Inventory Changes, Earnings, and Firm value

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A Thesis

in

The John Molson School of Business

Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Administration at
Concordia University
Montreal, Quebec, Canada

January 2010

Your file Votre référence
ISBN: 978-0-494-67108-5
Our file Notre référence
ISBN: 978-0-494-67108-5

Abstract

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Previous studies contend that an unexpected increase in inventory reflects firms' difficulty in generating sales and results in negative earnings growth and stock returns. This thesis intends to examine the persistence of the negative correlation between the unexpected increase in inventory and firms' earnings growth and to test whether and to what extent, inter-industry differences and firms' inventory holdings will affect the negative correlation. In a sample with over 85,000 observations for the period of 1950-2005, we find that the relation between inventory changes and future earnings is very sensitive to the selection of sample period. The thesis also reports empirical evidence that the negative relation between the change in inventories and firm performance could be somewhat attenuated for firms in the wholesale/ retail sector as well as for firms that normally carry low levels of inventory. In addition, we compute time-trends in inventory (scaled by sales) and its volatility for three industries, and find that both have declined since the early 1980s, and that the wholesale/retail sector's volatility of inventory (scaled by sales) is significantly lower than the other sectors over the entire sample period.

Acknowledgements

It is difficult to acknowledge all the people who have supported me to complete this thesis. I would first and foremost thank Dr. Nilanjan Basu for his timely guidance, inspirational instruction and incredible patience throughout the entire process of the thesis development. Special thanks are given to Dr. Gregory Lypny and Dr. Harjeet Bhabra for their valuable comments and being my committee members. I would also like to thank all my friends for their support and encouragement. My last thank would go to my wife and my son.

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1. Introduction

In their survey research on inventories, Blinder and Maccini [1991] point out that the drop in inventory investment accounts for 87% of the drop in GNP during an average recession in the US. Ramey and West [1997] point out a similar link between inventories and GDP for five of the G7 countries. Moreover, principles of working capital management, including the management of inventories, are a standard item for most undergraduate and graduate programs in business. Nevertheless, there is very little research that attempts to understand the link between inventory levels and firm value. Notable exceptions are the work of Abarbanell and Bushee [1997] and Lev and Thiagarajan [1993]. Abarbanell and Bushee [1997] examine the relation between EPS changes and several firm characteristics (including the change in inventories) from 1983 to 1990 and finds that an unexpected increase in inventory (to sales) is negatively related to short-term earnings growth measured by one-year-ahead EPS change. Lev and Thiagarajan [1993] examine the relation between inventory changes and stock price returns by examining a large cross-section of firms from 1974 to 1988 and find that unexpected increases in inventory result in lower stock price returns.

In this paper we attempt to address two issues. First, by employing a relatively long 56-year sample period, we intend to examine if the negative correlation between the unexpected changes in inventory and earnings growth holds for all time periods; second, by further classifying firms by industry, we intend to examine if the negative correlation holds for all the industries.

Similar to Abarbanell and Bushee [1997] and Lev and Thiagarajan [1993], we find that an unexpected increase (decrease) in inventory is followed by a fall (rise) in

short term earnings during the 1970s and 1980s. However, this conclusion does not hold for all time periods. We find no significant relation during the 1950s and the 1960s and a weaker relation in the years after 2000. We also find a similar inverse relation between the unexpected change in inventories and long term changes in earnings for the 1950s and the 1990s but not for the other decades. Similarly, we find a significant negative relation between the change in market-to-book ratios and the change in inventories for all decades starting from the 1970s. Overall, an unexpected rise in inventories is often accompanied by poor future performance but the relation is sensitive to the choice of sample period.

In our analysis of industry effects, we find some evidence that suggests that an unexpected increase in inventories is not as negative for wholesalers and retailers. However, this conclusion is also sensitive to the choice of sample period.

We also test the robustness of our findings. First, we use the change in return on assets (ROA) in place of the change in earnings as a measure of performance. We find that our results are robust to the use of ROA. Second, we test if there is a difference in the relation for firms that have historically maintained low inventories. We also test for potential differences between firms that consistently hold high or low levels of inventories. We find that an increase in inventories is not associated with as large an decline in earnings for low inventory firms as it is for firms that hold higher levels of inventory. Once again, the results are sensitive to the choice of sample period.

In order to better understand the changes that take place over time, we examine the overall trend in the level and volatility of inventory holdings of firms. We find that the level as well as the volatility of inventory holdings has declined over time and that the wholesale/retail sector's volatility of inventory is significantly lower than the other sectors

over the entire sample period.

Our contributions from this study are twofold. First, in comparison with prior research, we examine a relatively large sample period. As a result, we are better able to assess the relation between the unexpected inventory changes and firm performance and its stability over time. Second, we examine potential problems that may arise from viewing all firms as a homogeneous group. In particular, we test for potential differences in the relation for the retail / wholesale industry. Our results provide a more complete picture of the way in which inventory management affects firm performance.

The rest of the paper is organized as follows. Section 2 reviews prior research and presents our hypotheses; section 3 describes our data; section 4 explains methodology; section 5 presents our results and section 6 concludes.

2. Literature reviews

2.1 Motives for holding inventory

Usually, a firm may have three major motives (Blinder and Maccini [1991]) to carry inventory as stated below:

I. Production-Smoothing Motive: In the face of fluctuating sales, a firm has to carry some inventory to facilitate arrangement of production schedules, reducing fixed cost per unit. This is particularly true for those manufacturing companies with tremendous investment in fixed assets such as plants and machineries. In their case, carrying inventory not only smoothes production, but also effectively conveys manufacturing overhead from expense to current asset, finished goods in inventory.

II. Buffer Motive: There is always a time lag between processing customers' orders and fulfilling final sales, called lead time. In order to guard against risk of unpredictable rise in demand, a firm needs to maintain some inventory as a buffer to avoid stock-out cost. If a firm fails to react to sudden increase in demand of finished goods in a timely manner, it will miss a valuable opportunity to grow sales and even lose some current and potential customers due to competition.

III. Speculative Motive: A firm may like to purchase and stock inventory more than needed for production and sales purpose. This may serve the purpose of benefiting from quantity discounts connected with bulk purchasing or anticipating price rise. Moreover, when price rise in raw material outruns that in finished goods, stocking more inventories (raw material and work-in-process) also serves the purpose of hedging against unfavorable price changes.

2.2 Costs of holding inventory

In general, by holding inventory firms can improve production scheduling, minimize stock-out cost, reduce purchasing costs by buying in quantity, and speculate on price movements, but doing so can be very expensive. Usually, the cost of holding inventory is expressed as a percentage of inventory value. Typical figures used by financial analysts range from 15% to 43%, which includes opportunity cost (8 to 22%), cost of space (1 to 3%), handling cost (1 to 3%), stock obsolescence (1 to 3%), insurance (1 to 4%), and spoilage, pilferage, inventory damage (3 to 10%)(Lamarre [2003]). Apparently, increasing inventory levels may damage firm value. As a series of supply

chain management programs like Just-in-time (JIT) and outsourcing were popularized in the early 1980s in North America, advancement and development in logistics technology and information technology make it possible for firms to reduce inventory to a very low level without suffering stock-outs[1]. Therefore, the shortcomings of increasing inventory level become more noticeable.

In addition to direct costs of carrying inventory, it is possible that the stock market also discounts those firms with high inventory, which means the firms have to suffer from higher capital costs. In face of a high-inventory firm, investors can hardly tell whether its inventory holding is due to inefficient operation or to a strategy of speculating on price change. The competent firms cannot effectively communicate their inventory-holding strategies with inventors. To signal their competence and get better valuation, the competent firms decide to carry lower inventory to distinguish themselves from those incompetent firms which fail to decrease inventory at the same expense (Lai [2006]).

2.3 Managerial motives

Lowering inventory may improve firm value in the short run, but at the expense of the long-term growth if maintaining high inventory is the optimal strategy. Managers have two incentives to cater to the market's preference for low-inventory firms. First, managers have stronger inclination to concern short-term than long-term interest because their compensation, such as bonus, stock and options holdings are more short-term performance

[1] An article written by Ruth W. Epps in *Review of Business* (Sept. 22. 1995) describes the JIT philosophy on inventory management as follows: strive for a level of zero inventories, produce items at a rate required by the customer, eliminate all unnecessary lead times, reduce setup costs to achieve the smallest economical lot size, optimize material flow from suppliers through the production process to the point of sale of the finished product, so that inventories are minimized, ensure high quality just-in-time delivery from suppliers, minimize safety stocks, implement a total quality control program which will minimize scrap, rework, and resultant delays in production.

related (Narayanan [1985]). Second, managers tend to keep the firm's short-term value high to keep their positions safe because high-inventory firms are more likely to be undervalued and become takeover targets (Stein [1988]). Lai [2005] reports empirical evidence that the market discounts high-inventory firms, supporting the "catering" behavior. Lai [2006] continues his previous study and finds that lower inventory firms get better valuation measured by Tobin's Q. In addition, Chen et al [2005] finds that lower-inventory firms have better stock returns, except those with the lowest inventory levels. Similarly, Gaur et al [2005] documents a negative correlation between inventory and gross margin, which is positively correlated with valuation.

2.4 Inventory as a signal

Inventory itself can be informative in predicting firm value. On top of that, financial analysts [2] and researchers identify another inventory-related signal, an unexpected increase in inventory to sales (hereinafter INV). Financial analysts usually perceive that when a firm's inventory rises beyond its sales growth, it probably has difficulty in generating sales. Lev and Thiagarajan [1993] report empirical evidence that INV is statistically significant in explaining negative stock returns by examining a large cross-section of firms from 1974 to 1988. Abarbanell and Bushee [1997] examine the relation between EPS change and a series of firm characteristics (including INV) from 1983 to 1990 and finds that INV is also negatively related to short-term earnings growth measured by one-year-ahead EPS change. However, Abarbanell and Bushee (1997)

[2] For example, the *Quality of Earnings Reports* on Harris Corporation (March 27, 1989) states that the unexpected (to sales) increase in two fundamentals- receivables and inventories-is used as a leading indicator for future earnings.

report little evidence that INV has any impact on long-term growth in earnings measured by five-year geometric mean growth in EPS.

