. Obs.	6070	4346	5066	3220
Industry FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
R-squared	6.88%	7.06%	5.28%	5.83%

Panel B: Subsequent Abnormal Market Returns

	Dependent Variable = $XRET\_DRIFT_{jt}$			
	[1]	[2]	[3]	[4]
CH_BKL_{jt}	0.0164**	0.0220**		
	(2.01)	(2.06)		
BKL_TONE_{jt}			0.0138	0.0233**
			(1.34)	(2.15)
BKL_{jt}	0.0000	0.0022	−0.0002	−0.0003*
	(0.88)	(0.77)	(−1.43)	(−1.91)
SUE_{jt}	0.0370***	0.0274**	0.0327***	0.0290**
	(2.87)	(2.15)	(3.19)	(2.45)
BM_{jt}	0.0265*	0.0128	0.0177	0.0241
	(1.77)	(0.73)	(1.22)	(1.30)
$Log\ (ASSETS_{jt})$	−0.0014	0.0015	−0.0027	−0.0025
	(−0.53)	(0.62)	(−0.92)	(−1.02)
$XRET\_PRELIM_{jt}$	0.0149	0.0046	0.0030	−0.0002
	(1.44)	(0.42)	(0.28)	(−0.02)
ROE_{jt}	0.0019	−0.0346	0.0229	−0.0917
	(0.02)	(−0.50)	(0.36)	(−0.88)
$Earn\_Vol_{jt}$	0.0000	−0.0002	0.0011**	0.0011*
	(0.06)	(−0.53)	(2.57)	(1.90)
Lag_XRET_{jt}	−0.0098	−0.0235	0.0469	0.0242
	(−0.50)	(−1.01)	(1.41)	(0.80)
Inv_Surp_{jt}		−0.1328***		−0.1092
		(−2.64)		(−1.51)
No. Obs.	6070	4346	5066	3220
Industry FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
R-squared	0.95%	0.96%	0.91%	1.25%

Source: Charter Oak PIT Compustat data, I/B/E/S, CRSP, Form8-K and authors' analysis. As of 7/3/2021

Table 7 presents the regression results for the two groups of firms. In Panel A, the coefficients on $CH\_BKL_{j,t}$ and $BKL\_TONE_{j,t}$ load positively and significantly regarding the immediate market reaction for both make-to-stock and make-to-order firms, ranging from 0.0141 (t-statistic = 4.58) to 0.0165 (t-statistic = 2.25) for quantitative OB disclosures and 0.0137

(t-statistic = 2.21) to 0.0387 (t-statistic = 3.34) for verbal disclosures. It appears that investors interpret changes in OB as a positive signal for both groups of firms. However, the pattern is different for the $CH\_BKL_{j,t}$ and $BKL\_TONE_{j,t}$ coefficients in Panel B, where the dependent variable is future abnormal returns ($XRET\_DRIFT_{j,t}$). The coefficients are insignificant for

Table 7
Market Reactions for Make-to-Stock vs. Make-to-Order Firms. This table reports estimation results of the OLS regression of the abnormal market returns on the OB signals and other control variables for two groups of firms: make-to-stock and make-to-order. We rank all firms on the proportion of total inventory held as finished goods and classify firms as make-to-stock if they belong to the top quartile of this measurement (highest proportion of total inventory held as finished goods). The remaining firms are classified as make-to-order firms. The sample for this test consists of all firm-quarters that have either qualitative or quantitative backlog disclosures in Form 8-K for the years 2004–2015. The dependent variables are the buy-and-hold returns adjusted for size, book-to-market ratio, and momentum for the interval [-1, +1] surrounding the earnings announcement date in Panel A ($XRET\_PRELIM_{jt}$) and for the interval from two days after the call date through the subsequent quarter's preliminary earnings announcement in Panel B ($XRET\_DRIFT_{jt}$). See Appendix B for variable definitions. Standard errors are clustered by industry and time (year-quarter) following Petersen (2009) and Gow et al. (2010). Industry and time fixed effects are included. Industries are defined using 4-digit SIC codes. Robust t-statistics are reported in parentheses. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

