

Real and Financial Industry Booms and Busts

Gerard Hoberg and Gordon Phillips*

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ABSTRACT

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*University of Maryland and University of Maryland and National Bureau of Economic Research respectively. Hoberg can be reached at ghoberg@rhsmith.umd.edu and Phillips can be reached at gphillips@rhsmith.umd.edu. We especially thank Matthew Rhodes-Kroff and David Robinson for many helpful comments. We also thank Ron Giammarino, Bill Latham, Josh Lerner, Lubos Pastor, Paul Povel, Paul Seguin and seminar participants at the AEA meetings, American University, Baruch, Delaware, George Mason, Georgia State, the 2007 Frontiers of Finance Conference, Insead, NBER, NYU, Oxford, UBC, Vanderbilt, University of Vienna, Washington University of St. Louis, the Western Finance Association and Yale for helpful comments. All errors are the authors alone. Copyright ©2007 by Gerard Hoberg and Gordon Phillips. All rights reserved.

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We examine how industry valuation, investment and product market competition affect firm cash flows and stock returns in industry booms and busts. In competitive industries, we find high industry-level stock-market valuation, investment and new financing are followed by sharply lower operating cash flows and abnormal stock returns. We also find analyst estimates are positively biased when industry valuations are high in competitive industries. In concentrated industries these relations are weak and generally insignificant. Explanations based on changes in risk explain only part of these differences. Our results suggest that when industry stock-market valuations are high, firms and investors in competitive industries do not fully internalize the negative externality of industry competition on cash flows and stock returns.

I Introduction

The fact that industries go through cycles of very high valuations is well known. These high valuations are commonly written about as the start of a “new era” in which productivity increases and new products justify very high stock-prices.¹ These high valuations frequently are accompanied by very high investment when firms perceive the returns to investment to be high relative to their cost of capital. However, there also exists the perception that industries commonly go through periods of over investment followed by subsequent low returns to investment. These periods of very high investment followed by low returns have been seen most recently in the telecommunications industry. From 1997 to 2002 investors added \$880 billion to this industry. Subsequently over one-half of this investment has been lost according to Thomson Financial in New York, with at least 63 telecommunications firms going bankrupt.

This phenomenon of very high investment followed by low subsequent investment is not just present in the recent internet boom. Other industries such as the Winchester disk drive industry and the early railroad industry have also experienced this pattern. Sahlmon and Stevenson (1987) note that in mid-1983 the Winchester disk drive industry had a market capitalization of 5.4 Billion but by years end, the industry value fell to 1.4 Billion as net income fell by 98 percent. Extensive miles of track were laid (including spurs to future towns not yet built) by firms in the railroad industry only to be followed by extensive bankruptcies in the late 1870s.²

Our paper examines real and financial outcomes following industry booms, and the extent that these outcomes are related to industry-level competition. We document the existence of significant booms and busts in the economy and examine how these booms and busts, along with industry investment and financing, impact subsequent industry cash flows and stock returns in competitive and concentrated industries. We ask whether the factors that predict changes in operating performance and stock returns differ for competitive or concentrated industries and for industries that decrease in concentration. We also examine whether these factors differ for growth versus value industries.

We find that future operating performance and stock returns are negatively re-

¹See WSJ March 23, 2000 “Is there rational for lofty prices?” and January 19, 1999 “IPOs are different in current era of net-stock mania”.

²See: <http://www.eslarp.uiuc.edu/ibex/archive/vignettes/rrboom.htm>. The Chicago Sun Times wrote in 1872: that wealth from the railroads “will so overflow our coffers with gold that our paupers will be millionaires, and our rich men the possessors of pocket money which will put to shame the fortunes of Croesus.”

lated to ex ante industry-level valuation (our measure of industry booms) and new financing in competitive growth industries and in industries with declining concentration. High stock-market valuations in these competitive industries are very likely to be followed by subsequent downturns in cash flows and stock returns, especially when there is substantial new financing and investment by firms in the industry. These relations are significantly more negative than similar relations in concentrated industries. These results persist after controlling for recent changes in capital expenditures in the industry and after controlling for potential mean reversion in operating cash flows.

We also show that analyst estimates of earnings per share (EPS) and stock returns are related to our measures of industry relative valuation and new financing. We examine whether the predictable busts we observe in cashflows were predicted by analysts and investors. In particular, we examine whether analyst forecasts of earnings per share (EPS) were optimistic relative to the ex-post EPS outcomes. We perform these predictive tests using only information known to the analysts at the time their forecasts were made. We find that analyst estimates were positively biased in competitive growth industries, especially in competitive industries with the highest relative valuation. We do not find analogous biases in concentrated industries nor in industries with high market risk.

Our results for abnormal stock returns also show striking patterns in industries with high valuations. In competitive industries with the highest relative valuation and in particular in competitive growth industries, we find that firm abnormal stock returns are negatively related to industry relative valuations, high investment and industry new finance.

These findings are economically significant - both for operating cash flows and stock returns. In competitive industries, a one standard deviation increase in relative industry valuation is associated with a three percent decline in operating cash flows. A one standard deviation increase in industry financing is associated with a 6.5 percent decline in operating cash flows.

In competitive industries, annual abnormal stock returns for an industry level portfolio in the highest quintile of relative industry valuation are over three percentage points lower than a portfolio in the lowest quintile. At the firm level, this difference exceeds ten percentage points. In concentrated industries, quintile returns are non-monotonic, and magnitudes are less than half as large.

Our results are consistent with a new explanation not previously documented: the effect of high competition among firms on both cash flows and stock prices in

competitive industries. The predictable busts we observe in these industries are consistent with a failure of investors and industry participants alike to internalize the effect of competition on longer term outcomes. These effects are not correctly forecasted by analysts and are not anticipated in stock returns using the latest style and factor adjustment models. In contrast, we do not find evidence of predictable busts in concentrated industries. We conclude that firms in concentrated industries, given their enhanced pricing power, are more likely to internalize the effect of their actions on industry-wide prices, cash flows, and stock returns.³

While the effect of competition on cash flows may be natural and expected, the predictability of stock returns following booms and busts, after adjusting for style characteristics and Fama-French factors, is more puzzling. We thus investigate whether our evidence is consistent with the predictions of recent rational models of booms and busts. Pastor and Veronesi (2005) show that increases in systematic risk can cause industry busts after booms as industry participants adopt a standard technology. We find that systematic risk changes, consistent with their model and with the recent real options models of Aguerrevere (2006) and Carlson, Fisher, and Giammarino (2004). In particular, we find that market betas increase and idiosyncratic risk decreases after industry booms. We also find that adjusting stock returns by ex post measured changes in risk reduces the magnitude of the return predictability we document. Thus changes in risk are an important factor in explaining the results we document. However, in industries with the highest valuations, more than 50 percent of the return predictability persists after adjusting for these changes. Hence, change-in-risk-based explanations cannot explain the extent of our findings in the most extreme industries.

