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Operating Cycle and the Incremental Information Content of Operating Liabilities

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ABSTRACT
Common knowledge in financial statement analysis says that an increase in operating liabilities is a 'bad' thing. Based on the analysis of typical operating processes and empirical analysis, I show that the opposite is often true. An increase in operating liabilities-to-sales ratio provides timely and highly positive information about a firm' knowledge on its product market demand conditions. This information is not captured by other accounting measures, such as changes in current operating assets. Empirical evidence shows that, for firms without liquidity problems, an increase in operating liabilities-to-sales ratio forecasts a strong increase in future sales and profit margin, even after controlling for various other factors.

I. INTRODUCTION

In the process of calculating accounting accruals, changes in operating liabilities (OL) are subtracted from changes in non-cash current assets. Unlike accounting accruals, which have been extensively studied in the literature, changes in operating liabilities have been rarely mentioned, except as the variable to subtract away. The evidence presented in this paper shows that absent liquidity problems change in operating liabilities (as a fraction of sales) carries significant incremental information about the future operating profitability of the firm beyond the information in accruals. An increase in the operating liabilities-to-sales ratio typically forecasts a future growth in sales and an increase in the operating margin, and thus represents a positive signal about a firm.

The information value of a change in operating liabilities can be seen from the operating process in which OL is generated. Operating liabilities may increase because a firm has cash flow difficulties, and delays paying its bills, or a firm changes its practice regarding accounts payable and accrued liabilities. However, these happen only to a small percentage of firms. Another reason for a change in OL is that the firm changes its production based on observed demand for its products.

I argue that, compared to measures such as changes in inventory or other current assets, changes in operating liabilities are better for extracting the knowledge of the firm with respect to its product market demand condition. An increase in inventory may be due to an increase of stock of goods for expected demand growth, or simply because the firm cannot sell it. These are two opposite conditions, and therefore they mask the information in inventory. Operating liabilities, on the other hand, better reflect the firm's production decision action, and thus the firm's knowledge. A firm that observes an increase in inventory but continues to expand the production scale (thus increasing OL) is likely to be expecting a surge in demand. On the other hand, if the firm observes an increase in inventory and but scales back its purchases of raw materials and production level (thus decreasing OL), it is more likely that the inventory is accumulating due to slowing demand to its products. In both cases, inventory builds up. It is the changes in operating liabilities that reflect the knowledge of the firm. Empirical results will show that an increase in OL is a significant predictor of a firm's future sales growth and profit margin increase. The effect does not revert in the long-run. the firm cannot sell it. These are two opposite conditions, and therefore they mask the information in inventory. Operating liabilities, on the other hand, better reflect the firm's production decision action, and thus the firm's knowledge. A firm that observes an increase in inventory but continues to expand the production scale (thus increasing OL) is likely to be expecting a surge in demand. On the other hand, if the firm observes an increase in inventory and but scales back its purchases of raw materials and production level (thus decreasing OL), it is more likely that the

inventory is accumulating due to slowing demand to its products. In both cases, inventory builds up. It is the changes in operating liabilities that reflect the knowledge of the firm. Empirical results will show that an increase in OL is a significant predictor of a firm's future sales growth and profit margin increase. The effect does not revert in the long-run.

Extending the argument further, one can argue that firms that have an increase in operating liabilities, but a decrease in inventory would experience the highest future profit margin change. This would be a situation where the firm is increasing its production level, but the demand still outpaces the production so that inventory level decreases. On the other hand, firms with a decrease in OL and an increase in inventory have the worst profit margin change, since it means that the firm is decreasing its production level but inventory still accumulates. This paper studies various combinations of inventory change and OL change and the future sales and profitability change. The results provide strong support to the argument.

Using a capital market perspective, I construct a price regression and a return regression, and find that an increase in OL is associated with both higher valuation and higher future returns. This suggests that investors recognize a fraction of the information in the change in operating liabilities, but not fully.

The information role of changes in operating liabilities disappears if a firm is financially distressed and is unable to pay its invoices. Empirical results show that this is true for firms with low current ratio.

The results in the paper are robust when excluding firms with merger and acquisition activities, a concern raised by Hansen (1999) and Zach (2002). It is unlikely that the information content of the operating liabilities is due to merger and acquisition activities, since such activities have little effect on a firm's profit margin. An extensive robustness study further shows that the predictive ability of changes in operating liabilities cannot be explained away by earnings level or growth in earnings, operating income, property, plant and equipment (PP&E), leverage ratio, or research and development expenditures. I also applied the filters suggested by Zach (2002) to eliminate companies with mergers and acquisitions, and obtained similar results.