2.5 Hypotheses

Our first hypothesis concerns the overall relation between a change in inventories and firm performance. As discussed by Abarbanell and Bushee (1997) and Lev and Thiagarajan [1993], an unexpected increase in inventories could be the result of lower than expected sales. This in turn could result in obsolescence of existing inventory and also could signal poor future prospects. Therefore, we expect that:

Hypothesis 1: An unexpected increase (decrease) in inventories will be associated with lower (higher) future earnings and a lower (higher) market to book ratio.

Our second hypothesis concerns the cross-sectional variation in the above relation. Our first hypothesis implies that any change in inventories that is greater than the corresponding change in sales stems from an unplanned change in the volume of sales. However, it is possible that some firms are able to anticipate future increases in sales and that they increase their inventory in anticipation of such changes.

The wholesale/retail industry sector has several unique features, differentiating it from other sectors. First of all, interpretation of an unexpected increase in inventory to sales as bad news is mainly due to the smoothing production motive of holding inventory (Blinder and Maccini [1991]). Unlike manufacturers, wholesalers and retailers do not produce any goods, so the motive does not exist in the wholesale/retail industry. Moreover, because of dealing with a great number of end customers on a daily basis, distributors may get more market feedbacks of the products and have better capacity of predicting price

change than manufacturers. Last, it has become more and more common for distributors to develop collaborative partnerships with their suppliers on inventory protection in case of obsolete items and unfavorable price changes, substantially reducing their risks of holding inventory. The inventory protection mechanism is expected to relieve the negative effect of the inventory increase by hedging against price risk and obsolescence risk. Vendor-managed inventory (VMI) is one of the most widely discussed supplier/vendor programs in the wholesale/retail industry and it was popularized in the late 1980's by Wal-Mart and Procter & Gamble. Through VMI, the vendor transfers financial responsibility for the inventory partly to the supplier (Waller et al [2001]). Thus, holding more inventory works like a call option. When price rises, distributors can speculate on unlimited price rise; when price goes down, the risk is hedged within a certain range.

In addition, we expect that firms normally carrying low inventory are more efficient in managing inventory than their peers. Therefore, it is more likely that they increase their inventory beyond sales growth due to some speculating motives.

As outlined earlier, we expect that the negative relation between the change in inventories and firm performance could be somewhat attenuated for firms in the wholesale/ retail sectors as well as for firms that normally carry low levels of inventory. As of now there is very little research that has empirically analyzed the consequences of holding higher or lower amounts of inventory.

Therefore, we expect that:

Hypothesis 2a: For firms in the wholesale / retail sectors an unexpected increase in inventories will be associated with a lesser deterioration (or an improvement) in firm performance than for other firms.

Hypothesis 2b: For firms that normally carry low inventory an unexpected increase in inventories will be associated with a lesser deterioration (or an improvement) in firm performance than for other firms.

3. Data

We collect data on firm characteristics from the Compustat annual database. In addition, we collect data on nominal GDP growth rate, the three month T-bill rate, and Producer Price Index (PPI) from the Federal Reserve Bank of St. Louis. As indicated by Abarbanell and Bushee [1997] inventory data are meaningful in the context of our study only for industries that maintain a stock of raw materials or finished goods. For example, it is difficult to compare the economic consequences of the stock of goods held by a retailer for the purpose of resale to the inventory that is reported by a bank. As a result, we only include firm-year observations from the primary products (SIC codes from 2000 to 2999), manufacturing (SIC codes from 3000 to 3999) and wholesale/retail (SIC codes from 5000 to 5999) sectors. Defining the sample sectors this way is because the majority of inventory is held by the three sectors[3] and it is difficult to interpret for other sectors (Lai [2005], Lai [2006] and Abarbanell and Bushee [1997]). The definitions of all of the variables used in the below models are consistent with Lev and Thiagarajan [1993] and Abarbanell and Bushee [1997] and detailed in appendix. Besides, given some extreme values of the fundamental signals, mainly due to small denominators in the percentage change, we winsorize the signals at the 1% and 99% percentile. Besides, zero values on financial statement data are eliminated because they are unqualified as denominators in

[3] At the end of 1989, over 87 percent of nonfarm inventories were held in the manufacturing and trade sectors (Blinder and Maccini [1991])

the computation of fundamentals signals and other variables. The final sample consists of 7821 firms that we follow for the 56 years from 1950 to 2005.

4. Methodology

In order to explore the relation between inventory changes and firm value or earnings we run a number of ordinary least squares (OLS) regressions of the form:

$$\text{Performance metric} = \beta_0 + \beta_1 * \text{inventory change} + \Sigma\, \beta_i * \text{control}_i$$

Our dependent variable is one of several performance metrics and based on earnings and firm value. We measure short term earnings changes by CEPS1 and long term earnings changes by CEPSL. We also measure the operating performance using changes in ROA. Finally, we measure value changes using changes in market-to-book ratio as a proxy for Tobin's Q.

We follow Abarbanell and Bushee [1997] and Lev and Thiagarajan [1993] in choosing our control variables. They are: unexpected accounts receivable increases (AR), unexpected capital expenditures decreases (CAPX), unexpected gross margin decreases (GM), unexpected selling and administrative expenses increases (S&A), earning quality (EQ), and labor force (LF) respectively. These firm characteristics are expected to be negatively related to earnings growth. We also control two macro-economic factors, real GDP growth rate and nominal interest rate. In general, high real GDP growth and low interest rate provide favorable exterior environment for firms to growth their earnings, so real GDP growth is expected to be positively related to earnings growth while interest rate is negatively related.

Our primary variable of interest is unexpected inventory increases (INV) and is measured as: Percentage Change in inventory – Percentage Change in Sales. The annual percentage change in inventory is defined as: [inventory $_t$-E (inventory $_t$)]/ E (inventory $_t$), where E (.) denotes expected value. The measurements of the above firm characteristics are presented in the appendix.

5. Results and Findings

Table 1 provides a descriptive summary of the whole sample as well as the wholesale/retail sector. Over the entire sample period, the number of firms in the wholesale/retail sector accounts for 10% to 20% of the whole sample. Compared with the entire sample, wholesalers and retailers have lower profitability and higher inventory turnover. Furthermore, to better understand the difference among the three industry sectors, we also lay out a profile of inventory (t) (scaled by average sales of year t and t+1) and its volatility over time. In Figure 1, Panel A, B and C represent the median, the 25th percentile, and the 75th percentile of Inventory-to-sales ratio for primary product, manufacturing, and wholesale/retail industry, respectively while Panel D provides a comparison of the ratio's median among the three industries over time. Panel A exhibits that primary product sector's inventory level continues to decrease over time. Panel B and C show that manufacturers' and wholesalers/retailers' inventory (scaled by sales) fluctuated from 1950 until the middle 1970s and began decreasing thereafter. Panel D shows that from 1950 to 2005, firms' inventory (scaled by sales) in the wholesale/retail sector is significantly lower than that in the manufacturing sector. Figure 2 presents a time-trend of inventory's volatility from 1950 to 1996. Volatility of inventory-to-sales ratio at the year t for any given

sector is measured by the median of each firm's 10-year (from t to t+9) standard deviation of its inventory-to-sales ratio in the sector. Figure 2 clearly exhibits a wave for all the tested sectors from 1975 to 1985 when JIT began to become popular in the North America. In addition, compared to manufacturers, wholesalers and retailers have much less volatility in inventory (scaled by sales).

To examine the persistence of INV's informativeness in predicting short-term earnings growth over time, we run the regression (1-1) by controlling for firms' earnings growth momentum, AR, CAPX, GM, S&A, EQ, LF [4], and macro-economic factors including real GDP growth rate and nominal interest rate.

$$\textbf{(1-1)} \quad CEPS1_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \varepsilon_{t,i}$$

Table 2-Panel A reports the results of this regression. The coefficient estimate for INV is negative and significant from 1970 to 1999. Interestingly, this covers the sample period studied by Abarbanell and Bushee [1997] and Lev and Thiagarajan [1993]. Outside of this period, the significance is markedly lower from 2000 to 2005 and the estimate is insignificant during the 1950s and the 1960s. Our results indicate that the relation is sensitive to sample period selection and that the results presented by prior research are limited to the specific samples that they study.

Besides, the coefficients of AR and LF are negative and significant while the coefficients of CAPX, GM, S&A, and EQ are positive and significant. Our results for AR and EQ are consistent with Lev and Thiagarajan [1993] but not with Abarbanell and Bushee [1997]; our results for CAPX and S&A are consistent with Abarbanell and

[4] Different from Abarbanell and Bushee [1997], ETR and AQ are dropped off all the regressions because a great number of data on ETR and AQ are missing. Including both variables into the regression models will lead to a loss of up to 50,000 observations and missing coefficient estimates on INV from 1950 to 1969. Besides, the overall results for all the regressions are robust to including the two variables.

Bushee [1997] but not with Lev and Thiagarajan[1993]. Our result for LF is consistent with the two previous studies while the result for GM is not consistent with them.

It is possible that the growth in earnings is related to an expansion in the asset base. In order to get a cleaner measure of the change in the performance for a given firm, we replace EPS change with ROA change and the results are shown in Table 2-Panel B. Similarly, we control for firms' ROA growth momentum, AR, CAPX, GM, S&A, EQ, LF [5], and real GDP growth rate and nominal interest rate. Table 2-Panel B reports similar results as Panel A, which indicates that generally INV is negatively related firm accounting profitability in the short term but somewhat time-dependent as an indicator. Besides, the coefficients of S&A, EQ and LF are negative and significant while the coefficients of CAPX and GM are positive and significant. The coefficient of AR is insignificant.

$$\textbf{(1-2)} \quad CROA_{t,i} = \alpha + \beta_0 CHGROA_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \varepsilon_{t,i}$$

To examine the relation between INV and overall firm performance measured by market-to-book ratio, we run regression 1-3 stated as follows:

$$\textbf{(1-3)} \quad CMtoB_{t,i} = \alpha + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \varepsilon_{t,i}$$

Table 2-Panel C reports the results of this regression. The coefficient estimate for INV is negative and significant from 1970 to 2005, but insignificant in the 1960s[6]. The result indicates that whenever a firm's inventory growth outruns its sales growth, the market takes it as bad news and adjusts its evaluation downwards correspondingly. This

[5] Different from Abarbanell and Bushee [1997], ETR and AQ are dropped off all the regressions because a great number of data on ETR and AQ are missing. Including both variables into the regression models will lead to a loss of up to 50,000 observations and missing coefficient estimates on INV from 1950 to 1969. Besides, the overall results for all the regressions are robust to including the two variables.