In DeMarzo, Kaniel, and Kremer (2006a,b), participants with relative wealth concerns rationally overinvest (both in physical and financial assets) in industries with high systematic risk. Consistent with this view, our results are stronger in competitive growth industries with higher ex ante market risk. However, relative wealth is central to their theory and is difficult to directly test. Although this theory can explain part of our results regarding industries with high relative investment, which is most crucial to this theory, this variable is less significant than our other industry variables in predicting future cash flows and stock returns.

We conclude that although the effect of competition on changes in cash flows may be natural in competitive industries, current stock market theories cannot explain

³There is related research in economics that has examined theoretically whether there can be excessive competition and entry within industries. Weizsacker (1980), Martin (1984), Mankiw and Whinston (1986) and Scharfstein (1988) present models addressing this question. We discuss this literature more extensively in the next section.

the extent of the predictability of stock returns that we document. Also, these theories cannot explain the biased analyst estimates we find in some competitive industries. Overall, our findings in more extreme industries are consistent with stock market participants not anticipating the magnitude of the effects of competition in competitive industries.

Related to our paper is the recent theoretical and empirical work by Rhodes-Kropf and Viswanathan (2004) and Rhodes-Kropf, Robinson, and Viswanathan (2005), respectively. In these papers, sector and firm rational misvaluation affects merger and acquisition activity, as managers cannot distinguish between misvaluation and possible synergies. Only over time are synergies revealed and misvaluations corrected. Also related are papers on rational herding in investment and financial markets (early models are Scharfstein and Stein (1990) and Welch (1992)). In these models there is a signal extraction problem combined with the ability to observe earlier decisions by other, potentially better informed, industry participants. We discuss these models more extensively in the next section.⁴

What is common to these models and our interpretation of our findings is that firms make investment decisions based on multiple signals that are imperfect. Firms invest based on market signals as well as their own private information. Our study focuses on the impact of industrial organization given that firms face a coordination problem in competitive industries, and may not internalize, or have the incentives to internalize, the effect of their actions on industry prices and returns.

Although not considering the role of industry competition, related work in behavioral finance also documents results that are related to ours. Recent articles find low stock returns following high investment (see Titman, Wei, and Xie (2004) and Polk and Sapienza (2006) for cross-sectional results and Lamont (2000) for time-series results). Related to our results on industry financing, Baker and Wurgler (2000) show that when the share of equity issuance is in the top quartile, market-wide returns are 15 percent below the average market-wide returns over time.

Our results add to existing results in several new ways. First, our paper's main focus is on industry structure, and we show that subsequent outcomes after industry booms and busts vary dramatically across levels of industry competitiveness. Our results show that competitive industries, and not concentrated industries, experience significant downturns following high industry valuation and new industry financing. Second, our paper is the first to show that both stock returns and cash flows are low

⁴The idea that agents are attempting to extract information about fundamentals and how noisy signals create cycles can be found in the original Lucas island economy model and also in the real business cycle models of Kydland and Prescott.

in competitive industries following high industry valuation, high industry investment and, in particular, new industry financing. Third, we show that the effects of industry new financing and industry valuation on stock returns in competitive industries are especially negative in the top tercile of ex-ante industry valuation and the top tercile of ex-ante industry market risk. Fourth, we examine the role of changes in firm risk in explaining our predictable boom and bust patterns.

The remainder of this paper is organized as follows. Section II provides a more extensive discussion of industrial organization based theories of booms and busts and presents testable implications from these theories. Section III discusses the data and our empirical measures of firm valuation and relative valuation. Section IV provides summary statistics on booms and busts in different decades. Sections V and VI present and discuss the results on how industry valuation and financing booms impact subsequent operating cash flows and stock returns, respectively. Section VII concludes.

II Industrial Organization and Booms and Busts

Our central thesis is that industrial organization combined with industry valuation and financing are key to understanding industry booms and busts and subsequent industry outcomes. In this section we review the existing theoretical models that are related to our paper, and the empirical implications we examine from these theories.

Many existing theories of stock market booms and busts are silent on industrial organization. Given that our focus is on industrial organization, we focus first on the potential impact of industrial organization on booms and busts. At the end of this section we also consider the implications of risk-based theories of booms and busts.

A Competition in Concentrated Industries

There is a large body of work that has focused on the effects of competition in concentrated industries. The most famous work dates back to Schumpeter (1942) in which he coined the term “creative destruction.” Schumpeter’s work focused on the process of creative destruction in which entrants challenge the status quo through innovation. The view Schumpeter espoused in his posthumous book published in 1942 is that entrants with new technologies challenge firms in concentrated industries in order to displace established market leaders. Expansion and entry occurs in these industries as these industries are “where the money is.”

Related to the extent of entry into industries are formal models of how excessive entry may occur. Work by Von Weizsacker (1980), Perry (1984), Mankiw and Whinston (1986) formalize how there can be a tendency for excessive entry relative to the social optimum as entrants rationally do not take into account previous fixed costs by rival firms. The general implication of these models is that the industries have to have large fixed costs and prices above marginal cost. Entrants enter and invest if they can price below current industry prices. Firms enter despite large fixed costs as they can subsequently steal market share away from existing firms. We formulate the following hypothesis to test these implications:

Hypothesis 1: In concentrated industries with high valuations, high investment and high financing decrease industry and firm profitability.