An extensive body of research has examined the information value of accounting accruals. See, for examples, Sloan (1996), Teoh et. al. (1998), Bradshaw et. al. (1999), Collins and Hribar (1999a and 1999b), Xie (1999), and Thomas and Zhang (2001), Richardson et. al. (2002). However, research based on total accruals and operating accruals provide little guidance as to the information value of changes in OL. This is because changes in operating liabilities and changes in operating accruals are nearly uncorrelated. Each dollar of increase in accounts payable corresponds to nearly one dollar increase in inventory and accounts receivable. Since operating accruals are defined as the change in current operating assets minus change in OL liabilities, a change in operating liabilities has, on average, approximately zero net effect on the amount of the firm's operating accruals. because changes in operating liabilities and changes in operating accruals are nearly uncorrelated. Each dollar of increase in accounts payable corresponds to nearly one dollar increase in inventory and accounts receivable. Since operating accruals are defined as the change in current operating assets minus change in OL liabilities, a change in operating liabilities has, on average, approximately zero net effect on the amount of the firm's operating accruals.

The results here augment existing empirical results in the earnings quality literature (Abarbanell and Bushee (1997), Lev and Thiagarajan (1993), Penman and Zhang (2000)). An increase in operating liabilities signals an improvement in earnings quality, since both the operating margin and total profit tend to improve.

II. OPERATING CYCLE AND OPERATING LIABILITIES

Accounting accruals, the difference between net income and cash flow from operating activities, is a primary accounting construct. Not surprisingly, there has been extensive research in the information content on accruals and operating accruals. I will use the following definition of operating accruals, often also referred to current accruals:

Operating accruals = Δ (Current operating assets) − Δ(operating liabilities),

where $\Delta(\ )$ is the change in a variable. I will denote the change in current operating assets as ΔOCA, and the change on operating liabilities as ΔOL.

In a business process, operating liabilities arise when a firm temporarily defer cash payments for goods and services that it obtains. A firm may observe its operatin liabilities increasing if it delays its payment beyond schedule to suppliers or employees. A delay in payment usually means the firms wants (or needs) to conserve cash. For this

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reason, an increase in OL is often considered a signal of liquidity problems.

Absent liquidity problems, operating liabilities may increase simply due to an increase in inventory and other current assets. Payments to suppliers are usually made after the firms receive cash from selling their finished products or services. Thus, an increase in operating liabilities would result in an increase in inventory (if the products have not been sold) or accounts receivables (if products have been sold but cash has not being collected). To a lesser degree, a firm may also see its cash balances increase if the payment for supplies is not due, but cash from sales has been collected. Therefore, one would expect that each dollar of change in operating liabilities corresponds to one dollar of change in current assets.

If such an observation is approximately true, the operating accruals, $\Delta OCA - \Delta OL$, and the operating liabilities, ΔOL, are approximately uncorrelated. This suggests that the information content of operating accruals is approximately orthogonal to the information content of the change in operating liabilities. Based on this near orthogonality, research on the information content of accounting accruals and operating accruals has no implication for the information content of changes in operating liabilities.

Conversely, if an increase on ΔOL leads to a similar increase in ΔOCA, we may expect that they carry similar information contents. Prior research suggests that the change in inventories carries negative information about the future profit of a firm (Thomas and Zhang, 2001). Bernstein and Wild (1998, page 117) indicate that an increase in inventory signals a future increase in sales, and a future decrease in profit margin. One would expect the same information for ΔOL.

Hypothesis 1: An increase in operating liabilities is associated with future sales growth and a future decrease in profit margin, resulting a net future decrease in profit.

While changes in operating liabilities is correlated with changes in operating assets, there are, however, important differences. Inventory may stay in a warehouse for an indefinite length of time, while operating liabilities usually must be paid within a certain period. Inventories may increase for two reasons: (1) A firm anticipate future increase in demand; (2) Sales growth is unexpectedly less than production growth. While the first case is positive news for the firm, the second one is negative. The two effects offset each other, making the inference somewhat ambiguous. Since operating liabilities must be paid within a certain time limit, a change in OL reflects timelier the production decision by the firm. If a firm observes an increase in product demand, one would observe an increase in operating liabilities, as the firm increases its production. Firms that observe an inventory buildup out-pacing sale would reduce the production and purchase of inventory, and thus the operating liabilities may decrease.

This distinction suggests that the change in operating liabilities may be a more informative variable inferring the production decision, and thus the knowledge of the firm. An increase in OL may indicate that a firm is observing an increase in demand. This suggest that the change in OL may be useful for forecasting a future increase in sales and profitability. This leads to an alternative to Hypothesis 1:

Hypothesis 1A: Absent liquidity problems, an increase in operating liabilities is associated with future sales growth and a future increase in profit margin, resulting in a net future increase in profit.

To understand the effect of the business process better, consider the following hypothetical example.

Example 1: Widgets Company produces and sell 3 widgets each month at \$2 each. It keeps a finished inventory of 6 units. The production process takes 3 months to complete. Assume that the inventory costs \$1 each at the beginning of the production process and the supplier's invoice is paid off within 3 months. For simplicity, assume that the production process does not add value. The fiscal year ends at December 31.