[6] Table 2-Panel C does not include the results in the 1950s because of missing data.

finding is consistent with Lai [2005]. In addition, the coefficients of AR, GM, S&A, and EQ are negative and significant while the coefficients of CAPX and LF are positive and significant.

Regression 2 below is used to test the persistency of the relation between INV and long-term earnings growth measured by CEPSL. Table 3 reports very weak evidence in that the coefficient of INV is negative and significant in the 1950s while insignificant in the 1960s, 1970s, 1980s, and the years from 2000 to 2005 and less significant in the 1990s. Consistent with Abarbanell and Bushee [1997], no evidence is found in the 1980s that INV will affect long-term EPS growth. In general, the negative relation is little after the 1950s.

$$(2) \quad CEPSL_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \varepsilon_{t,i}$$

To capture INV's informativeness in predicting firm performance in the wholesale/retail sector, we create an interactive item $INV_{t,i} \times Dummy\_0$, where Dummy_0=1 when a firm's SIC is between 5000 and 5999; it equals 0 otherwise.

Table 4-Panel A reports the results of regression 3-1. Overall, the coefficient of the interactive item (INV×Dummy_0) is significant and positive as expected, which supports our hypothesis 2a. This indicates that although INV, in general, is bad news to short-term earnings growth for all relevant sectors, to the wholesale/retail sector the news is not as bad as to the other sectors. However, the positive significance is also time-dependent, and occurred only in the 1970s and 1990s. Moreover, though statistically significant, the coefficient of the interactive item is not economically significant, and can hardly be used to predict EPS growth in practice. Besides, the sign and significance of the control variables stay the same with Table2-Panel A.

(3-1) $CEPS1_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_0 + \varepsilon_{t,i}$

To test the robustness of the results in Table 4-Panel A, we run regression 3-2 by replacing EPS with ROA and report similar results in Table 4-Panel B. The sign and significance of the control variables stay the same with Table2-Panel B.

(3-2) $CROA_{t,i} = \alpha + \beta_0 CHGROA_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_0 + \varepsilon_{t,i}$

We also run regression 3-3 to examine the relation between INV and market-to-book ratio in the wholesale / retail sector and find that the coefficient of the interactive item is not significant in Table 4-Panel C. The sign and significance of the control variables stay the same with Table 2-Panel C.

(3-3) $CMtoB_{t,i} = \alpha + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_0 + \varepsilon_{t,i}$

To examine the relation between INV and long-term EPS growth in the wholesale/retail sector, we run regression 4.Table 5 reports no evidence that INV's informativeness in predicting long-term EPS growth is significantly different between the wholesale/retail sector and other sectors.

(4) $CEPSL_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_0 + \varepsilon_{t,i}$

To capture INV's informativeness in predicting firm performance in the group of firms which normally carry low levels of inventory, we create an interactive item $INV_{t,i} \times Dummy\_1$, where for a given firm and fiscal year, if its inventory-to-sales ratio < 10th percentile of the industry (classified by using 2-digit SIC) at the year, Dummy_1=1; otherwise Dummy_1=0. Dummy_1 is always computed one year before INV is computed.

Table 6-Panel A reports the results of regression 5-1. The coefficient of the interactive item (INV×Dummy_1) is significant and positive as expected, which supports the hypothesis 2b. This indicates that although INV, in general, is bad news to short-term

earnings growth for all relevant sectors, to low-inventory firms the news is not as bad as to the others. However, the positive significance is also time-dependent, and occurred only in the 1970s and 1980s. Moreover, the coefficient of the interactive item is both statistically and economically significant. Besides, the sign and significance of the control variables stay the same with Table2-Panel A.

(5-1) $CEPS1_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_1 + \varepsilon_{t,i}$

To test the robustness of the results in Table 6-Panel A, we run regression 5-2 by replacing EPS with ROA and report no significant results in Table 6-Panel B, which indicates that the significance reported in Panel A is also sensitive to the specific measure of firms profitability. The sign and significance of the control variables stay the same with Table2-Panel B.

(5-2) $CROA_{t,i} = \alpha + \beta_0 CHGROA_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_1 + \varepsilon_{t,i}$

We also run regression 5-3 to examine the relation between INV and market-to-book ratio to the low inventory firms and report no significant results in Table 6-Panel C. The sign and significance of the control variables stay the same with Table2-Panel C.

(5-3) $CMtoB_{t,i} = \alpha + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_1 + \varepsilon_{t,i}$

To examine the relation between INV and long-term EPS growth for the low-inventory firms, we run regression 6.Table 7 reports no evidence that INV's informativeness in predicting long-term EPS growth is different between the low-inventory firms and their peers.

(6) $CEPSL_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_1 + \varepsilon_{t,i}$

In addition, our results are by and large robust by running two-way fixed effect

regression[7] though the significance levels of some coefficients are changed a little bit. The results are reported in Table 8.

6. Conclusion

In summary, we further study the relationship between unexpected inventory changes and firms' earnings by testing much longer sample period than previous study. Our results suggest that the negative relation between inventory changes and earnings growth/firm value is not stable over time. Although the work of Abarbanell and Bushee (1997) and Lev and Thiagarajan [1993] suggest a negative relation between an unexpected increase in inventory (to sales) and firm performance, we find that it is not present during the 1950s and 1960s. One of possible explanations is that the significant advancement in inventory management arising in the middle of the 1970s in the U.S. such as Just-in-Time (JIT) manufacturing has changed the game. In addition to JIT, the advancement of technology may accelerate the inventory obsolescence. This is especially true for the IT industry. Changes in industry standards may cause tremendous obsolescence of electronic parts. Therefore, in the decades after the 1970, unexpected increases in inventory are more likely associated with the obsolescence than before.

Moreover, we compute time-trends in inventory (scaled by sales) and its volatility for three industries, and find that both have declined since the early 1980s, and that the wholesale/retail sector's volatility of inventory (scaled by sales) is significantly lower than the other sectors over the entire sample period.

Most interestingly, we find some evidence that industry classification and firms'

[7] Hausman tests have been done for each above regression and the P-values are all very small (less than 0.01). In this case, fixed effect regressions are the more appropriate to run than random effect ones.

current inventory holdings may attenuate the negative relation between unexpected increases in inventory and earnings growth/firm value. This finding implies that there exists a group of firms strategically increasing their inventories not to support current sales, but to speculate on some market opportunities in the future. We believe that further classifying firms based on better established methods may finally exhibit the common features of these firms.

Not only does our research enrich the literature on how firms' inventory changes affect their earnings growth and overall performances, it also sheds some lights on further study firms' inventory managerial behavior's impact on their earnings growth and firm values. However, it is unclear why the relation between inventory and firm performance changes over time. Also, our study does not look at the interaction between inventory and governance and the resulting impact on firm performance. We really encourage other researchers to complete the literature in the field.

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Appendix

Definition of variables

Panel A: Definitions of independent variables

Variables	Measurement [a]
Inventory (INV) [b]	Δ Inventory (78 or 3) [c] -ΔSales (12)
Accounts Receivable (AR)	Δ Accounts Receivable (2) - Δ Sales
Capital Expenditure (CAPX)	Δ Industry CAPX -Δ Firm CAPX (30) [d]
Gross Margin(GM)	Δ Sales - Δ Gross Margin [(12) – (41)]
Selling and Administrative Expense (S&A)	Δ S&A (189) -Δ Sales
Effective Tax Rate (ETR)	$\left[\left(\frac{1}{3}\sum_{\tau=1}^{3} ETR_{t-\tau}\right) - ETR_t\right] \times CHGEPS_t$ Where $ETR_t = \frac{Tax\ Expense\ (16)_t}{EBT\ (170+65)_t}$
Earnings Quality (EQ)	0 for LIFO, 1 for FIFO or other (59)
Audit Qualification (AQ)	0 for Unqualified, 1 for Qualified or other (149)
Labor Force (LF)	$\left(\frac{Sales_{t-1}}{\#\ Employes_{t-1}} - \frac{Sales_t}{\#\ Employes_t}\right) \Big/ \frac{Sales_{t-1}}{\#\ Employes(29)_{t-1}}$

Panel B: Definitions of Dependent Variables and Control Variables

Variables	Measurement
One-Year –Ahead Earnings (CEPS1)	$[Adj.EPS_{t+1} - EPS_t]/P_{t-1}$ [e]
Long-Term Growth in Earnings ($CEPSL_t$)	$\prod_1^5 CEPSi^{1/5}$ e.g. $CEPS2 = [adjEPS_{t+2} - EPS_{t+1}]/P_t$
CHGEPS	$[Adj.EPS_t - EPS_{t-1}]/P_{t-1}$
CROA	$ROA_{t+1} - ROA_t$
CHGROA	$ROA_t - ROA_{t-1}$
CMtoB	$\frac{M}{B}ratio_t - \frac{M}{B}ratio_{t-1}$

[a] The definitions of all of the fundamental signals and the dependent variables come from Abarbanell and Bushee [1997]. The Δ operator represents a percentage change in the variable based on a two-year expectation model; e.g., $\Delta Sales = [Sales_t - E(Sales_t)]/E(Sales_t)$ *where* $E(Sales_t) = (Sales_{t-1} + Sales_{t-2})/2$

[b] The Inventory variable is finished goods when available, total inventory otherwise.

[c] Numbers in parentheses represent *Compustat* data item numbers.

[d] Industry Capital Expenditures are calculated by aggregating firm figures for all firms with the same two-digit SIC code.