B Competition in Competitive Industries

Unlike the previous work, it is possible that it is in competitive industries that the greatest risk from new competition exists. Schumpeter's early work in 1912 focused on creative destruction in competitive industries. In Schumpeter's creative destruction story, there is an innovation and the market gets very excited (rationally or irrationally) about the future prospects of this industry. These opportunities increase industry and firm valuations above their long-run historical levels. Firms observing these positive industry valuations, and positive own valuations, raise capital and invest. Firms may suffer from a signal extraction problem, as they may not know what fraction of the positive signal they receive is attributable to opportunities they have, or opportunities available to all firms in the industry. Individually, firms invest not taking full account of the investment decisions made by rivals who receive the same industry signal. More broadly, firms in competitive industries suffer from an inability to coordinate their investment.

Related to this idea is the extensive research on R&D and patent races (summarized by Reinganum (1989)) showing there can be excessive entry. This literature predicts that industries facing new opportunities that are also characterized by either significant economies of scale or patent protection can suffer excessive ex ante competition with the total investment exceeding the amount that would be socially optimal. This key feature is similar to business stealing models, where firms rationally do not consider the effect on rival firms. In contrast to business stealing models, however, industries can be explicitly ex ante competitive with free entry. In our empirical work we test the following hypothesis:

Hypothesis 2A: In competitive industries with high valuations, high investment

and high financing will be associated with decreased industry and firm profitability.

A related alternative to this coordination problem is the possibility that margins in this industry may decrease as customers wait for the new innovation to hit the market. Investment would be high as the industry is in the process of replacing itself and introducing the new product or innovation. Thus in our regressions examining subsequent changes in firm cashflows, in addition to examining investment that is high relative to long-run industry investment, we also examine the impact of high current investment spikes that occur as the industry is in the process of replacing itself and introducing the new product or innovation. Both of these effects are likely to be stronger in competitive industries.⁵

C Competition, Risk and Stock Returns

Following our examination of cash flows, we examine the effect of industry competition on abnormal stock returns. Recent work by Hou and Robinson (2005) empirically supports the contention that there is competitive risk priced in stock market returns. For theoretical consistency, if competitive risk is priced, assets exposed to this competitive risk factor should be more procyclical. In our context, competitive risk can be procyclical as follows. In boom times, opportunities arise that require additional financing and investment. These opportunities increase industry and firm valuations above their long-run historical levels. During times of high GDP growth, these valuations are likely to be even higher as access to capital is likely to be highest. However, in competitive industries, many firms can exploit these opportunities and thus these opportunities are less likely to persist. Capital will flow quickly into these industries, causing competitive industries to have a tendency to be more pro-cyclical.

In our empirical work we test the following risk-based hypothesis:

Hypothesis 2B: Decreased stock returns following industry booms in competitive industries result from a priced risk factor that varies with product market competition.

Aguerrevere (2006) introduces product market competition into a real options based model of the firm, and shows that competition can affect asset returns and firm risk via industry demand. A key prediction is that market risk will decrease as demand increases in competitive industries (industry booms), but will then increase as demand declines (industry busts). Decreases in market risk during booms arise because firms in competitive industries face a high likelihood of preemption by com-

⁵We also examine the pattern of cash flow changes prior to the industry booms and attempt to see if a simple mean reversion explanation can explain changes in cash flows.

petitors. These firms find it optimal to exercise growth options earlier than firms in concentrated industries. When demand decreases, market risk increases more in competitive industries because firms in these industries optimally delay shut down decisions because the benefits of shutting down capacity accrue most to industry rivals. This increase in market risk in competitive industries is especially strong as these firms have higher operating leverage when demand declines.⁶

Hypothesis 2C: During industry booms, systematic risk decreases more for firms in competitive industries than in concentrated industries. Following decreases in demand (industry busts), systematic risk increases more for firms in competitive industries than in concentrated industries.

The alternative to Hypotheses 2B and 2C is that risk changes do not explain subsequent stock market returns given market participants fail to take into account the effect of product market competition on cash flows.

D Non-Industrial Organization Theories of Valuation Booms and Herding

Rhodes-Kropf and Viswanathan (2004) (RKV) model how asymmetric information about the size of synergies and misvaluations cause merger waves to develop. In RKV, both the bidder and target have private information about the extent they are misvalued. However, they do not know if this misvaluation is firm- or industry-specific and target firms do not know the size of potential synergies. Targets end up putting higher weight on potential synergies in periods of high industry misvaluation or industry booms. In our context, potential investors in a new technology may end up putting higher weight on the potential value of new technology in periods of industry booms.

In addition, there are many different models of industry herding that can produce booms. In Scharfstein and Stein (1990) firms again face a signal extraction problem. Uncertainty about the return on investment combined with uncertainty about own ability, causes managers to make decisions that are similar to those of prior participants. Welch (1992) models informational cascades and shows that herding can emerge in IPO markets as individuals find it rational to ignore their own private information and base their purchase decision on others' decisions. Likewise, in our context, uncertainty or asymmetric information about the value of new technologies may cause market participants to invest similarly to other firms causing a boom in

⁶The operating leverage effect on stock market risk and returns in a real option context was introduced by Carlson, Fisher, and Giammarino (2004).

both valuation and investment along with the financing of this investment.

Three recent articles offer explanations regarding how boom and bust patterns can develop rationally. Pastor and Veronesi (2005) and DeMarzo, Kaniel, and Kremer (2006a,b) model how new technological opportunities can play a role in the formation of rational boom and subsequent bust patterns. While many of these theories are hard to separate from models of excessive competition or herding, we do test two hypotheses about the role of risk in booms and busts.

In Pastor and Veronesi (2005), there is a rational boom and bust linked to a switch of uncertainty (risk) from idiosyncratic to systematic. This change in the composition of risk occurs after firms standardize on the winning technology. This increase in systematic risk will thus cause a subsequent drop in stock prices. We thus test the following prediction of their model:

Hypothesis 3A: Systematic risk will increase and idiosyncratic risk will decrease following industry valuation booms.

We test a related hypothesis from Demarzo, Kaniel, and Kremer (2006b) and Demarzo, Kaniel, and Kremer (2006a). They predict that high risk technologies that are correlated with aggregate consumption can lead to excessive and often unprofitable investment in competitive industries. While they focus on the dissipation of rents in competitive industries with decreasing returns to scale, they do not model the differences between competitive and concentrated industries.