Panel A: Immediate Abnormal Market Returns				
Variables	Dependent Variable = $XRET\_PRELIM_{jt}$			
	Make-to-Stock Firms		Make-to-Order Firms	
	[1]	[2]	[3]	[4]
CH_BKL_{jt}	0.0165**		0.0141***	
	(2.25)		(4.58)	
BKL_TONE_{jt}		0.0387***		0.0137**
		(3.34)		(2.21)
BKL_{jt}	0.0007	−0.0109	−0.0009	0.0000
	(1.40)	(−1.01)	(1.50)	(0.02)
SUE_{jt}	0.0591***	0.0453***	0.0609***	0.0507***
	(4.73)	(4.88)	(8.69)	(5.86)
BM_{jt}	0.0519***	0.0120	0.0177***	0.0172**
	(2.80)	(0.85)	(3.20)	(2.04)
$Log\ (ASSETS_{jt})$	−0.0032	−0.0052*	0.0011	0.0001
	(−0.25)	(−1.74)	(1.43)	(0.24)
ROE_{jt}	0.2099***	0.0460	0.1203***	0.1045***
	(4.02)	(1.46)	(3.72)	(2.82)
$Earn\_Vol_{jt}$	−0.0011*	−0.0001	0.0000	0.0006**
	(−1.83)	(0.97)	(0.11)	(2.00)
Lag_XRET_{jt}	−0.0032	−0.0539*	−0.0147*	−0.0096
	(−0.26)	(−1.92)	(−1.98)	(−0.15)
No. Obs.	1192	1197	4024	3266
Industry FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
R-squared	9.03%	7.39%	7.20%	5.09%
Panel B: Subsequent Abnormal Market Returns				
Variables	Dependent Variable = $XRET\_DRIFT_{jt}$			
	Make-to-Stock Firms		Make-to-Order Firms	
	[1]	[2]	[3]	[4]
CH_BKL_{jt}	0.0011		0.0238**	
	(0.05)		(2.58)	
BKL_TONE_{jt}		−0.0028		0.0215*
		(−0.11)		(1.86)
BKL_{jt}	−0.0029**	−0.0274	0.0027	−0.0005***
	(2.63)	(−0.90)	(1.35)	(5.01)
SUE_{jt}	0.0353*	−0.0005	0.0352*	0.0432***
	(1.78)	(−0.04)	(1.87)	(3.34)
BM_{jt}	0.0345	0.0042	0.0327**	0.0186
	(0.04)	(0.03)	(2.18)	(1.24)
$Log\ (ASSETS_{jt})$	−0.0058	−0.0047	0.0001	−0.0024
	(−1.57)	(0.62)	(0.08)	(−0.29)
$XRET\_PRELIM$	−0.0043	0.0154	0.0175	−0.0045
	(−0.19)	(0.62)	(1.26)	(0.34)
ROE_{jt}	0.0976	0.1146	−0.0039	0.0141
	(−0.02)	(1.24)	(−0.17)	(0.21)
$Earn\_Vol_{jt}$	−0.0004	0.0014	−0.0002	0.0014**
	(−0.37)	(0.39)	(−0.76)	(2.33)
Lag_XRET_{jt}	−0.0734*	0.0154	0.0106*	0.0535
	(−1.22)	(0.45)	(1.79)	(1.52)
No. Obs.	1192	1197	4024	3266
Industry FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
R-squared	1.36%	0.87%	1.25%	1.52%

Source: Charter Oak PIT Compustat data, I/B/E/S, CRSP, Form8-K and authors' analysis. As of 7/3/2021.

make-to-stock firms, suggesting that investors fully reacted to the changes in backlog levels on the date of the announcement. On the other hand, in columns 3 and 4 the coefficients are positive and significant for make-to-order firms: 0.0238 (t-statistic = 2.58) for $CH\_BKL_{j,t}$ and 0.0215 (t-statistic = 1.86) for $BKL\_TONE_{j,t}$. It appears that for these firms, investors underreact on the announcement date, as is evidenced by the subsequent positive drift returns. These results provide some evidence that investors take more time to react to backlog news driven by demand fluctuations.

5. Conclusions

Our study establishes order backlog as a useful accounting variable in predicting next-period sales. The decision to disclose OB depends on its magnitude, the firm's prior disclosure habits, and whether the OB news is good or bad. Quarterly OB disclosures affect both immediate and subsequent abnormal returns (beyond the effect of contemporaneous earnings surprises), and investors react to both quantitative and qualitative information in those disclosures. Investors also attend to the causes of OB: they tend to react more gradually to backlog news from make-to-order firms which directly signals demand, than to backlog disclosures by make-to-stock firms.