[e] $Adj.EPS_{t+\tau} = EPS_{t+\tau} \times (Adjustment\ Factor(27)_{t+\tau-1}/Adjustment\ Factor_{t+\tau})$

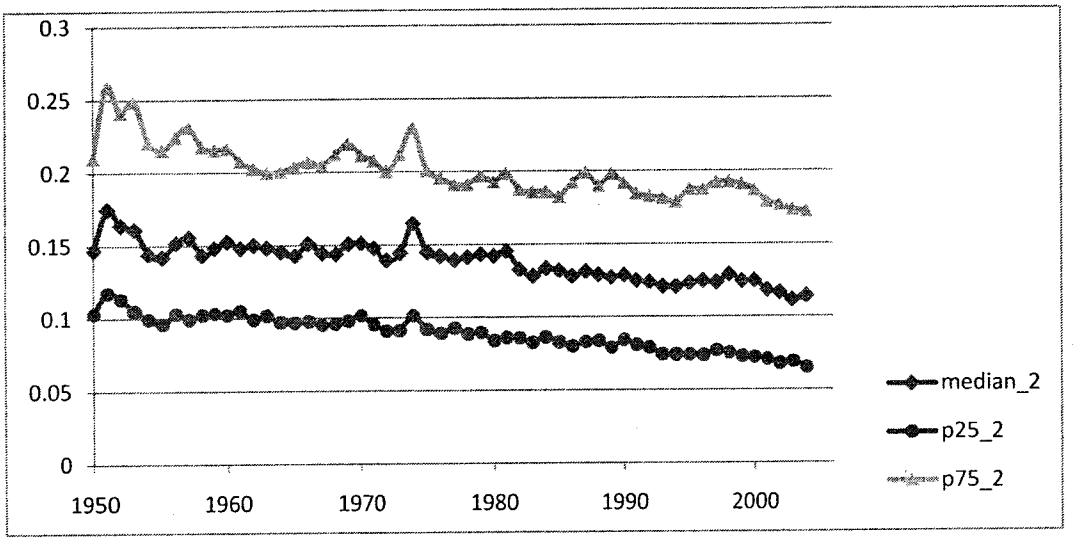
Table 1 Descriptive Summary

	Periods	1950s	1960s	1970s	1980s	1990s	2000-2005
Whole sample	# of firms	5757	17001	32420	36917	44972	23923
	Inventory/Sales	17.29%	18.18%	18.42%	16.78%	14.49%	12.87%
	EBITDA/Sales	12.86%	11.08%	9.94%	9.96%	10.62%	10.84%
	Asset(mm$)	54.80	29.50	30.90	40.81	69.90	139.59
Wholesale /retail	# of firms	673	2786	6652	7829	9221	4266
	Inventory/Sales	13.50%	14.77%	15.46%	13.41%	11.88%	10.04%
	EBITDA/Sales	6.59%	6.16%	6.26%	6.33%	6.28%	7.01%
	Asset(mm$)	50.40	24.57	31.10	45.68	104.45	248.57

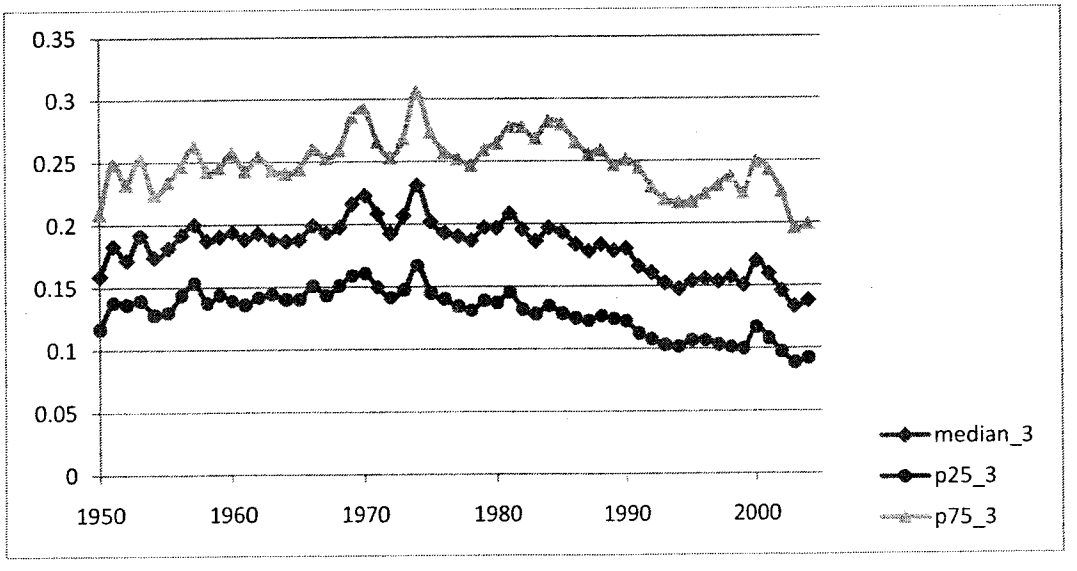
Figure 1 Profile of inventory-to-sales ratio from 1950 to 2005

The sample consists of all firms (SIC 2000-2999, 3000-3999 and 5000-5999) in the annual Compustat database from 1950 to 2005. Panel A, B and C represents the median, the 25th percentile, and the 75th percentile of *Inventory-to-sales ratio for primary product, manufacturing, and wholesale/retail industry, respectively. Panel D provides a comparison of the ratio's median among the three industries over time. Inventory-to-sales ratio is defined as* $Inventory(3)_t / [(Sales(12)_t + Sales_{t-1})/2]$. *Numbers in parentheses represent Compustat item numbers.*

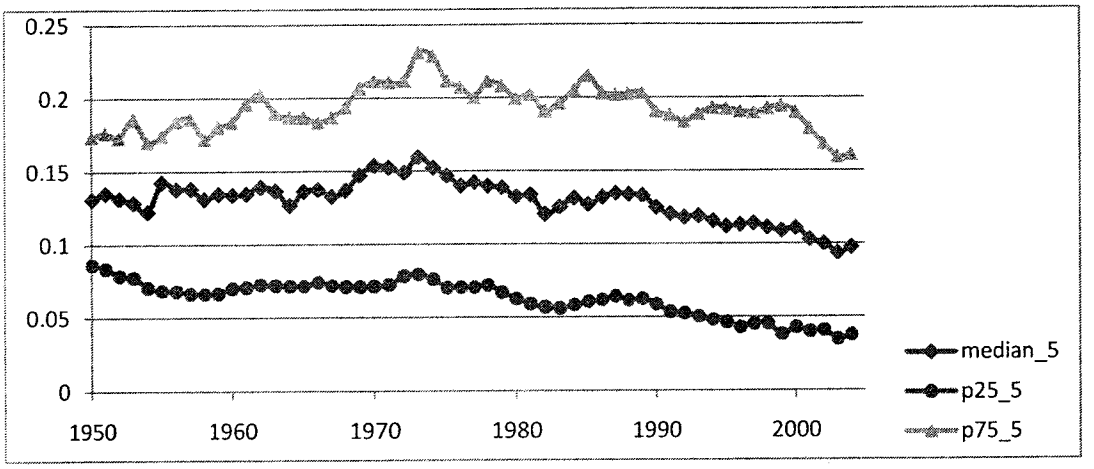
Panel A. Primary product industry (SIC 2000-2999)



Panel B. Manufacturing industry (SIC 3000-3999)



Panel C. Wholesale/Retail industry (SIC 5000-5999)



Panel D. Comparison of inventory-to-sales ratios among industries

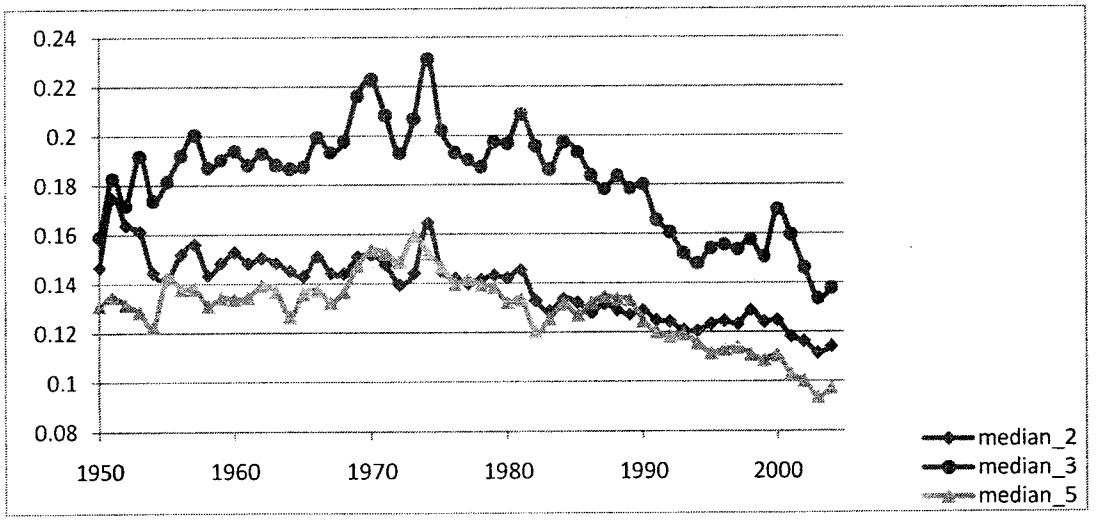


Figure 2 Time trend of volatility of inventory-to-sales ratio from 1950 to 1996

Inventory-to-sales ratio is defined as Inventory(3)$_t$/ [(Sales(12)$_t$+Sales$_{t-1}$)/2]. For each firm in a given industry sector, we measure its volatility of inventory-to-sales ratio at the year t by calculating standard deviation of the inventory-to-sales ratio over 10 years (from t to t+9). And then we take the median of the volatility at year t for all the firms in any given sector as the sector's volatility of inventory-to-sales ratio at year t. Numbers in parentheses represent Compustat item numbers.