They model how profitable and fast growing firms have low expected returns because they provide consumption insurance to investors, especially when future resources are in limited supply. These relative wealth concerns can explain why overinvestment and herding can develop in industries that are viewed as providing large fractions of future consumption. As noted by the authors, these concerns should be most relevant when the distribution of industry returns is highly correlated with the market. The main idea is that high systematic risk implies co-movement, and hence a more likely outcome that other agents in the economy will become rich if the new technology is successful. We thus test the following prediction:

Hypothesis 3B: In industries with high systematic risk, subsequent stock market returns will be negatively related to high industry valuation, investment, and financing.

III Data and Measures of Competition and Valuation

A Industry Competitiveness

We classify industries by their competitiveness on the basis of three-digit SIC codes using measures that capture both public and private firms. We discard all firms residing in industries that are identified as “miscellaneous” by the Census Bureau, as it is likely that firms in these groups cannot be classified (and hence they do not compete in similar product markets).⁷ We also classify industries into growth and value industries based on industry-average book to market ratios. We first winsorize firm book-to-market ratios at the 1/99 percentile level prior to taking industry averages and classify growth (value) industries as industries in the lowest (highest) tercile of industry book-to-market ratios.

We merge data obtained from Compustat and CRSP to obtain information on firm financials and stock prices. Following standard practice in the literature, we exclude from our sample financial firms (SICs 6000-6999) and regulated utilities (SICs 4900-4999). We also restrict our sample to the years 1972 to 2004, as net equity and debt issuing activity are not available prior to this period. In order for a firm year to remain in our sample, at a minimum, the firm must have valid CRSP and COMPUSTAT data both in the given year and in the previous year. Merging the CRSP and Compustat databases, and applying these filters, yields a total of 108,522 firm year observations.

We classify industries into competitive and concentrated industries using both public and private firms.⁸ We calculate a measure of industry concentration that accounts for privately held firms by combining COMPUSTAT data with Herfindahl data from the Commerce Department and employee data from the Bureau of Labor Statistics (BLS).⁹ The inclusion of BLS data is necessary to examine all industries with greater depth, as the Department of Commerce Herfindahl data only covers manufacturing industries.

To classify industries by their competitiveness, we calculate a Herfindahl–Hirschman Index (HHI) for each industry in each year using a two-step procedure. First, for

⁷Because they operate in nearly identical product markets, we also combine the following industries in each set of parentheses: (20, 70), (210, 211), (220-225), (254, 259), (278, 279), (322, 323), (333, 334), (520, 521), (533, 539), (540, 541), (570, 571), and (700, 701).

⁸Our initial tables just used Compustat public firms to classify industries. These tables are available from the authors and showed similar, slightly stronger findings.

⁹We thank David Robinson for sharing this data with us.

the subsample of manufacturing industries (where we have actual HHIs including both public and private firms for every fifth year), we regress actual industry HHI from the Commerce Department on three variables: the Compustat public-firm-only Herfindahl,¹⁰ the average number of employees per firm using the BLS data (based on public and private firms), and the number of employees per firm for public firms using Compustat data. We also include interaction variables of each of these firm size variables with the HHI calculated from Compustat data.

In our second stage, we use the coefficient estimates from this regression to compute fitted HHI for all industries. This fitted method has the advantage of capturing the influence of both public and private firms, and can also be computed for all industries. To mitigate measurement error, we do not use these fitted HHIs in any regression, but rather we classify industries into concentrated versus competitive terciles based on this variable. We classify industries in the highest tercile of fitted HHI as concentrated and those industries in lowest tercile as competitive.

The correlation between actual HHIs, as specified by the Department of Commerce for manufacturing industries, and our fitted HHIs, is 54.2%. The correlation between Compustat HHIs using segment data and the actual manufacturing HHIs is only 34.1%.¹¹ We conclude that our fitted HHIs offer significant improvements as a measure of true product-market competitiveness relative to the basic COMPUSTAT HHI and has the advantage over manufacturing HHIs in that it covers all industries.

B Industry Valuation, Investment and Financing

In order to identify the conditions that likely surround industry booms and busts, we construct three proxies of new industry-level opportunities and relative industry valuation: (1) industry-wide valuation relative to historical values using a procedure described below, (2) industry-wide investment relative to predicted investment, and (3) industry financing. These proxies either reflect beliefs about an industry having good future prospects (industry valuation), or they measure current actions that are consistent with acting on new opportunities (investment and finance).

We define an industry and firm’s “relative” time-series valuation (we refer to this

¹⁰We compute Compustat HHI using the firm segment tapes in years the segment data is available (1984 onwards) to break a multi-segment firm’s sales into the industries in which it operates. We then include two Compustat HHI variables in our regression. The first variable equals the HHI in years prior to 1984, and zero in years when the segment tapes are available. The second one equals the HHI in subsequent years using the segment tapes, and zero in previous years.

¹¹In an earlier version of this paper we conducted all of our tests results using the Herfindahls computed from Compustat and the Compustat segment tapes. The results were similar and slightly stronger than the ones we report in the tables.

measure as relative valuation subsequently) using a three step procedure that is based on the third valuation model in Rhodes-Kropf, Robinson, and Viswanathan (2005) (RRV). The difference between our valuation model and the one in RRV is that we only use lagged data in constructing our measure of relative valuation given we are examining ex post returns and operating performance and do not want to have a look ahead bias in our predictions. As RRV note, this valuation model is based on a long tradition in the accounting literature that examines the value relevance of accounting information.¹² We group each firm “i” into its industry “j” based on its three digit SIC code in year “t”. (1) We estimate the parameters of the RRV valuation model using data from year t-10 to t-1. (2) These ten year fitted industry-specific regression coefficients are used to compute predicted values in year t. (3) Relative valuation is the actual value (log market capitalization) in year t minus the predicted value in year t. The fitted valuation model used in the first step assumes that each firm’s value is a function of its characteristics and industry specific prices of characteristics as follows:

$$\begin{aligned} LnMVE_{i,j,t} = & \beta_{j,0} + \beta_{j,1}LnBVE_{i,j,t} + \beta_{j,2}Ln(abs(NI_{i,j,t})) \\ & + \beta_{j,3}NEGNIDUM_{i,j,t} + \beta_{j,4}LEV_{i,j,t} + \epsilon_{i,j,t} \end{aligned} \quad (1)$$

The left hand side variable is the natural logarithm of the firm’s market value of equity.¹³ The characteristics in equation 1 are the log book value of equity, log net income, a dummy for negative net income, and the firm’s leverage ratio. Relative firm-level valuation is then equal to a firm’s actual valuation less its predicted valuation using the coefficients from 10 years of lagged data and the actual firm accounting data in year t:

$$RelativeValuation_{i,j,t} = LOGMVE_{i,j,t} - Predicted LOGMVE_{i,j,t} \quad (2)$$

Relative industry-level valuation is the average of all relative firm-level valuations over all firms in each three-digit SIC industry.