Case 1 (base case): Sales remains constant in all months. Note that the ending inventory consists of 6 finished widgets and $3 \times 3 = 9$ units of work-in-progress. At year end, the company reports the following figures:

Annual sales = $12 \times 3 \times \$2 = \$72$
Ending inventory = $(6 + 9) \times \$1 = \$15$
Accounts payable = $9 \times \$1 = \$9$.

Case 2 (increasing demand): Sales increases to 5 units per month starting from October. The firm increases production to 5 units per month immediately. At year end, the company would have zero finished widgets and 3×5 work-in-progress. Year and financial figures are

Annual sales = $[(9 \times 3) + (3 \times 5)] \times \$2 = \$84$
Ending inventory = $9 \times \$1 = \$15$
Accounts payable = $15 \times \$1 = \$15$.

Case 3 (decreasing demand): Sales decreases to 1

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unit per month starting from October. The firm decreases the production to 1 unit per month immediately. At year end, the company would have 12 finished widgets and 3 × 1 work-in-progress. Year end financial figures are

Annual sales = [(9 ×3) + (3 ×1)] ×$2 = $60
Ending inventory = (12 + 3) × $1 = $15
Accounts payable = 3 ×$1 = $3.

Comparing the three cases, one can observe that the ending inventory does not provide any signal about expected future demand, while the operating liability (accounts payable) increases when the demand, and thus the production, increases. The inventory/sales ratio decreases when the demand is higher in case 2. However, this is not robust. Consider the following two cases.
Case 2A (increasing demand): Sales increases to 5 units per month starting from October. The firm can only increase the production to 6 units per month immediately to replace the inventory. At year end, the company would have zero finished widgets a n d .

3 × 6 = 18 work-in-progress. Year-end financial figures are
Annual sales = [(9 × 3) + (3 × 5)] × $2 = $84
Ending inventory = 18 ×$1 = $18
Accounts payable = 18 ×$1 = $18.

Case 3A (decreasing demand): Sales decreases to 1 unit per month starting from October. The firm decreases the production to 2 units immediately. At year end, the company would have 12 finished widgets and 3 × 2 work-in-progress. Year-end financial figures are

Annual sales = [(9 ×3) + (3 ×1)] ×$2 = $60
Ending inventory = (12 + 3 ×2) ×$1 = $18
Accounts payable = 6 ×$1 = $6.

The last two cases show both increased inventory/sales ratio, even though the demand has changed in opposite directions. The signal from operating liabilities, however, is unambiguous.

Example 1: Inventory and Operating Liabilities

	Case	Case	Case	Case	Case
Demand	flat	up	down	up	down
Annual Sales	72	84	60	84	60
Ending	15	15	15	18	18
Accounts	9	15	3	18	6
Finished goods	6	0	12	0	12
Inventory/Sales	.208	.179	.250	.214	.300
AP/Sales	.125	.179	.050	.214	.100

If the change operating liabilities is a good proxy for the change in future sales, then increases in ending inventory relative to the operating liabilities should indicate high excess inventory, and, resulting in price pressure. Firms of this type are most likely to see a drop-in profit margin in the future. On the other hand, a decrease in inventory with an increase in OL suggests that production cannot catch up with demand. Thus, one would expect that firms of this type are most likely to see a future margin increase.

Hypothesis 2: Let F ( ) be the expected change in future profit margin. We have: F(Inventory up, OL down) < F(Inventory up, OL up)< F(Inventory down, OL down) <F(Inventory down, OL up).

I hypothesize that F(Inventory up, OL up) < F(Inventory down, OL down), because firms with a decreasing inventory and OL are scaling back their production, typically to cut cost and increase profitability.

Future sale growth, on the other hand, should follow a slightly different pattern. One would expect that sales growth be the highest among firms that experience an increase in both inventory and OL, since this means that the firms can meet increasing demand. Sales growth should be lowest for firms with a decrease in both inventory and OL, as these are the firms that have scaled back.

Hypothesis 3: Let G( ) be the future sales growth. We have G(Inventory down, OL down) < G(Inventory down, OL up),G(Inventory up, OL down) < G(Inventory up, OL up).
For firms with liquidity problems, one would expect

that the change in OL be less, or unrelated to the production decision, but more likely related to the cash flow concerns.

Hypothesis 4: An increase in OL has less positive association with sales growth, profit margin, market value, and future return, for firms with liquidity problems than for firms without liquidity problems.
Since an increase in OL forecasts a rosier prospect for a firm, one would expect that a rational stock market recognizes this in stock price.

Hypothesis 5: Absent liquidity problems, an increase in operating liabilities is associated with higher market price.

It has been recognized in research, however, that stock market does not fully recognize the information content of accounting accruals. For example, Sloan (1996), Sloan et. al. (2002), Zach (2002) all document a negative return for a portfolio long in the high accruals firms and short in the low accruals firms. Thomas and Zhang (2002) show that this effect is due mainly to firms with high inventory. Therefore, the inefficiency may also be true with operating liabilities.