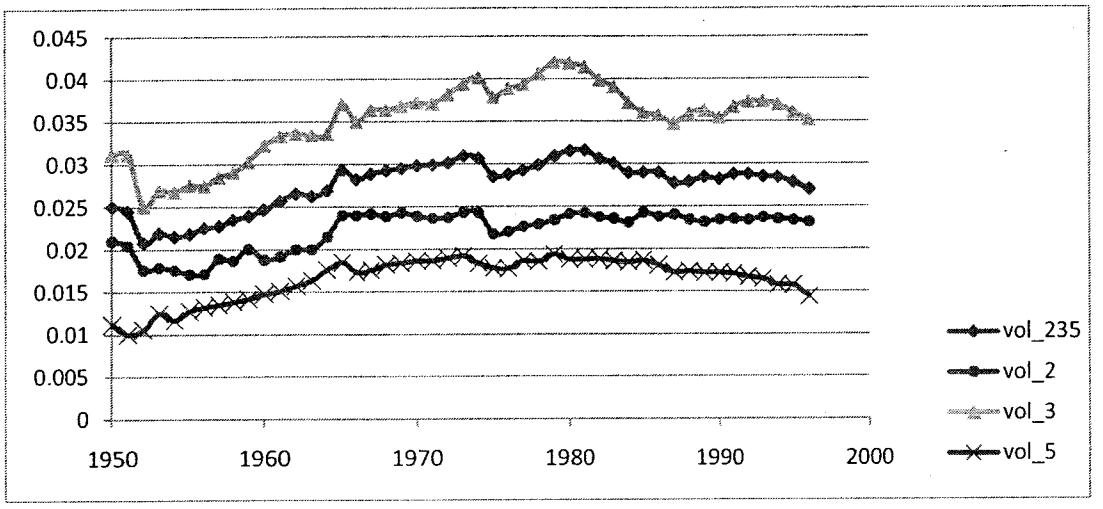


Table2-Panel A

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CEPS1 is one-year-ahead EPS change and CHGEPS is current EPS change (both defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%;** significant at 5% level; *** significant at 1% level.*

$$CEPS1_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \varepsilon_{t,i}$$

	1950-2005	50-59	60-69	70-79	80-89	90-99	2000-05
CHGEPS	-0.106	-0.264	-0.128	-0.122	-0.123	-0.134	-0.056
	(11.43)***	(3.11)***	(1.83)	(5.39)***	(7.00)***	(8.37)***	(2.98)***
INV	-0.011	-0.008	-0.004	-0.021	-0.016	-0.006	-0.007
	(8.33)***	(1.13)	(1.42)	(6.24)***	(7.77)***	(2.60)***	(1.91)*
AR	-0.008	0.022	0.003	-0.003	-0.014	-0.012	0.005
	(3.72)***	(3.59)***	(1.20)	(0.53)	(3.52)***	(3.06)***	(0.71)
CAPX	0.011	-0.001	0.001	0.010	0.009	0.012	0.015
	(16.19)***	(0.51)	(1.84)	(7.54)***	(8.51)***	(9.92)***	(6.24)***
GM	0.024	-0.026	-0.004	0.036	0.027	0.012	0.026
	(6.40)***	(1.65)	(0.53)	(2.83)***	(4.05)***	(2.08)**	(3.05)***
S&A	0.032	-0.010	-0.005	0.013	0.028	0.029	0.054
	(7.39)***	(1.41)	(0.92)	(1.09)	(3.57)***	(3.87)***	(4.53)***
EQ	0.009	-0.000	0.000	0.003	0.005	0.017	0.027
	(5.45)***	(0.09)	(0.27)	(0.90)	(1.64)	(5.34)***	(3.72)***
LF	-0.021	0.047	0.002	-0.013	-0.018	-0.018	-0.040
	(4.81)***	(2.55)**	(0.56)	(0.98)	(2.52)**	(2.45)**	(3.32)***
adjgdp_growth	0.002	0.001	0.002	0.002	0.004	0.000	0.011
	(8.31)***	(2.27)**	(7.48)***	(4.35)***	(6.65)***	(0.32)	(7.49)***
interest	-0.004	-0.017	-0.003	-0.004	-0.001	-0.007	-0.009
	(11.17)***	(8.64)***	(7.70)***	(2.98)***	(0.91)	(3.86)***	(5.47)***
Constant	0.034	0.049	0.011	0.050	0.005	0.046	0.020
	(11.98)***	(7.67)***	(4.55)***	(5.52)***	(0.63)	(4.10)***	(2.12)**
Observations	85226	1470	5412	19333	22037	25100	11874
R-squared	0.03	0.21	0.05	0.04	0.04	0.03	0.03

Table2-Panel B

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CROA is one-year-ahead ROA change and CHGROA is current ROA change (both defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%; ** significant at 5% level; *** significant at 1% level.*

$$CROA_{t,i} = \alpha + \beta_0 CHGROA_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \varepsilon_{t,i}$$

	1950-2005	50-59	60-69	70-79	80-89	90-99	2000-05
CHGROA	-0.223	-0.150	-0.116	-0.167	-0.255	-0.244	-0.182
	(17.76)***	(3.26)***	(4.16)***	(6.58)***	(11.54)***	(11.37)***	(5.94)***
INV	-0.009	0.001	-0.005	-0.009	-0.009	-0.008	-0.009
	(8.74)***	(0.26)	(1.78)*	(6.03)***	(4.94)***	(4.15)***	(3.16)***
AR	0.001	0.020	0.005	0.002	0.002	-0.002	-0.001
	(0.50)	(4.62)***	(1.72)*	(0.91)	(0.75)	(0.56)	(0.18)
CAPX	0.005	0.001	0.002	0.003	0.004	0.007	0.009
	(13.14)***	(0.91)	(3.18)***	(5.23)***	(6.43)***	(8.17)***	(5.41)***
GM	0.007	0.011	0.014	0.026	0.009	0.001	-0.000
	(2.55)**	(1.60)	(3.01)***	(4.88)***	(1.86)*	(0.19)	(0.02)
S&A	-0.007	0.004	0.004	0.000	-0.015	-0.015	0.011
	(2.16)**	(1.22)	(1.17)	(0.02)	(2.22)**	(2.37)**	(1.19)
EQ	-0.003	0.001	-0.001	0.000	-0.004	-0.004	-0.003
	(5.07)***	(0.49)	(0.77)	(0.11)	(3.31)***	(3.71)***	(1.41)
LF	-0.009	0.023	0.001	-0.002	-0.011	-0.004	-0.026
	(3.05)***	(2.28)**	(0.30)	(0.28)	(1.89)	(0.76)	(2.94)***
adjgdp_growth	0.001	0.001	0.002	-0.000	0.001	-0.001	0.001
	(8.04)***	(3.26)***	(9.39)***	(1.78)	(4.99)***	(2.65)***	(0.79)
interest	-0.001	-0.014	-0.005	-0.005	-0.001	-0.004	-0.008
	(10.24)***	(10.24)***	(10.40)***	(11.04)***	(3.86)***	(4.48)***	(9.73)***
Constant	0.003	0.026	0.008	0.034	0.002	0.021	0.016
	(2.82)***	(5.68)***	(2.94)***	(9.62)***	(0.49)	(3.86)***	(4.63)***
Observations	95511	2188	6159	23026	24419	27177	12542
R-squared	0.05	0.18	0.08	0.06	0.07	0.06	0.05

Table2-Panel C

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CMtoB is current Market-to-Book ratio change (defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%;** significant at 5% level; *** significant at 1% level.*

$$CMtoB_{t,i} = \alpha + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \varepsilon_{t,i}$$

	1950-2005	60-69	70-79	80-89	90-99	2000-05
INV	-0.077	0.004	-0.034	-0.075	-0.090	-0.103
	(10.63)***	(0.06)	(3.48)***	(6.56)***	(6.86)***	(5.05)***
AR	-0.044	-0.120	-0.068	-0.081	-0.025	-0.001
	(4.14)***	(2.44)**	(4.54)***	(4.63)***	(1.31)	(0.04)
CAPX	0.036	0.021	0.004	0.025	0.053	0.062
	(11.92)***	(1.37)	(1.23)	(5.37)***	(8.79)***	(6.02)***
GM	-0.111	-0.466	-0.070	-0.123	-0.114	-0.091
	(7.32)***	(2.75)***	(2.59)***	(4.86)***	(4.14)***	(2.64)***
S&A	-0.112	-0.492	-0.045	-0.059	-0.167	-0.126
	(5.48)***	(4.12)***	(1.36)	(1.72) *	(4.57)***	(2.50)**
EQ	-0.057	-0.001	-0.053	-0.069	-0.018	-0.083
	(14.17)***	(0.08)	(9.34)***	(9.62)***	(2.11)**	(6.36)***
LF	0.033	-0.112	-0.017	0.035	0.040	0.044
	(2.01)*	(1.33)	(0.61)	(1.26)	(1.41)	(1.09)
adjgdp_growth	0.019	0.072	0.034	0.005	0.019	0.028
	(26.87)***	(8.05)***	(32.99)***	(2.91)***	(6.33)***	(6.39)***
interest	-0.001	-0.058	0.042	0.008	0.012	-0.070
	(1.36)	(2.94)***	(17.16)***	(3.61)***	(2.10)*	(12.07)***
Constant	-0.039	-0.049	-0.368	-0.053	-0.128	0.174
	(4.56)***	(0.36)	(18.70)***	(2.11)**	(3.47)***	(7.51)***
Observations	88462	3091	20038	23537	26603	15193
R-squared	0.02	0.17	0.09	0.02	0.02	0.04

Table3

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CEPSL is five-year geometric mean growth in earnings and CHGEPS is current EPS change (both defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%;** significant at 5% level; *** significant at 1% level.*

$$CEPSL_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \varepsilon_{t,i}$$

	1950-2005	50-59	60-69	70-79	80-89	90-99	2000-05
CHGEPS	-0.099	-0.057	-0.088	-0.069	-0.069	-0.127	-0.182
	(6.16)***	(2.85)***	(3.86)***	(2.30)**	(2.43)**	(4.85)***	(1.85)*
INV	-0.009	-0.005	-0.003	-0.009	-0.003	-0.008	-0.024
	(3.38)***	(2.27)**	(1.56)	(1.54)	(0.79)	(1.75)*	(1.31)
AR	0.001	0.003	0.001	-0.002	0.002	0.002	-0.015
	(0.20)	(1.55)	(0.72)	(0.18)	(0.22)	(0.22)	(0.62)
CAPX	0.002	-0.000	0.001	0.001	0.002	0.003	-0.003
	(2.00)**	(0.01)	(2.67)***	(0.26)	(1.18)	(1.24)	(0.45)
GM	-0.005	-0.002	0.003	-0.016	0.002	-0.003	-0.005
	(0.76)	(0.45)	(1.03)	(0.82)	(0.15)	(0.30)	(0.13)
S&A	0.000	0.000	0.001	0.003	-0.001	-0.009	0.011
	(0.06)	(0.02)	(0.44)	(0.18)	(0.09)	(0.68)	(0.28)
EQ	-0.019	0.001	0.001	-0.018	-0.019	-0.031	-0.014
	(7.60)***	(1.67)	(0.44)	(3.93)***	(4.12)***	(6.21)***	(0.57)
LF	0.016	0.006	-0.001	0.030	0.001	0.016	0.060
	(2.18)**	(1.26)	(0.55)	(1.52)	(0.12)	(1.23)	(1.52)
adjgdp_growth	-0.000	0.000	-0.000	-0.001	0.003	-0.003	0.000
	(0.16)	(0.29)	(0.41)	(1.35)	(3.58)***	(1.90)	(0.00)
interest	-0.001	-0.003	-0.001	-0.005	0.006	-0.005	0.000
	(2.04)**	(3.92)***	(1.30)	(2.54)**	(5.44)***	(1.94)	(0.00)
Constant	-0.012	0.010	0.009	0.024	-0.098	0.011	-0.041
	(2.96)***	(5.02)***	(5.48)***	(1.75)*	(7.50)***	(0.63)	(1.97)**
Observations	58614	1452	5217	15787	16105	18373	1680
R-squared	0.01	0.06	0.01	0.00	0.01	0.01	0.02