To show that these results are robust and do not depend on whether the first-stage regression is estimated in levels we also estimate the following model:

$$Ln(MVE_{i,j,t}/BVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}LnASSETS_{i,j,t} + \beta_{j,2}Ln(abs(NI_{i,j,t})) \quad (3)$$

¹²See Holthausen and Watts (2001), Kothari and Zimmerman (1995), Kothari (2001), and Barth, Beaver, and Landsman (2001) for surveys and discussion of the debates within this literature.

¹³While these variables are in levels, estimation of this equation does not produce biased coefficients if the variables are cointegrated. Tests using residuals indicated that cointegration is supported. We also estimate an alternative model (equation 3) using the ratio of Market to Book Equity.

$$+ \beta_{j,3}NEG\text{NIDUM}_{i,j,t} + \beta_{j,4}LEV_{i,j,t} + \epsilon_{i,j,t}$$

From this model we obtain relative (unpredicted) market to book equity in an analogous manner as above.

For robustness, we also estimate a simpler model that is analogous to a Price to Earnings (PE) model where we regress the log of the market value on log net income and a dummy for negative net income as follows:

$$\text{LnMVE}_{i,j,t} = \beta_{j,0} + \beta_{j,1}\text{Ln}(\text{abs}(NI_{i,j,t})) + \beta_{j,2}NEG\text{NIDUM}_{i,j,t} + \epsilon_{i,j,t} \quad (4)$$

Again this equation is estimated on 10 years of lagged data by industry and then the coefficients are used to predict current period market value using current net income. Our measure of relative valuation is then calculated as the difference between the log of current market value and the predicted log market value.

Although we do not present results from these regressions to conserve space, we do note that the explanatory power from these regressions is high, similar to the results presented in Rhodes-Kropf, Robinson, and Viswanathan (2005). The adjusted R-squareds from each of these industry-level regressions range from 63 percent at the 5th percentile (the lowest R-squared is 4.7 percent) to 96 percent at the 95th percentile, with a median R-squared of 85 percent.

Relative firm- and industry-level investment is computed using a similar method. We regress log capital expenditures on lagged Tobin's q, lagged assets (COMPUS-TAT annual data item 6) and also the log of operating income before depreciation (COMPUSTAT annual data item 13). Tobin's q is calculated as the market value of equity plus the book value of debt divided by the book value of assets. We calculate relative unpredicted investment (which we call relative investment) as equal to actual investment less predicted investment from this industry panel regression. Relative industry investment is given as the average of relative firm-level investment in each industry.

We define a firm's "new financing" in a given year as the sum of its net equity issuing (COMPUSTAT annual data item 108 minus item 115) and net debt issuing activity (annual data item 111 minus item 114) in the given year, and divide by its assets. For industry financing, we sum up all firm financing in the industry and divide by total industry assets.

These proxies are constructed using each industry's own characteristics as a benchmark for determining relative firm valuations. We use out-of-sample regression coefficients based on past data to predict our industry and firm valuations, so that our proxies can be used in an unbiased fashion to predict future stock returns and

future accounting performance. For all three variables (relative valuation, relative investment, and new finance), we compute industry deviations as the raw industry average minus the predicted industry average. Firm-level deviations are equal to each variable’s raw value minus its industry average.

C Operating Cash Flows and Stock Returns

This section describes how we calculate operating cash flows and abnormal stock returns. We examine whether firm and industry relative valuation, investment, and financing predict future operating cash flows and abnormal stock returns.

Our first set of tests regresses the change in firm-level operating cash flow divided by firm assets (year $t+1$ - year t) on relative industry- and firm-level valuation, investment and new finance. Our definition of operating cash flow is operating income (COMPUSTAT annual item 13), and we scale each year’s operating cash flow by assets (COMPUSTAT annual item 6) in each year. For robustness, we also estimate our results using the change in operating cash flow by divided by beginning period assets (year t).

We compute abnormal returns using two methods advocated by recent studies. The first method is based on Daniel, Grinblatt, Titman, and Wermers (1997). A firm’s “monthly abnormal return” is its raw return less the return of one of 125 benchmark portfolios formed on the basis of size, book to market, and past 12 month return.¹⁴ Portfolios are formed at the end of each June,¹⁵ and (1) firm size is the CRSP market capitalization on the formation date, (2) the book to market ratio uses accounting data from the most recent fiscal year ending in the last calendar year, and (3) past return is based on the 12 month period ending in May of the formation year. Portfolio breakpoints are based only on NYSE/AMEX firms, and we first form quintiles in each year based on firm size. Then, firms in each size quintile are further sorted into quintiles based on their industry-adjusted book to market ratio (firm-specific book to market ratio less the average book to market ratio of the corresponding Fama-French 48 industry).¹⁶ Each of the 25 size and book to market portfolios is then further sorted into quintiles based on each firm’s preceding 12 month return.

¹⁴Results are robust to forming benchmarks just based on 25 size and book to market portfolios (not displayed).

¹⁵Portfolios are formed at the end of June so all previous fiscal year accounting data is public at that time.

¹⁶Our results are not materially different if we do not adjust book to market within each industry. We use the industry-adjusted method to maintain consistency with past studies.