Hypothesis 6: Absent liquidity problems, an increase in operating liabilities is associated with higher future stock return.

III. MODEL SPECIFICATIONS AND EMPIRICAL RESULTS

Data were obtained from the annual COMPUSTAT files (industrial, research, and full-coverage). The sample period covers 1965-2020. A company is included in the sample in each year if its sales exceeds $10 million that year, the year before, and the year after.

A list of the variables is given in Table 1. The four dependent variables used are future sales growth (SG_{t+1}), future change in profit margin (ΔPM_{t+1}), defined as

$\Delta PM_{t+1} - \Delta PM_t$, and future stock return r_{t+1}, and yearend market-to-book ratio $(M/B)_t$. Sales growth and margin change at year t + 1 are both winsorized to lie between −1 and 1 (-100% and 100%).

In this paper, the growth of net income of a firm is decomposed into sales growth and change in sales margin. To be consistent with this, independent variables are scaled by contemporaneous sales except in price level regression. For example, we define

$$\Delta INV_t = \frac{Inventory_t}{Sales_t} - \frac{Inventory_{t-1}}{Sales_{t-1}}.$$

This definition helps to mitigate the effect of merger and acquisition on inventory and other accruals components that may take place at year t. All the results below are qualitatively unchanged when the scaling variable is changed to total assets.

The independent variables of interest include change in inventory-to-sales ratio (ΔINV), change in accounts receivable-to-sales ratio (ΔAR), and change in operating liabilities-to-sales ratio (ΔOL). Several control variables are also included: lagged sales growth, and lagged profit margin. To account for the nonlinear relationship between future profit change and lagged profit margin, I introduce an interaction between D = (profit margin<0) and the profit margin. This interaction term allows for different slopes for firms with negative profit. To avoid influential observations, 1% of the most extreme observations (0.5% each side) of each independent variable are truncated.

Table 1 contains distributional statistics of the variables under investigation. Changes in inventory, accounts receivables, and operating liabilities all have a mean near 0. The variation of operating liabilities is substantially less than that of ΔAR+ΔINV, the non- cash current assets.
To evaluate the relationship between changes in operating liabilities and changes in current operating assets, I perform the following regression

$$\Delta AR + \Delta INV + \Delta OCA = \alpha + \beta \Delta OL + \varepsilon$$

OLS regression gives an estimate of $\hat{\beta}$ = 0.751 with a standard error of 0.005. Restricting on the range of ΔOL on a middle 90% range (from 5-th to 95-th percentile) gives an estimate of $\hat{\beta}$ = 0.857 with a standard error of 0.008. Thus each dollar of increase in operating liabilities would result in less than $1 of increase in non-cash operating assets. But the coefficient is close to 1. It is therefore true that operating accruals only weakly dependent of changes in operating liabilities.

Figures 1 and 2 illustrate the marginal effect of change in operating liabilities. The top docile in ΔOL has a median sales growth of 16%, while the bottom docile has a median of below 8% sales growth. The top docile would see a profit margin increased by 0.08% versus a change of −0.11% for the bottom. Such a change is economically significant since the median profit margin is below 3%. However, the marginal effect of ΔOL is substantially smaller than the net effect of ΔOL due the correlation between ΔOL and ΔINV, and the negative effect of ΔINVon future profit margin change.

Tables 2A provides formal support to Hypothesis 1A against Hypothesis 1. Table 2A uses sales growth (SG_{t+1}) as the dependent variable, while Table 2B uses future change in profit margin (ΔPM_{t+1}). Model (I) in both cases use ΔOL as the only independent variable. The slope of the variable is highly significant in both cases. This verifies the graphical results in Figures 1 and 2. In model (II), operating accruals is included as the second variable. If Hypothesis 1 is true, then ΔOL provides no incremental information about the firm given the operating accruals, and the coefficient for ΔOL should be insignificant. However, ΔOL is highly significant in both Tables 2 and 3 when operating accruals are included. For sales growth, ΔOL becomes more significant when operating accruals are included. Indeed, ΔOL is more significant than operating accruals.

Note that for model (II), the coefficient of ΔOL and operating accruals have the same sign in Table 2, but different signs in Table 3. It indicates that these two variables do not provide similar information. That is, the informational role of ΔOL is different from that of operatingaccruals.

Model (III) in Tables 2A-2B replace the operating accruals with its major components. The significance and the coefficient of ΔOL increase in Table 2B substantially when the negative effect of inventory change (ΔOL) is included. The effects of ΔAR and ΔINV are quite different, which would be even more obvious in Model (IV). This indicates that different components in accruals provide useful, but different information content.