Table4-Panel A

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. Dummy_0 equals 1 when a firm's SIC code is between 5000 and 5999; it equals 0 otherwise. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CEPS1 is one-year-ahead EPS change and CHGEPS is current EPS change (both defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%; ** significant at 5% level; *** significant at 1% level.*

$$CEPS1_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_0 + \varepsilon_{t,i}$$

	1950-2005	50-59	60-69	70-79	80-89	90-99	2000-05
CHGEPS	-0.106	-0.263	-0.128	-0.121	-0.123	-0.134	-0.056
	(11.43)***	(3.10)***	(1.83)	(5.35)***	(6.99)***	(8.37)***	(2.98)***
INV	-0.011	-0.007	-0.004	-0.024	-0.016	-0.006	-0.007
	(8.43)***	(1.02)	(1.18)	(7.48)***	(7.60)***	(2.68)***	(1.99)**
AR	-0.008	0.021	0.003	-0.004	-0.014	-0.012	0.005
	(3.75)***	(3.46)***	(1.21)	(0.76)	(3.52)***	(3.11)***	(0.71)
CAPX	0.011	-0.001	0.001	0.010	0.009	0.013	0.015
	(16.23)***	(0.50)	(1.78)	(7.53)***	(8.51)***	(10.00)***	(6.24)***
GM	0.024	-0.025	-0.004	0.040	0.027	0.012	0.026
	(6.41)***	(1.64)	(0.54)	(3.18)***	(4.05)***	(2.09)*	(3.02)***
S&A	0.032	-0.009	-0.005	0.013	0.028	0.029	0.055
	(7.37)***	(1.31)	(0.94)	(1.14)	(3.57)***	(3.83)***	(4.55)***
EQ	0.009	-0.000	0.000	0.003	0.005	0.017	0.027
	(5.45)***	(0.10)	(0.30)	(0.88)	(1.64)	(5.34)***	(3.72)***
LF	-0.021	0.046	0.002	-0.016	-0.018	-0.018	-0.040
	(4.80)***	(2.53)**	(0.56)	(1.20)	(2.52)**	(2.43)**	(3.32)***
INV×Dummy_0	0.000	-0.023	-0.009	0.017	-0.001	0.000	0.002
	(6.61)***	(0.68)	(1.23)	(4.19)***	(0.71)	(5.50)***	(0.78)
adjgdp_growth	0.002	0.001	0.002	0.002	0.004	0.000	0.011
	(8.30)***	(2.28)**	(7.46)***	(4.41)***	(6.65)***	(0.30)	(7.49)***
interest	-0.004	-0.017	-0.003	-0.003	-0.001	-0.007	-0.009
	(11.17)***	(8.65)***	(7.57)***	(2.89)***	(0.90)	(3.87)***	(5.47)***
Constant	0.034	0.049	0.011	0.049	0.005	0.046	0.020
	(11.98)***	(7.67)***	(4.50)***	(5.42)***	(0.63)	(4.12)***	(2.12)**
Observations	85226	1470	5412	19333	22037	25100	11874
R-squared	0.03	0.21	0.05	0.04	0.04	0.04	0.03

Table4-Panel B

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. Dummy_0 equals 1 when a firm's SIC code is between 5000 and 5999; it equals 0 otherwise. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CROA is one-year-ahead ROA change and CHGROA is current ROA change (both defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%; ** significant at 5% level; *** significant at 1% level.*

$$CROA_{t,i} = \alpha + \beta_0 CHGROA_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_0 + \varepsilon_{t,i}$$

	1950-2005	1950-59	1960-69	1970-79	1980-89	1990-99	2000-05
CHGROA	-0.223	-0.150	-0.116	-0.167	-0.255	-0.244	-0.182
	(17.77)***	(3.24)***	(4.17)***	(6.56)***	(11.55)***	(11.38)***	(5.94)***
INV	-0.009	0.002	-0.004	-0.010	-0.009	-0.008	-0.009
	(8.81)***	(0.42)	(1.48)	(6.41)***	(5.16)***	(4.20)***	(3.22)***
AR	0.001	0.020	0.005	0.002	0.002	-0.002	-0.001
	(0.48)	(4.62)***	(1.72)*	(0.76)	(0.79)	(0.58)	(0.18)
CAPX	0.005	0.001	0.002	0.003	0.005	0.007	0.009
	(13.18)***	(0.93)	(3.10)***	(5.17)***	(6.51)***	(8.21)***	(5.42)***
GM	0.007	0.011	0.014	0.027	0.009	0.001	-0.000
	(2.55)**	(1.61)	(3.00)***	(5.00)***	(1.88)*	(0.19)	(0.05)
S&A	-0.007	0.004	0.004	0.001	-0.015	-0.015	0.011
	(2.17)**	(1.21)	(1.16)	(0.08)	(2.19)**	(2.40)**	(1.21)
EQ	-0.003	0.001	-0.001	0.000	-0.004	-0.004	-0.003
	(5.07)***	(0.50)	(0.74)	(0.10)	(3.30)***	(3.71)***	(1.41)
LF	-0.009	0.023	0.001	-0.002	-0.011	-0.004	-0.026
	(3.04)***	(2.22)*	(0.31)	(0.39)	(1.87)*	(0.75)	(2.95)***
INV×Dummy_0	0.000	-0.004	-0.013	0.004	0.002	0.000	0.002
	(3.91)***	(0.95)	(1.63)	(4.10)***	(2.08)**	(11.51)***	(0.85)
adjgdp_growth	0.001	0.001	0.002	-0.000	0.001	-0.001	0.001
	(8.03)***	(3.26)***	(9.37)***	(1.77)*	(4.98)***	(2.67)***	(0.79)
interest	-0.001	-0.014	-0.005	-0.005	-0.001	-0.004	-0.008
	(10.24)***	(10.25)***	(10.30)***	(11.00)***	(3.87)***	(4.50)***	(9.72)***
Constant	0.003	0.026	0.007	0.034	0.002	0.021	0.016
	(2.83)***	(5.68)***	(2.90)***	(9.57)***	(0.51)	(3.88)***	(4.63)***
Observations	95511	2188	6159	23026	24419	27177	12542
R-squared	0.05	0.18	0.08	0.06	0.07	0.06	0.05

Table4-Panel C

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. Dummy_0 equals 1 when a firm's SIC code is between 5000 and 5999; it equals 0 otherwise. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CMtoB is current Market-to-Book ratio change (defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%;** significant at 5% level; *** significant at 1% level.*

$$CMtoB_{t,i} = \alpha + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_0 + \varepsilon_{t,i}$$

	1950-2005	60-69	70-79	80-89	90-99	2000-05
INV	-0.077	0.002	-0.033	-0.076	-0.090	-0.109
	(10.60)***	(0.02)	(3.32)***	(6.45)***	(6.84)***	(5.26)***
AR	-0.044	-0.120	-0.068	-0.081	-0.025	-0.003
	(4.13)***	(2.45)**	(4.51)***	(4.63)***	(1.30)	(0.09)
CAPX	0.036	0.021	0.004	0.025	0.053	0.064
	(11.90)***	(1.38)	(1.27)	(5.37)***	(8.76)***	(6.10)***
GM	-0.111	-0.465	-0.071	-0.123	-0.114	-0.092
	(7.33)***	(2.76)***	(2.62)***	(4.86)***	(4.15)***	(2.69)***
S&A	-0.112	-0.491	-0.045	-0.059	-0.167	-0.124
	(5.48)***	(4.13)***	(1.37)	(1.72)	(4.57)***	(2.46)*
EQ	-0.057	-0.001	-0.053	-0.069	-0.018	-0.083
	(14.17)***	(0.09)	(9.34)***	(9.62)***	(2.11)*	(6.35)***
LF	0.033	-0.112	-0.016	0.035	0.040	0.044
	(2.01)**	(1.33)	(0.58)	(1.26)	(1.41)	(1.08)
INV×Dummy_0	-0.000	0.033	-0.007	0.001	-0.000	0.047
	(0.44)	(0.12)	(1.62)	(0.32)	(0.28)	(2.93)***
adjgdp_growth	0.019	0.072	0.034	0.005	0.019	0.028
	(26.87)***	(8.03)***	(32.98)***	(2.91)***	(6.33)***	(6.40)***
interest	-0.001	-0.058	0.042	0.008	0.012	-0.070
	(1.36)	(2.97)***	(17.14)***	(3.61)***	(2.11)*	(12.06)***
Constant	-0.039	-0.048	-0.367	-0.053	-0.128	0.174
	(4.57)***	(0.36)	(18.68)***	(2.11)**	(3.47)***	(7.50)***
Observations	88462	3091	20038	23537	26603	15193
R-squared	0.02	0.17	0.09	0.02	0.02	0.04

Table5

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. Dummy_0 equals 1 when a firm's SIC code is between 5000 and 5999; it equals 0 otherwise. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CEPSL is five-year geometric mean growth in earnings and CHGEPS is current EPS change (both defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%;** significant at 5% level; *** significant at 1% level.*

$$CEPSL_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_0 + \varepsilon_{t,i}$$