The second method uses the Fama-French factors with an adjustment proposed by Mitchell and Stafford (2000). We begin by identifying a firm year as one firm’s returns from July to June. This designation permits us to use the same accounting based variables to predict annual returns as above. We regress each firm year’s twelve monthly stock returns on four factors: the three Fama-French factors plus momentum.¹⁷ From these time series regressions, we extract a database of yearly firm-specific intercepts describing each firm’s abnormal return in the given year. We define a firm’s “Mitchell/Stafford alpha” as its yearly intercept minus the average yearly intercept of firms residing in the given firm’s benchmark portfolio based on size, book to market, and past 12 month returns (as described above). This two-stage method ensures that returns have sufficient control for known risk factors even when the relationship between factor loadings and returns is non-linear. Although we do not present results based on “buy and hold abnormal returns” due to the criticisms noted in Mitchell and Stafford (2000), we can report that our results are robust to using this method. To further ensure robustness, we present results using three regression methods: (1) OLS with year fixed effects and industry clustering adjustments, (2) OLS with year fixed effects and both industry and year clustering adjustments, and (3) the Fama-MacBeth method.

D Systematic and Idiosyncratic Risk

In order to explore whether changing risk attributes can explain industry busts following industry booms we examine both systematic and idiosyncratic risk. We first define a firm year as beginning on July first of year t , and ending on June 30th of year $t+1$. Where d denotes one trading day in year t , we then regress the daily stock returns associated with firm i in year t on the three Fama-French factors plus momentum as follows (one regression per firm-year)

$$r_{i,y,d} = \alpha_{i,y} + \beta_{i,y,1}MKT_d + \beta_{i,y,2}HML_d + \beta_{i,y,3}SMB_d + \beta_{i,y,4}UMD_d + \epsilon_{i,y,d} \quad (5)$$

We define a firm year’s idiosyncratic risk as the standard deviation of the residuals from this regression. We examine various types of systematic risk as measured by each firm year’s beta (factor loading) with respect to the four risk factors $(\beta_{i,y,1}, \beta_{i,y,2}, \beta_{i,y,3}, \beta_{i,y,4})$. To identify whether risk changes are associated with our industry and firm valuation measures, and thus might be related to the return predictability we document, we regress annual changes in these risk exposures (betas) on our industry and firm measures of relative valuation, investment and financing.

¹⁷We thank Ken French for providing these factors on his website.

We also estimate nonpredictive regressions where we regress abnormal stock returns on all measures of risk for the year following the abnormal returns, and use the residual from this regression as a measure of “change-in-risk-adjusted stock returns”.¹⁸ The idea we are examining is whether market participants anticipate future risk changes. In particular, we examine if stock returns remain related to our industry and firm measures of relative valuation, investment and financing after adjusting for changes in risk.

IV Descriptive Statistics

Table I lists the top 5 booms in competitive industries (those in the lowest tercile based on sales HHI using three-digit SIC codes from Compustat) in each of the following four decades: 1970s, 1980s, 1990s, and in the new millennium.

[Insert Table I here]

Table I shows that in all competitive industries, Herfindahl indices are below .25. Some of the most extreme booms have over one hundred publicly traded firms competing in the same SIC code. The business services industry had 843 public firms. Although this last example is part of the well-known late 1990s technology boom, the other examples suggest that high levels of valuation at the industry level are not unique. Many of the most extreme competitive industries in the 1980s (over 100% above predicted industry valuation - our measure of relative industry valuation) deviated even further from their long-term valuations than those in the 1990s (70% to 90% above predicted industry valuation). The table also shows that the most extreme booms were not necessarily in technology industries, as was the case in the late 1990s. For example, at least two of the most extreme 1980s boom industries were based in retail operations. In the 1970s, more traditional industries including petroleum and electrical work were among the most extreme booms. Finally, because the column of weighted high industry valuations is generally the same as the unweighted column, we conclude that both large and small firms alike are prone to industry booms and busts.

[Insert Table II here]

Table II lists the top 5 booms in concentrated industries (those in the highest tercile based on predicted HHI), in the 1970s, 1980s, 1990s, and 2000s. The selected

¹⁸We thank Lubos Pastor for this suggestion.

industries generally have concentration levels exceeding 0.4. Tables I and II show that the differences between the herfindahls constructed using public Compustat data alone and the fitted herfindahls using both public and private firms are generally small, with most industries remaining in the high or low competition terciles on both measures. Given our tests do not use the concentration measures explicitly but rather examine industries by high and low competition categories, we thus expect and find similar results using either herfindahl measure.

The most striking difference between concentrated and competitive industries is that booms appear to be more extreme in concentrated industries. For example, Beer and Ale Distributors were 234% above their predicted industry valuation in 2005, and yarn and thread mills were 175% above their predicted industry valuation in 1996. Statistical noise might be one reason for the larger magnitude of booms in the most extreme concentrated industries, as their smaller number of firms makes the practice of computing industry-specific valuation models more difficult. Although these booms appear to be larger, our later tables presented in this paper show that we do not find evidence that concentrated industries experiencing booms actually underperform. Hence high industry valuations in concentrated industries likely last more than several years.

Table III reports summary statistics for the boom and bust proxies, and for the key variables that our study explains.

[Insert Table III here]

The sample wide statistics in Panel A show that the standard deviation of industry “relative” (valuation above predicted valuation) is significant, indicating that many industries have valuations above and below predicted levels. Financing tends to be slightly positive, as more firms raise new capital relative to those who are paying down debt and repurchasing shares. The table also shows that all three firm level variables have higher standard deviations than their industry counterparts. These results suggest that actual industry valuations can vary dramatically, as one standard deviation is a full 45% of the value of an industry.

Panels B and C display descriptive statistics for competitive and concentrated industries, respectively. For virtually all variables, mean levels are close to zero. The table also shows that concentrated industries generally have higher standard deviations. This difference is most stark for investment relative to predicted levels (concentrated industries have 38% more standard deviation), but rather moderate for relative industry valuation (18% difference). Interestingly, at the firm level, the

reverse is true and competitive industry firms appear to have more volatile characteristics than concentrated industry firms (although differences are a bit more modest). The average returns in Panels B and C also confirm the results of Hou and Robinson (2005). The annual equivalent of the difference in monthly returns across the two panels suggests that concentrated industries underperform competitive ones by about 2% per year. In contrast, we find no material difference in accounting performance across these two groups, a result that also supports Hou and Robinson (2005)’s findings.