In models (IV) and (V), several control variables are introduced. The profit margin variable is included as profit margin is known to mean-revert. Table 2B indicates that the mean reversion is mainly due to the loss firms. Lagged sales growth is included in all models as it is known to be auto correlated (Chan et. al., 2001). Another variable, the growth in production capacity, as measured by property, plant and equipment (PPE), is also included as it has strong prediction effect on future sales growth. The turnover ratio, as defined by log(Sales/Assets), is included to mitigate the effect of industrial sector on profit margin. In model (V), I include 35 dummy variables for years and 63 industry dummy variables based on two-digit Standard and Poor Industrial Classification (SIC) code. Controlling for these variables have little impact on the importance of ΔOL. All the results one observes in the cases without the controlling variables still hold.

Table 3 provides an evaluation of Hypothesis 4. The current ratio (CR) is used as a simple way to proxy the liquidity problem. Firms with current ratio less than one is classified as firms with liquidity problems. While an increase in operating liabilities still signals higher future sales growth for firms with liquidity problems, the coefficient is less than half of that for firms without liquidity problems. For profit margin, an increase in operating liabilities is associated with a future decrease in profit margin for liquidity- constrained firm. This is exactly opposite to the firms without liquidity problem. The t- ratio for the difference in the coefficients of ΔOL in the two samples is 7.04 for sales growth, and 7.52 for margin change. The results support Hypothesis 5.

In Table 4A-4B, I focus on firms without a liquidity problem using current ratio>1 as the criterion. Table 4A gives the future margin change based on the classifications in

ΔINV and ΔOL. Unconditionally, historical profit margin shows a slight trend of going downward. In Table 4A, this is true for all cases except one. The only group of firms that shows an increase in profit is the one with a decrease in inventory and an increase in operating liabilities. The effect of increase in ΔOL is clear for each inventory group. Firms with ΔOL increasing by 1% of the sales has an operating margin that is about 0.01 higher than that for the firms with ΔOL decreasing by 1% of the sales. This is economically significant considering that median profit margin is about 0.03. The results in Table 5 are consistent with Hypothesis 3.

In Table 4B, one can observe that the future sales growth is the highest for firms that have both increased inventory and operating liabilities, and the lowest for the opposite. This is consistent with Hypothesis 2. For firms with increase inventory, the group with highest ΔOL has a sales growth that is about 9% higher than those with lowest ΔOL.

To investigate the effect of ΔOL on market value, I use a price level regression. Control variables in Tables 2A-2B are also included. The profit margin variable is replaced by the return-on-equity (ROE). Table 5 shows that ΔOL is positively and significantly correlated with market-to-book ratio, and one-year ahead stock return. For firms with an increase in inventory, investors mix-price it positively at the fiscal yearend but reverse the price in the following year. For firms with an increase in operating liabilities, the pattern is different. Investors recognize its positive effect, but not fully. Thus, the stock return continues to go higher in the year ahead. The results thus support Hypothesis 5 and 6. Similar to Table 3, there are significant differences between firms with and without liquidity problems. ΔOL does not have a positive effect for firms with current ration less than 1.

A number of robustness studies have been carried out to verify the results above. Hansen (1999) and Zach (2002) showed that extreme accruals change is often accompanied by merger and acquisition. I repeat the above studies using a number of filters suggested in Zach (2002), including (1) eliminating all firms with significant merger and acquisition (COMPUSTAT item #129), (2) requiring that the inventory change calculated from the balance sheet being within 10% of inventory change stated in the statement of cash flows (item #308); (3) Intangible (item #33) does not increase. I apply each of the restriction separately, as suggested in Zach (2002). As the consequence of decreased sample size, the statistical significance of the tests decreases. But all the results hold qualitatively.

IV. CONCLUSIONS

In order to understand the information carried by different component of accruals, it is important to understand the point of the operating cycle at which accruals are generated. I consider the role of changes operating liabilities/sales ratio, and show that change in operating liabilities is a leading indicator of a firm's future performance.

More specifically, I show that changes in operating liabilities and changes in in current operating assets carry different information. This is because while current asset may stay on the balance sheet indefinitely, operating liabilities usually need to be paid within a certain limit of time. Due to this difference, change in operating liabilities reflect change in production process, and thus the knowledge of the firms more timely.

Empirical evidence is consistent with this view. An increase in operating liabilities typically indicates an increase in demand, and thus forecast higher future sales growth and future profit margin. This is partially recognized by investors. Thus, it leads to high market valuation of the firm and forecast a higher future stock return.