The results of this study are relevant to academics, investors, regulators, and firms. For researchers, they confirm previous findings that increases in OB are positively associated with future returns. Investors may rely on OB signals that are captured not only in annual filings, but also in quarterly announcements, whether the signal is numeric or qualitative. Our results suggest that for certain firms, where OB is significant, earlier than annual OB disclosures are used by investors, and regulators should consider requiring it in quarterly reports, whether quantitative or qualitative. Regulator might also consider expanding the XBRL tagging requirements to contextual cues, as our study shows the usefulness of certain qualitative disclosures in 8-K forms. Finally, firm managers may find that disclosing OB (quantitatively or qualitatively) at quarterly intervals (or even more frequently) reduces information uncertainty about the firm, and as a consequence, may reduce its cost of capital. Commitment to providing OB disclosures on a quarterly basis, as some firms do, may be beneficial for investors and firms alike.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Extracts of earnings conference calls with backlog discussions

This table exhibits some examples of backlog discussions from the conference call transcripts. The transcripts are proved by S&P. The key backlog phrases are bolded.

Company/ Quarter/Call Date	Examples	Call Section
Roper Industries/ Q1 2009/April 24, 2009	*Brian Jellison, Executive Chairman:* In the toll and traffic solutions side, we had **solid backlogs** coming into the year, still have **very strong backlogs**, that's helped sustain organic growth.	Presenter Section
Quanta Services/ Q1 2009 /May 6, 2009	*James Haddox, Executive Vice President*: Our **total backlog** of work at March 31 of '09 was approximately $5.801 billion, which is $633 million or about 12.2% **higher than total backlog** at March 31 of '08. Total **backlog has increased** $609 million or 11.7% since December 31 of '08. Our 12-month backlog currently stands at $2.524 billion. This compares to 12-month backlog of 2.385 billion at March 31 of '08, and represents an increase of 139 million or about 6%. **12-month backlog** attributed to electric work **increased** about $95 million, gas work increased about $56 million, while telecom **12-month backlog decreased** about $39 million. Ancillary 12-month **backlog increased** about $8 million, while dark fiber **backlog increased** about $19 million.	Presenter Section
KB Home/Q3 2012/September 21, 2012	*Jeffrey Mezger, Chairman, President, & CEO*: We **grew our backlog** substantially, ending the quarter with $745 million in potential future housing revenues, a 33% increase over the prior year and the **highest third quarter backlog level** since 2008. . .Based on our **current backlog**, we project that the trends of higher average selling prices and larger homes will continue going forward. . .Going forward, we expect to see significant positive impacts on our business with a **better quality backlog**	Presenter Section

(*continued on next page*)

Appendix A (*continued*)

Company/ Quarter/Call Date	Examples	Call Section
Black Box Corporation/Q2 2016 /October 27, 2015	*Timothy Huffmyer, Vice President of Finance:* **6-month order backlog** is $182 million, down $2 million from $184 million last quarter and down $7 million from $189 million in the prior year. The **sequential decrease in backlog** is related to North America Services. There was a **backlog decrease** related to a lower build in our core commercial offering by approximately $8 million, offset by an increase related to certain previously announced federal awards. **The backlog** for these solution practices and the large managed Services contract **remains flat.**	Presenter Section
Herley Industries/Q4 2009/ October 16, 2009	*Eric Hugel, Analyst, S&P Capital IQ Equity Research*: In terms of **your backlog**, I mean, the comments that you guys have made previously, at least, a little, led us to believe that -- we were thinking that we were going to see **additional backlog expansion** going forward. Can you talk about -- and it wasn't a huge number but again, you given the comments coming out. We were looking -- we were thinking that **the backlog will continue to grow sequentially** and it **was down a bit**. Can you address that? Was there any de-bookings or anything like that in the quarter that might skew that number? *David Lieberman, Director*: No, I think, actually **our backlog was near record levels** of -- it was about -- over 180 million... *Eric Hugel, Analyst*: I have 186 million as of the end of last quarter. Is that number not right? *Richard Poirier, Chief Executive Officer and President*: 182 million. *Anello Garefino, Chief Financial Officer, Principal Accounting Officer and Vice President*: No, the 186 million, I think, was an overstatement. In the fourth quarter, our book to bill, I think, was approximately 1.2 and our forecast for the year, we believe that to continue, and that'll be an excess of 1:1. *Richard Poirier, Executive Officer and President*: The bookings forecast looks strong. *Anello Garefino, CFO*: I think there might have been an approximation given in the last call. *Eric Hugel, Analyst*: Okay, but that number was actually as of the last... *Anello Garefino, CFO*: We're looking at the **actual backlog** at the close of the quarter versus at the date that the conference call took place and there was an estimate at that time that we probably -- we may have been around 185 million. *Eric Hugel, Analyst*: Okay, but what was it as of the end of Q3? *Anello Garefino, CFO*: I think it was... *Eric Hugel, Analyst*: Did you ever find that **backlog number**? *Anello Garefino, CFO*: Yes, it is. Unfortunately, I do not have the third quarter data here with me on the **backlog**. *Richard Poirier, CEO*: The bottom line is that, the **backlog is** at or near **record levels** and is **continuing to grow**.	Q&A
The Manitowoc Company/Q1 2012/May 4, 2012	*Joel Tiss, Senior Research Analyst, BMO Capital Markets*: I wonder if you can talk a little bit about **the value of what's in backlog**. Is that going to help the mix a little bit more as we go through the year? *Eric Etchart, Senior Vice President of Business Development:* I think if you look at the **backlog quarter-over-quarter** - comparing to year-over-year, sorry, of course, we - I think, we have a **much better backlog** probably with the exceptions of towers, that again, we don't see a rebound in Europe in the very short term. But overall, I think we have a **healthy backlog**, well positioned with the expected pricing that we were shooting for. So again, I think it's a good indication. I don't know if you need a more color of it.	Q&A