V Operating Cash Flows

We now examine the effect of industry booms on subsequent firm-level operating performance. We regress the change in operating cash flow on both firm- and industry-level valuation relative to predicted valuation, investment relative to predicted values and also new finance. From this point on in the paper, we use the term “relative” valuation and “relative” investment to refer to actual valuation and investment less their predicted values.

A Firm Level Results

Table IV displays the results of firm-level regressions of the change in operating cash flow on relative valuation, relative investment, and new financing. We estimate our regressions for all industries in columns one through three and then separately for growth industries in columns four through six. For each independent variable, we separately examine the difference between the actual industry average and the predicted industry average and its firm specific deviation from its industry average.¹⁹ We separately include industry averages to directly study the main topic of this paper: industry booms and busts, and their link to an industry’s organization. The firm-level components provide a natural test of our relative valuation proxy, and permit us to ask whether a firm that deviates from its explained valuation (as explained by the industry-specific price of its own characteristics), experiences operating cash flow decreases or increases as might be predicted by a high valuation.

We estimate the regressions using OLS and random firm effects using an unbalanced panel. We also correct for correlated standard errors within years and within industries and heteroskedasticity in the regression errors. We do not present results

¹⁹All three firm-level variables are less than ten percent correlated with their corresponding industry components, so including both variable classes does not induce multicollinearity. This low correlation is expected by construction.

for the fixed effects specification at the firm level as Moulton (1986) has shown that fixed effects estimation at the firm level is inappropriate and produces negatively biased standard errors when you have additional variables at the industry level. We also do not estimate Fama-MacBeth regressions when examining operating cash flow, as our tests document the existence of firm-level effects. Petersen (2005) has recently shown that Fama-MacBeth regressions are biased when there is a significant firm-level effect (which we find in this case, as is common when examining accounting data).

[Insert Table IV here]

Panel A of IV shows that industry-level variables matter, especially in growth industries, in columns four through six. In growth industries, high relative industry valuation, investment, and an industry's average new financing are all negatively related to future operating performance. These results are also robust across specifications, and are also robust to excluding the technology boom of 1998-2000 (reported in an earlier version).²⁰ We next examine if industrial organization can explain these striking industry patterns.

Panels B and C display results for the most competitive tercile of industries and the most concentrated tercile of industries, respectively. Terciles are formed based on the fitted Herfindahl, which is predicted using data on both public and private firms in each industry. We find that high industry-level relative valuation, investment and new finance are indeed more important in Panel B for competitive industries than they are in Panel C. The industry valuation coefficient is statistically stronger in competitive versus concentrated industries. In addition to the higher significance levels, which might be partially due to the larger number of observations in Panel B (competitive industries have more firms), the table also shows that the coefficient magnitudes are significantly different across levels of industry competitiveness. In competitive industries, a one standard deviation increase in industry valuation is associated with an 6.5 percent decline in operating cash flows - compared to a slight increase for concentrated industries.

Columns four through six show that the negative relations between cash flows and relative industry valuation, investment and new financing are even more negative in competitive growth industries. We conclude that industry valuation plays a larger role in predicting industry booms and busts in competitive industries than

²⁰This result suggests that the technology boom was indeed an important example of a recent boom and bust, but also that the sequence of events surrounding the technology boom are not new, as other industries have befallen similar fates throughout our sample period.

in concentrated ones - and particularly so in competitive growth industries. These results support Hypothesis 2A, which predicts a decline in competitive industries following high industry valuation.

Lastly, Panel D shows that relative industry valuation and new industry financing are highly important in industries with declining concentration. The magnitudes of the coefficients for high industry valuation and industry financing are both more negative than they are for other subsets of data. Columns four through six of Panel D also show that the magnitudes of the coefficients on the industry variables are even more negative in growth industries with declining concentration.

Panel D supports the proposition that high competition might be a primary driver of extreme industry busts, as theories of industrial organization suggest that declining concentration is one way to measure increasing competitiveness. As new technologies or opportunities emerge in a changing industry, multiple firms invest and exploit the new opportunity when it might only be optimal for a small number to do so. The coordination failure that stems from high valuations causes large amounts of investment, and industry booms soon become industry busts. The significance of both firm and industry new finance suggests that not only do industries suffer from very high competition, but also that the most aggressive rivals likely suffer most.

We also conduct the following robustness checks. We examine results using the alternative M/B model and the simpler “PE” model. The results are similar to the results discussed above.

These results are consistent with industry investment and competition causing a negative externality on industry firms in competitive industries but not in concentrated industries. These findings are perhaps not surprising as it is consistent with what we naturally believe occurs - high product market competition drives down cash flows when industry valuations are high. In competitive industries, firms cannot, or find it difficult to, coordinate their product market policies and naturally do not take into account the negative externality their investment has on industry cashflows.

B Investment Spikes and Cash Flow Mean Reversion

In Table V, we explore whether our previous results are robust to different measures of investment spikes and also to mean reversion in cash flows.

We examine if our results are robust to different measures of investment spikes. Specifically, we add the recent percentage change in investment from period $t-2$ to $t-1$

as an independent variable.²¹ We thus examine if recent new product introduction or innovation in these industries causes decreased cash flows and increased investment. The explanation is that margins in this industry may decrease as customers wait for a new innovation to hit the market. Investment would be high as the industry is in the process of replacing itself and introducing the new product or innovation. We do find that this variable is negative and significant for the whole sample and in competitive industries. However, it is not significantly different in competitive versus concentrated industries and our previous results still hold. Thus new product introduction does not explain the differences in cash flows we document based on industry competitiveness.

[Insert Table V here]

We also examine the pattern of cash flow changes prior to the industry booms and attempt to see if a simple mean reversion explanation can explain the changes in cash flows we document. In particular a growing industry may suddenly have very high EBITDA growth. The market decides (rationally or irrationally) that growth will now be higher. This may be correlated with high valuation, high investment and high financing. Even if the market is correct, the next period may see reduced EBITDA because of mean reversion given that industry supply may be very elastic in competitive industries. This mean reversion should thus be more pronounced in competitive industries. We thus include the lagged change in operating cash flow plus depreciation (EBITDA) into the previous specification. Inspection of Table V reveals that this variable is only significant in Growth industries, and in particular, in concentrated industries. However it is positive and significant in these two cases. Thus rather than showing mean reversion, there is some evidence of persistence of changes in cash flows for concentrated industries - consistent with firms in these industries having some market power.