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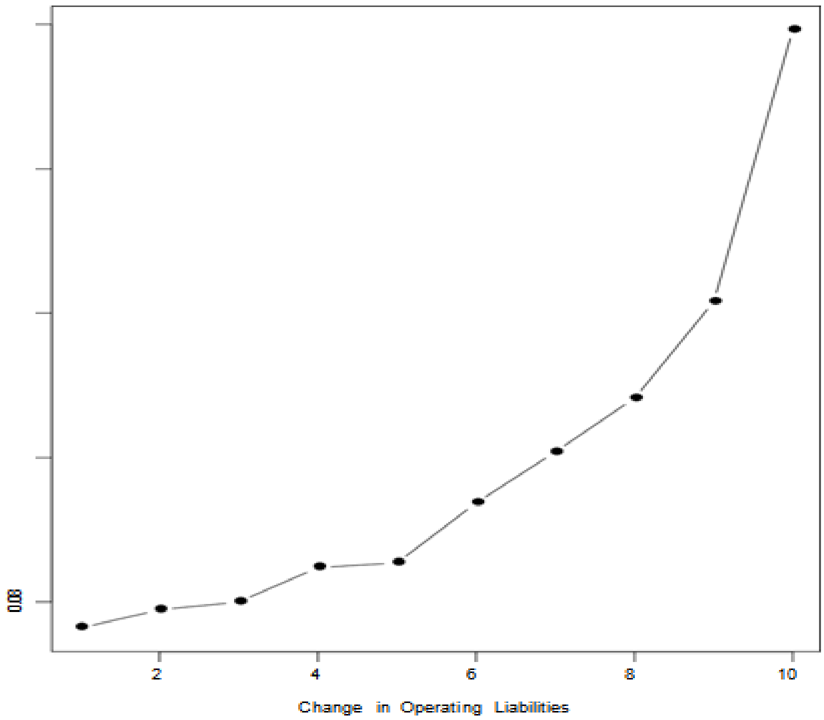

Figure 1: The plot of sales growth at year t + 1 against change in operating liabilities- to-sales ratio (ΔOL). For each year t, firms are classified into 10 equal groups based on change in OL-to-sales ratio from t − 1 to t. The vertical axis is the median sale growth in each group at year t+ 1, averaging across years.

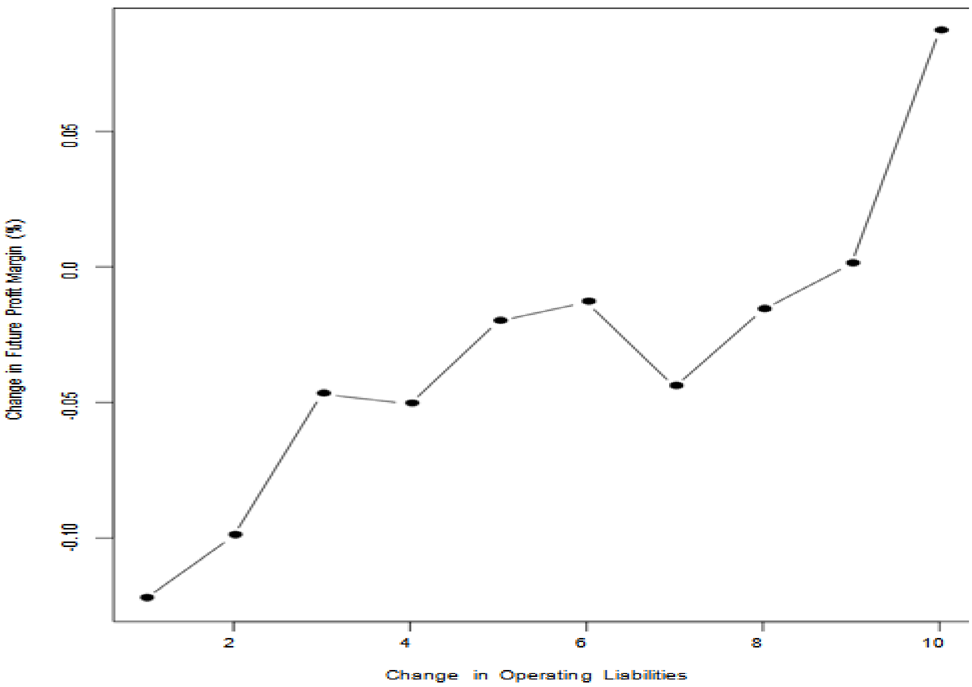

Figure 2: The plot of future change in profit margin at year t + 1 against change in operating liabilities-to-sales ratio (ΔOL). For each year t, firms are classified into deciles based on change in OL-to-sales ratio from t− 1 to t. The vertical axis is the median change in profit margin in each group at year t+ 1, averaging across years.