	1950-2005	50-59	60-69	70-79	80-89	90-99	2000-05
CHGEPS	-0.099	-0.057	-0.088	-0.067	-0.069	-0.127	-0.183
	(6.16)***	(2.84)***	(3.86)***	(2.26)*	(2.43)*	(4.85)***	(1.85)*
INV	-0.009	-0.005	-0.002	-0.013	-0.003	-0.008	-0.025
	(3.41)***	(2.14)**	(1.11)	(2.06)**	(0.80)	(1.76)*	(1.31)
AR	0.001	0.003	0.001	-0.003	0.002	0.002	-0.015
	(0.20)	(1.44)	(0.74)	(0.34)	(0.22)	(0.22)	(0.63)
CAPX	0.003	-0.000	0.001	0.000	0.002	0.003	-0.003
	(2.01)**	(0.01)	(2.55)**	(0.05)	(1.18)	(1.25)	(0.41)
GM	-0.005	-0.002	0.003	-0.011	0.002	-0.003	-0.005
	(0.74)	(0.43)	(0.97)	(0.57)	(0.15)	(0.30)	(0.14)
S&A	0.000	0.000	0.001	0.004	-0.001	-0.009	0.012
	(0.06)	(0.11)	(0.40)	(0.22)	(0.09)	(0.69)	(0.29)
EQ	-0.019	0.001	0.001	-0.018	-0.019	-0.031	-0.014
	(7.60)***	(1.64)	(0.46)	(3.93)***	(4.12)***	(6.20)***	(0.57)
LF	0.016	0.006	-0.001	0.026	0.001	0.016	0.061
	(2.18)**	(1.24)	(0.54)	(1.37)	(0.12)	(1.24)	(1.52)
INV×Dummy_0	0.000	-0.009	-0.011	0.020	0.000	0.000	0.011
	(1.30)	(0.81)	(1.74)	(4.22)***	(0.46)	(1.45)	(0.57)
adjgdp_growth	-0.000	0.000	-0.000	-0.001	0.003	-0.003	0.000
	(0.16)	(0.32)	(0.45)	(1.31)	(3.58)***	(1.90)	(0.00)
interest	-0.001	-0.003	-0.000	-0.005	0.006	-0.005	0.000
	(2.04)*	(3.93)***	(1.22)	(2.47)**	(5.44)***	(1.94)	(0.00)
Constant	-0.012	0.010	0.009	0.023	-0.098	0.011	-0.041
	(2.96)***	(5.01)***	(5.37)***	(1.65)*	(7.50)***	(0.63)	(1.96)*
Observations	58614	1452	5217	15787	16105	18373	1680
R-squared	0.01	0.06	0.01	0.01	0.01	0.01	0.02

Table6-Panel A

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. For a given firm and fiscal year, if its inventory-to-sales ratio < 10th percentile of the industry (classified by using 2-digit SIC) at the year, Dummy_1=1; otherwise Dummy_1=0. Dummy_1 is always computed at t-1 for a given firm. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CEPS1 is one-year-ahead EPS change and CHGEPS is current EPS change (both defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%;** significant at 5% level; *** significant at 1% level.*

$$CEPS1_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_1 + \varepsilon_{t,i}$$

	1950-2005	50-59	60-69	70-79	80-89	90-99	2000-05
CHGEPS	-0.113	-0.226	-0.123	-0.134	-0.133	-0.137	-0.058
	(12.63)***	(2.63)***	(1.88)	(6.41)***	(7.88)***	(8.76)***	(3.12)***
INV	-0.014	-0.012	-0.006	-0.026	-0.020	-0.007	-0.010
	(8.74)***	(1.26)	(1.62)	(6.57)***	(8.15)***	(2.64)***	(2.38)**
AR	-0.001	0.018	0.002	-0.002	-0.001	-0.003	-0.000
	(2.38)**	(2.92)***	(1.12)	(0.62)	(2.25)**	(1.43)	(5.60)***
CAPX	0.000	-0.001	0.001	0.002	0.000	0.002	0.000
	(1.31)	(0.40)	(1.55)	(2.06)**	(0.05)	(2.33)**	(1.34)
GM	-0.000	-0.006	-0.000	0.000	-0.000	0.000	-0.000
	(81.52)***	(1.24)	(0.04)	(0.26)	(0.15)	(0.67)	(22.36)***
S&A	0.000	0.000	-0.000	0.018	0.002	0.002	0.026
	(2.59)***	(3.07)***	(0.41)	(4.04)***	(0.66)	(0.66)	(3.51)***
EQ	0.008	-0.000	0.000	0.002	0.005	0.016	0.025
	(4.92)***	(0.02)	(0.19)	(0.67)	(1.54)	(4.77)***	(3.41)***
LF	-0.001	0.044	-0.000	-0.024	-0.007	-0.000	-0.006
	(1.26)	(2.42)**	(0.18)	(1.91)*	(1.67)*	(0.32)	(1.77)*
INV×Dummy_1	0.006	0.012	0.007	0.017	0.009	-0.000	0.007
	(2.01)**	(0.91)	(1.20)	(2.51)**	(2.49)**	(0.06)	(0.93)
adjgdp_growth	0.002	0.001	0.002	0.002	0.003	0.000	0.011
	(7.68)***	(2.48)**	(7.54)***	(4.39)***	(6.15)***	(0.20)	(7.76)***
interest	-0.003	-0.017	-0.003	-0.004	-0.001	-0.006	-0.009
	(10.91)***	(8.56)***	(7.83)***	(3.01)***	(0.79)	(3.40)***	(5.42)***
Constant	0.034	0.049	0.012	0.048	0.004	0.042	0.021
	(11.87)***	(7.58)***	(4.63)***	(5.37)***	(0.52)	(3.75)***	(2.21)**
Observations	85226	1470	5412	19333	22037	25100	11874
R-squared	0.02	0.20	0.05	0.03	0.03	0.03	0.02

Table6-Panel B

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. For a given firm and fiscal year, if its inventory-to-sales ratio < 10th percentile of the industry (classified by using 2-digit SIC) at the year, Dummy_1=1; otherwise Dummy_1=0. Dummy_1 is always computed at t-1 for a given firm. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CROA is one-year-ahead ROA change and CHGROA is current ROA change (both defined in the appendix).The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%;** significant at 5% level; *** significant at 1% level.*

$$CROA_{t,i} = \alpha + \beta_0 CHGROA_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_1 + \varepsilon_{t,i}$$

	1950-2005	50-59	60-69	70-79	80-89	90-99	2000-05
CHGROA	-0.216	-0.172	-0.142	-0.207	-0.253	-0.232	-0.172
	(20.57)***	(3.78)***	(4.57)***	(10.13)***	(13.42)***	(12.34)***	(6.14)***
INV	-0.010	0.002	-0.005	-0.010	-0.012	-0.009	-0.010
	(9.06)***	(0.33)	(1.80)*	(5.29)***	(6.15)***	(4.10)***	(3.12)***
AR	-0.000	0.014	0.003	0.002	-0.000	-0.001	-0.000
	(0.29)	(2.80)***	(1.75)*	(1.89)*	(0.30)	(1.09)	(0.33)
CAPX	0.000	0.002	-0.000	0.000	-0.000	0.001	0.000
	(0.23)	(1.48)	(0.06)	(0.15)	(0.90)	(2.61)***	(0.25)
GM	-0.000	0.003	0.002	0.000	-0.000	-0.000	-0.000
	(77.67)***	(1.51)	(2.62)***	(0.72)	(0.90)	(0.47)	(32.05)***
S&A	-0.000	0.000	-0.000	-0.002	-0.006	-0.004	0.006
	(5.29)***	(1.20)	(2.44)**	(0.48)	(2.55)**	(1.42)	(0.92)
EQ	-0.004	0.001	-0.001	-0.000	-0.004	-0.005	-0.004
	(5.78)***	(0.55)	(0.87)	(0.43)	(3.50)***	(4.26)***	(1.84)*
LF	-0.001	0.022	0.000	-0.008	-0.004	0.001	-0.002
	(0.86)	(2.17)**	(0.17)	(2.51)**	(1.15)	(0.76)	(1.04)
INV×Dummy_1	0.000	-0.001	-0.001	-0.000	0.005	-0.001	-0.005
	(0.18)	(0.08)	(0.25)	(0.13)	(1.21)	(0.33)	(0.79)
adjgdp_growth	0.001	0.001	0.002	-0.000	0.001	-0.001	0.001
	(6.76)***	(3.46)***	(9.70)***	(1.92)*	(4.45)***	(2.98)***	(0.92)
interest	-0.002	-0.014	-0.005	-0.005	-0.002	-0.004	-0.008
	(10.78)***	(9.99)***	(10.28)***	(11.33)***	(4.33)***	(4.32)***	(9.78)***
Constant	0.004	0.025	0.007	0.034	0.003	0.020	0.017
	(3.41)***	(5.52)***	(2.74)***	(9.65)***	(0.82)	(3.77)***	(5.07)***
Observations	95511	2188	6159	23026	24419	27177	12542
R-squared	0.05	0.18	0.07	0.05	0.06	0.05	0.04

Table6-Panel C

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. For a given firm and fiscal year, if its inventory-to-sales ratio < 10th percentile of the industry (classified by using 2-digit SIC) at the year, Dummy_1=1; otherwise Dummy_1=0. Dummy_1 is always computed at t-1 for a given firm. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CMtoB is current Market-to-Book ratio change (defined in the appendix). The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%; ** significant at 5% level; *** significant at 1% level.*

$$CMtoB_{t,i} = \alpha + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_1 + \varepsilon_{t,i}$$