Appendix B. Variable definitions

BKL_Surp_{jtt}	Change in backlog from year $t-1$ to year t scaled by average total assets during the quarter.
BKL_{jt}	Firm's annual order backlog divided by annual sales.
BKL_Up_{jt}	An indicator variable equal to one if annual backlog increased from the previous year, zero otherwise.
BKL_Down_{jt}	An indicator variable equal to one if annual backlog decreased from the previous year, zero otherwise.
BKL_NA_{jt}	An indicator variable equal to one if a firm does not report annual backlog, zero otherwise.
BKL_Direct_{jt}	An indicator variable equal to one if backlog increased from the most recent previous period available, zero otherwise. If numeric OB values are unavailable for the current period then a qualitative tone variable is used with 1 for positive tone and 0 otherwise.
CH_BKL_{jt}	Change in firm OB levels as reported in 8-K filings, scaled by the OB level in the previous reporting period.
BKL_TONE_{jt}	Tone of OB disclosures in 8-K filings, coded as 1 if the tone is positive and zero if the tone is negative.
$Prelim_{jt}$	An indicator variable equal to one if a firm discloses backlog on form 8-K in the 4th quarter and zero if a firm waits until 10-K filing to disclose its backlog.
Q_{jt}	An indicator variable equal to one if a firm discloses backlog on a quarterly basis and zero if a firm waits until the 4th quarter to disclose its backlog.
$Quant_{jt}$	An indicator variable equal to one if a firm discloses quantitative information about its backlog in the 8-K filings and zero if a firm discloses qualitative information about its backlog in the 8-K filings.
SUE_{jt}	Earnings surprise, calculated as the adjusted fully diluted preliminary EPS before extraordinary items in the current quarter minus expected EPS for the quarter scaled by the standard deviation of EPS surprises in the previous eight quarters. Expected EPS is the adjusted fully diluted EPS in the same quarter of the preceding year plus a constant growth term equivalent to the average EPS surprise in the previous eight quarters.
$Invch_{jt}$	Firm's percentage change in inventory from year $t-1$ to year t.
$Large_{jt}$	An indicator variable equal to one if the firm's days in inventory change by more than 20% from the previous year, otherwise 0.
Inv_Surp_{jt}	Change in inventory level from the previous quarter, scaled by total assets at the end of the quarter.
$SalesGr_{jt}$	Sales growth rate in year t.
$SalesGrAnalyst_{jt+1}$	Analyst prediction of firm i's sales growth rate in year $t+1$ per I/B/E/S.
ROE_{jt}	Earnings before extraordinary items divided by shareholders' equity.
$Earn\_Vol_{jt}$	Standard deviation of the firm's earnings before extraordinary items, deflated by lagged total assets, measured over the previous 12 quarters.
Lag_XRET_{jt}	Cumulative stock return, measured from three trading days following the preceding earnings announcement to three trading days before the current earnings announcement.
BM_{jt}	Shareholder's equity divided by pre–earnings announcement market value.
$ASSETS_{jt}$	Total assets at the earnings announcement date.
$XRET\_PRELIM_{jt}$	The buy-and-hold return on a stock minus the average return on a portfolio of stocks matched in size, book-to-market ratio, and momentum in the interval [−1, +1], where day 0 is the conference call date.
$XRET\_DRIFT_{jt}$	The buy-and-hold return on a stock minus the average return on a portfolio of stocks matched in size, book-to-market ratio, and momentum from 2 days after the conference call date through the subsequent quarter's preliminary earnings announcement.

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