Table 1: Descriptive Statistics

	Mean	Standard deviation	Percentiles 10-th	25-th	50-th	75-th	90-th
Acc. Rec.	0.167	0.172	0.045	0.100	0.149	0.203	0.275
ΔAR	0.000	0.043	-0.040	-0.015	0.000	0.015	0.039
Inventory	0.150	0.172	0.010	0.054	0.132	0.209	0.293
ΔINV	-0.001	0.041	-0.040	-0.015	-0.001	0.012	0.038
ΔAR+ΔINV	0.001	0.065	-0.064	-0.024	0.001	0.026	0.065
Oper. Liab.	0.218	0.165	0.076	0.139	0.197	0.267	0.356
ΔOL	0.001	0.039	-0.035	-0.013	0.001	0.015	0.037
TOV	0.158	0.647	-0.785	-0.183	0.243	0.568	0.891
PPEG	0.179	0.331	-0.026	0.036	0.097	0.215	0.463
Oper. Margin	0.031	0.171	-0.029	0.013	0.039	0.073	0.123
ΔPM	-0.010	0.285	-0.060	-0.016	-0.000	0.011	0.042
Sales Growth	0.133	0.391	-0.124	0.000	0.095	0.207	0.390

Definition:
Sales = Total sales revenue (COMPUSTAT item #12) Acc. Rec. = Accounts receivable (item #2)/Sales Inventory = Inventory (item #3)/Sales
Oper. Liab. = [Accounts Payable (item #70) + accrued liabilities (item #72)]/Sales
ΔAR_t = (Accounts Receivable/Sales)$_t$ − (Accounts Receivable/Sales)$_{t-1}$
ΔINV_t = (Inventory/Sales)$_t$ − (Inventory/Sales)$_{t-1}$
ΔOL_t = (Oper. Liab.)$_t$ − (Oper. Liab.)$_{t-1}$
ΔOCA_t = Change in (Other non-cash current assets, item #68)/Sales Oper. Acc. = Operating accruals, ΔAR+ΔINV+ΔOCA − ΔOL
PM = (Net income before extraordinary items, item #18)/Sales D = 1 if Profit Margin < 0,and 0 otherwise.
PPE = Gross property, plant, and equipment (item #7) $PPEG_t$ = $(PPE_t - PPE_{t-1})/PPE_t$
TOV = log(Assets (item #6)/Sales)
ΔPM_{t+1} = (Oper. Margin)$_{t+1}$ −(Oper. Margin)$_t$ Sales $Growth_{t+1}$ = $(Sales_{t+1} - Sales_t)/Sales_t$

Table 2: Operating Liabilities, Sales Growth, Profit Margin

Sample period is from 1965-2020. Firms are required to have some minimal sales of $10 mil for year t − 1, t, and t + 1, to be included in the sample. See Table 1 for variable descriptions. For each independent variable, 1% of extreme value (0.5% each side) are omitted. Dependent variables are winsorized so that all values lie between −1 and 1. Year variable represents 35 dummy variables indicating years 1995-1999. Sector variable represents 163 dummy variables based on 2-digit SIC code. Given in the parentages are the t-ratio. Each column represents on model. The number of firm-years included is 98,931.

Panel A: Dependent variable is $(Sales_{t+1} - Sales_t)/Sales_t$

	I	II	III	IV	V
ΔOL	0.71 (37.2)	0.87 (41.8)	0.36 (16.1)	0.67 (30.7)	0.64 (30.1)
Oper. Acc.		0.51 (38.6)			
ΔAR			0.63 (32.1)	0.65 (34.7)	0.61 (33.1)
ΔINV			0.38 (19.9)	0.41 (22.1)	0.42 (23.1)
PM_t				0.18 (10.4)	0.23 (13.3)
$D*PM_t$				-0.02 (-0.7)	-0.09 (-3.7)
TOV				-0.02 (-13.4)	-0.04 (-24.0)
SG_t				0.33 (76.7)	0.32 (74.9)
$PPEG_t$				0.08 (30.6)	0.08 (29.4)
Sector					*
Year					*
$R^2(adj)$	0.012	0.026	0.027	0.163	0.197

Panel B: Dependent variable is change of profit margin from year t **to** t+ 1

	I	II	III	IV	V
ΔOL	0.08 (8.3)	0.06 (6.7)	0.21 (20.9)	0.14 (14.3)	0.12 (13.0)
Oper. Acc.		-0.15 (-25.7)			
ΔAR			-0.09 (-10.2)	0.00 (-0.4)	0.00 (-0.2)
ΔINV			-0.21 (-24.3)	-0.15 (-18.4)	-0.15 (-18.3)
PM_t				-0.01 (-2.0)	-0.02 (-2.4)
$D*PM_t$				-0.36 (-35.0)	-0.39 (-37.4)
TOV				0.01 (19.3)	0.01 (20.0)
SG_t				0.01 (3.9)	0.01 (3.7)
$PPEG_t$				-0.03 (-24.3)	-0.02 (-19.9)
Sector					*
Year					*
$R^2(adj)$	0.0006	0.008	0.009	0.075	0.092

Table 3: Separation by Current Ratio

All variables are as in Table 2. CR is the current ratio=(total current assets, COMPUSTAT item #4)/(total current liabilities, item #5). Firms are required to have the value of CR to be included in the sample. Future sales growth and future margin change are one year ahead sales growth and profit margin change.