	1950-2005	60-69	70-79	80-89	90-99	2000-05
INV	-0.105	-0.074	-0.027	-0.101	-0.114	-0.147
	(10.90)***	(1.35)	(2.52)**	(7.29)***	(6.90)***	(5.02)***
AR	-0.003	-0.039	-0.035	-0.016	-0.007	-0.000
	(1.03)	(1.09)	(3.57)***	(2.83)***	(0.74)	(0.07)
CAPX	0.002	0.014	0.003	0.001	0.004	0.001
	(1.76)*	(1.03)	(0.69)	(0.72)	(1.87)*	(0.79)
GM	-0.000	0.002	-0.002	-0.002	-0.003	-0.000
	(2.87)***	(0.05)	(0.77)	(1.19)	(0.74)	(3.05)***
S&A	0.033	-0.084	0.030	0.041	0.011	0.049
	(2.73)***	(1.22)	(2.19)*	(3.38)***	(0.57)	(1.48)
EQ	-0.062	0.002	-0.054	-0.073	-0.019	-0.112
	(13.82)***	(0.11)	(9.36)***	(9.35)***	(2.00)*	(7.20)***
LF	-0.001	-0.130	-0.025	-0.018	-0.006	0.001
	(0.21)	(1.96)**	(0.98)	(0.88)	(1.59)	(0.20)
INV×Dummy_1	-0.004	0.188	-0.054	0.006	-0.008	0.018
	(0.18)	(0.66)	(1.93)	(0.17)	(0.20)	(0.27)
adjgdp_growth	0.019	0.076	0.034	0.004	0.018	0.030
	(24.03)***	(8.05)***	(31.80)***	(2.27)**	(5.25)***	(5.49)***
interest	-0.003	-0.063	0.042	0.007	0.010	-0.090
	(2.73)***	(3.06)***	(16.21)***	(2.89)***	(1.66)	(12.48)***
Constant	-0.036	-0.059	-0.361	-0.056	-0.126	0.223
	(3.85)***	(0.41)	(17.79)***	(2.00)**	(3.06)***	(8.26)***
Observations	88462	3091	20038	23537	26603	15193
R-squared	0.01	0.14	0.08	0.02	0.01	0.03

Table7

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. For a given firm and fiscal year, if its inventory-to-sales ratio < 10th percentile of the industry (classified by using 2-digit SIC) at the year, Dummy_1=1; otherwise Dummy_1=0. Dummy_1 is always computed at t-1 for a given firm. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CEPSL is five-year geometric mean growth in earnings and CHGEPS is current EPS change (both defined in the appendix).The table provides estimates of the following model. Figures in parentheses are robust t-statistics. * significant at 10%;** significant at 5% level; *** significant at 1% level.*

$$CEPSL_{t,i} = \alpha + \beta_0 CHGEPS_{t,i} + \beta_1 INV_{t,i} + \sum_{j=2}^{9} \beta_j Control_{t,i,j} + \beta_{10} INV_{t,i} \times Dummy\_1 + \varepsilon_{t,i}$$

	1950-2005	50-59	60-69	70-79	80-89	90-99	2000-05
CHGEPS	-0.099	-0.057	-0.095	-0.058	-0.070	-0.126	-0.184
	(6.49)***	(2.98)***	(4.30)***	(2.14)**	(2.59)***	(4.95)***	(1.89)*
INV	-0.010	-0.006	-0.005	-0.005	-0.007	-0.010	-0.022
	(3.06)***	(1.96)*	(2.40)**	(0.85)	(1.28)	(1.76)*	(1.01)
AR	-0.000	0.002	-0.001	0.001	-0.001	-0.002	-0.005
	(0.08)	(1.37)	(0.55)	(0.17)	(0.67)	(0.83)	(0.66)
CAPX	0.001	-0.000	0.001	0.001	0.002	0.001	-0.001
	(1.91)	(0.10)	(2.76)***	(0.58)	(1.48)	(1.16)	(0.72)
GM	0.000	-0.001	0.001	0.000	0.000	0.000	0.017
	(0.56)	(1.36)	(0.95)	(0.86)	(0.10)	(1.71)	(0.49)
S&A	0.000	0.000	-0.000	0.026	-0.003	0.002	0.011
	(0.25)	(4.22)***	(1.88)	(4.02)***	(1.41)	(0.29)	(0.51)
EQ	-0.019	0.001	0.001	-0.018	-0.020	-0.032	-0.015
	(7.76)***	(1.65)	(0.40)	(3.90)***	(4.21)***	(6.38)***	(0.62)
LF	0.000	0.006	-0.001	0.011	-0.003	-0.001	0.003
	(0.19)	(1.29)	(0.89)	(0.77)	(0.75)	(0.68)	(0.23)
INV×Dummy_1	0.007	0.004	0.011	-0.018	0.020	0.008	0.006
	(1.12)	(0.98)	(2.90)***	(1.16)	(2.63)***	(0.82)	(0.18)
adjgdp_growth	0.000	0.000	-0.000	-0.001	0.003	-0.003	0.000
	(0.09)	(0.31)	(0.28)	(1.44)	(3.63)***	(1.86)	(0.00)
interest	-0.001	-0.003	-0.001	-0.005	0.006	-0.005	0.000
	(2.21)*	(3.91)***	(1.42)	(2.70)***	(5.53)***	(1.93)	(0.00)
Constant	-0.014	0.010	0.009	0.024	-0.099	0.009	-0.046
	(3.26)***	(5.03)***	(5.46)***	(1.77)	(7.61)***	(0.54)	(2.20)**
Observations	58614	1452	5217	15787	16105	18373	1680
R-squared	0.01	0.06	0.02	0.01	0.01	0.01	0.02

Table 8

*The sample consists of all firms with SIC code from 2000 to 3999 and from 5000 to 5999 in the annual Compustat database from 1950 to 2005. Dummy_0 equals 1 when a firm's SIC code is between 5000 and 5999; it equals 0 otherwise. For a given firm and fiscal year, if its inventory-to-sales ratio < 10th percentile of the industry (classified by using 2-digit SIC) at the year, Dummy_1=1; otherwise Dummy_1=0. Dummy_1 is always computed at t-1 for a given firm. Fundamental signals include seven variables defined in The appendix expect ETR and AQ. Real GDP growth rate is defined as annual nominal GDP growth rate deducted by annual inflation rate measured by PPI. Interest rate is measured by three-month T-bill rate. CEPS1 is one-year-ahead EPS change. CMtoB is current Market-to-Book ratio change. CROA is one-year-ahead ROA change and CHGROA is current ROA change. CEPSL is five-year geometric mean growth in earnings, and CHGEPS is current EPS change. All of above variables are defined in the appendix .The table provides estimates of the following mode by running two-way fixed effects regression. Figures in parentheses are robust t-statistics. * significant at 10%; ** significant at 5% level; *** significant at 1% level.*

Panel A

	Model (1-1) CEPS1	Model (1-2) CROA	Model (1-3) CMtoB	Model (2) CEPSL
CHGEPS	-0.153			-0.064
	(50.29) ***			(12.43) ***
CHGROA		-0.280		
		(-73.01) ***		
INV	-0.013	-0.008	-0.073	-0.003
	(9.87) ***	(14.49) ***	(16.77) ***	(1.94) *
AR	-0.005	0.001	-0.035	0.001
	(2.77) ***	(1.35)	(5.35) ***	(0.51)
CAPX	0.012	0.005	0.033	0.000
	(19.63) ***	(19.55) ***	(16.75) ***	(0.83)
GM	0.019	0.010	-0.127	0.004
	(7.85) ***	(9.24) ***	(16.54) ***	(1.13)
S&A	0.028	0.000	-0.169	0.012
	(7.66) ***	(0.11)	(14.20) ***	(2.47) ***
EQ	0.005	-0.000	-0.002	0.000
	(1.55)	(0.20)	(0.23)	(0.06)
LF	-0.014	-0.013	0.027	-0.001
	(4.60) ***	(9.67) ***	(2.83) ***	(0.26)
adjgdp_growth	0.005	-0.007	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)
interest	0.000	0.000	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)

Panel B

	Model (3-1) CEPS1	Model (3-2) CROA	Model (3-3) CMtoB	Model (4) CEPSL
CHGEPS	-0.153			-0.064
	(50.28) ***			(12.43) ***
CHGROA		-0.278		
		(72.56) ***		
INV	-0.013	-0.008	-0.073	-0.003
	(9.93) ***	(-13.98) ***	(16.71) ***	(1.98) *
AR	-0.005	0.001	-0.035	0.001
	(2.77) ***	(1.42)	(5.34) ***	(0.50)
CAPX	0.011	0.005	0.033	0.000
	(19.66) ***	(19.29) ***	(16.72) ***	(0.85)
GM	0.019	0.010	-0.127	0.004
	(7.86) ***	(9.25) ***	(16.54) ***	(1.16)
S&A	0.028	-0.000	-0.169	0.012
	(7.65) ***	(0.11)	(14.19) ***	(2.46) ***
EQ	0.005	-0.000	-0.002	0.000
	(1.55)	(-0.26)	(0.23)	(0.06)
LF	-0.013	-0.013	0.027	-0.001
	(4.59) ***	(10.08) ***	(2.83) ***	(0.25)
INV×Dummy_0	0.000	0.000	-0.000	0.000
	(1.44)	(2.65)***	(0.71)	(0.66)
adjgdp_growth	0.005	0.001	0.000	0.000
	(0.00)	(8.90)	(0.00)	(0.00)
interest	0.000	-0.001	0.000	0.000
	(0.00)	(9.00)	(0.00)	(0.00)

Panel C

	Model (5-1) CEPS1	Model (5-2) CROA	Model (5-3) CMtoB	Model (6) CEPSL
CHGEPS	-0.160			-0.068
	(54.33) ***			(13.83) ***
CHGROA		-0.288		
		(-81.25)		
INV	-0.016	-0.011	-0.095	-0.004
	(10.78) ***	(16.40)***	(19.66)***	(2.25) **
AR	-0.004	-0.000	-0.001	0.002
	(1.83) *	(-0.59)	(-1.23)	(2.25)**
CAPX	0.001	-0.000	0.002	0.000
	(6.61) ***	(7.50)***	(6.93)***	(2.09)**
GM	-0.000	-0.000	-0.000	0.000
	(0.43)	(7.77)***	(6.76)***	(0.20)
S&A	0.00	0.000	0.009	0.000
	(0.72)	(0.02)	(2.18)	(0.17)
EQ	0.005	-0.000	-0.001	0.002
	(1.68)*	(-0.27)	(0.15)	(0.05)
LF	0.000	-0.001	-0.001	-0.002
	(0.81)	(2.07)**	(0.79)	(1.19)
INV×Dummy_1	0.008	0.003	0.019	0.008
	(2.77)***	(2.20)**	(1.88)*	(2.00)**
adjgdp_growth	0.000	-0.004	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)
interest	0.000	0.000	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)