	Dependent Variable is			
	Future Sales Growth		Future Margin Change	
	CR>1	CR≤ 1	CR>1	CR≤ 1
ΔOL	0.71 (29.9)	0.32 (6.3)	0.17 (16.4)	-0.06 (-2.2)
ΔAR	0.61 (30.7)	0.62 (10.9)	-0.01 (-1.6)	0.08 (2.5)
ΔINV	0.39 (20.5)	0.73 (9.6)	-0.16 (-20.1)	-0.03 (-0.7)
PM_t	0.26 (14.0)	-0.01 (-0.2)	-0.03 (-4.1)	0.05 (2.0)
D^*PM_t	-0.19 (-7.2)	0.22 (3.8)	-0.37 (-32.7)	-0.54 (-16.2)
TOV	-0.04 (-20.6)	-0.06 (-12.7)	0.02 (20.2)	0.01 (5.0)
SG_t	0.32 (70.5)	0.26 (20.4)	0.01 (3.4)	0.01 (1.5)
$PPEG_t$	0.07 (25.7)	0.14 (15.0)	-0.02 (-19.2)	-0.02 (-4.8)
Sector	*	*	*	*
Year	*	*	*	*
$R^2(adj)$	0.26	0.24	0.09	0.07
#obs	86870	11249	86870	11249

Table 4: Joint Effects of Inventory and Operating liabilities

Only firms with current ratio > 1 are included. The values given are the mean value of each sample group. Given in the parentheses are the standard error. All variables are as defined in Table 1.

A: Change in Profit Margin ($PM_{t+1} - PM_t$**, in percentage) from year** t **to** t + 1

	Change in OperatingLiabilities		
	ΔOL< −1%	−1% <ΔOL< 1%	ΔOL> 1%
ΔINV< −1%	-1.01% (0.14%)	-0.15% (0.08%)	0.06% (0.29%)
−1% <ΔINV< 1%	-1.22% (0.18%)	-0.75% (0.27%)	-0.49% (0.15%)
ΔINV> 1%	-3.15% (0.27%)	-1.36% (0.09%)	-2.00% (0.21%)

B: Sales Growth (in %) from year t **to** t + 1

	Change in OperatingLiabilities		
	ΔOL< −1%	−1% <ΔOL< 1%	ΔOL> 1%
ΔINV< −1%	8.6% (0.28%)	10.1% (0.22%)	14.2% (0.70%)
−1% <ΔINV< 1%	10.6% (0.48%)	10.9% (0.17%)	15.1% (0.31%)
ΔINV> 1%	11.4% (0.46%)	11.6% (0.27%)	19.8% (0.36%)

Table 6: Market Valuation and Future Stock Return

Dependent Variable is

$\log(MV_t/BV_t)$				Fut ure	Stock Return	(r_{t+1})
All		CR>1	CR≤1	All	CR>1	CR≤1
ΔOL	0.25 (3.9)	0.27 (3.9)	0.10 (0.5)	0.52 (9.8)	0.63 (11.0)	-0.30 (-2.0)
ΔINV	0.44 (8.0)	0.46 (8.1)	0.03 (0.1)	-0.86 (-19.3)	-0.94 (-20.3)	0.85 (3.5)
ΔAR	0.66 (11.9)	0.70 (12.1)	0.41 (2.0)	-0.07 (-1.5)	-0.10 (-2.2)	0.35 (2.2)
Size	0.05 (39.5)	0.06 (40.0)	0.02 (5.8)	0.00 (4.4)	0.00 (3.8)	0.00 (1.5)
log(M/B)				-0.06 (-18.8)	-0.06 (-18.0)	-0.05 (-4.7)
ROE	3.22 (161)	3.32 (154)	2.45 (45)	0.36 (19.3)	0.37 (18.0)	0.30 (6.3)
D*ROE	3.65 (-140)	-3.79 (-	-2.69 (-41)	-0.16 (-6.6)	-0.17 (-	-0.08 (-1.3)

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		132)			6.7)	
$\Delta Sales_t$	0.63 (48.3)	0.65 (47.4)	0.31 (6.8)	-0.06 (-6.0)	-0.07 (-6.1)	-0.04 (-1.1)
ΔPPE_t	0.24 (29.1)	0.23 (27.8)	0.23 (7.3)	-0.09 (-13.7)	-0.09 (-12.8)	-0.10 (-4.2)
Sector	*	*	*	*	*	*
Year	*	*	*	*	*	*
R^2(adj)	0.53	0.54	.51	0.19	0.20	0.17
#obs	74525	67327	6563	74389	67212	6545

Definition:
MV_t = (Price 3 months after fiscal yearend, quarter item #14)*(Shares, quarter item #15) BV_t = Common equity (item #60)
$Size_t = \log(BV_t)$
ROE = (net income before extraordinary items, item #18)/BV
r_{t+1} = One year stock return starting 3 months after fiscal year end