C Analyst Forecasts

In this section, we examine whether analysts accurately predict cash flow realizations conditioning on our measures of industry valuation, financing, and investment. This test helps us to address whether analysts forecast the cashflow declines we observe, and in particular, whether they forecast the effect of increased competition on ex-post outcomes.

We use the methods outlined in Hong and Kubik (2003) to examine analyst

²¹We thank Matt Rhodes-Kroff for this suggestion.

forecast optimism. We use I/B/E/S analyst forecast data from 1983 to 2005, and to generate our measure of forecast optimism, we first define $F_{i,t}$ as the consensus forecast of earnings per share one year before firm i 's fiscal year end in year t , and $A_{i,t}$ as the actual earnings per share ultimately realized at year t 's fiscal year end. $P_{i,t}$ denotes the share price at the time the forecast is made. Analyst forecast optimism is then defined as follows:

$$\text{Optimism}_{i,t} = \frac{F_{i,t} - A_{i,t}}{P_{i,t}} \quad (6)$$

In Table VI, we explore whether ex-post analyst forecast optimism is related to our ex-ante measures of industry booms. We restrict our analysis to competitive industries, although we can report that we find no significant evidence of analyst optimism within concentrated industries (not reported to conserve space). Within the subsample of industries in the most competitive tercile, we present results for all firms in this group, firms that also reside in industries in the high growth tercile and in the high relative valuation tercile. We also examine industries based on the highest market risk tercile. All terciles are formed by sorting industries in each year on the basis of the given characteristic. Market risk is computed using the industry's average market beta.

[Insert Table VI here]

We find that analysts indeed make forecasts that are biased upwards when industry relative valuations are high in some of our subsamples, but not in others. In particular, forecasts are biased upward in the competitive high growth tercile, and especially in industries residing in the high relative valuation tercile. However, we find no evidence of an analyst bias in the broader sample of competitive industries, nor in the high market risk tercile, nor do we find similar effects in concentrated industries.

We conclude that analysts likely do not anticipate the cashflow declines we reported earlier in this section in growth industries where valuation uncertainty is high. Our finding that this bias is largest in the high relative valuation tercile is especially supportive of the view that market participants do not internalize the effects of high competition on ex-post outcomes in this extreme industry group. In particular, we find results most consistent with this form of optimism where theory predicts that optimism will have the largest impact: when valuations are high and in growth industries when valuation (and perhaps uncertainty) is also high.

In contrast, we interpret the lack of observed analyst bias in the high market risk competitive tercile as being consistent with the possibility that analysts, and perhaps

other investors, are fully aware of the poor ex-post stock market performance we observe in these industries (documented in the next section, section VI). Hence, in this subsample, any predictable busts we find might be driven by rational risk-based theories of industry booms and busts. We discuss the broader evidence we find regarding these theories and this subsample more in the next section.

These findings suggest that some of the predictable busts we observe are more consistent with rational risk-based theories (especially in the high market risk tercile), while some of the predictable busts we observe are more consistent with a failure to internalize the effects of high competition on industry outcomes (especially the high relative valuation tercile, and to some extent the high growth tercile).

VI Stock Returns and Industry Factors

A Industry Competition and Stock Returns

We now consider the effect of competition on outcomes in the stock market. Table VII displays the results of firm-level regressions of monthly abnormal returns on relative valuation, relative investment, and new financing. As before, for each independent variable, we separately examine its industry average and its firm-specific deviation from its industry average.

[Insert Table VII here]

Panel A of Table VII shows that both relative valuation and new financing are negatively related to future stock returns. These results are especially strong within the subsample of high growth industries. Our results for relative industry investment are slightly less significant, but are still reliably related to future stock returns. The highly significant and negative coefficients on our firm-level variables affirms the findings of existing studies, and the role of our proxies as valid measures of firm value, and suggest that firms have a strong tendency to revert back to the valuation suggested by their industry characteristics. Unique to our study is the inclusion of our industry-level variables, and their especially high relevance in competitive industries.

Inspection of Panel A reveals that the industry relative valuation coefficient and the industry relative investment coefficient both roughly double in size for industries that reside in the high growth tercile. This suggests that booms and predictable busts are larger for growth industries, consistent with valuation uncertainty being

higher in these industries. In contrast, the industry new financing variable does not appear to change in magnitude across these two subsamples.

Given our strong industry results, it is natural to ask about the role of industrial organization. Panels B and C display results for the most competitive tercile industries and the most concentrated tercile industries, respectively. As in earlier sections, we use the “fitted concentration measure,” which predicts an industry’s concentration from a combination of public and private industry data.

To the extent that ex post risk does not change and market participants do not anticipate the effects of high competition, we may observe negative abnormal stock returns in competitive industries following periods of high valuation and investment. We posit that high competition and coordination failure by industry rivals might explain why some industries might experience inferior abnormal stock returns while others might not. In the broad sample (first three rows), we find that industry new finance is more important in Panel B for competitive industries than in concentrated industries in Panel C, consistent with Hypothesis 2A. The industry new financing coefficient is negative and significant at the 1% level for all but one specification in Panel B, and is not significant for any specification in Panel C. The difference in coefficients is significant in two of the three specifications. In addition to the higher significance levels, which might be partially due to the larger number of observations in Panel B (competitive industries have more firms), the table also shows that the coefficient magnitudes are also different in an economically meaningful manner. For example, the industry new finance coefficients are roughly two to three times larger for some specifications in Panel B than in Panel C. The results are much weaker for relative industry valuation and relative industry investment in the whole sample. As our hypothesis is that these variables should primarily matter in competitive industries, and especially in extreme industry subsamples, we next proceed to consider high growth industries, where valuation uncertainty is high.

In high growth industries (columns four to six), we continue to find that the industry new finance variable matters. We also now find that the high industry valuation and the high industry investment variable are significantly different across competitive (Panel B) and concentrated industries (Panel C). The sign of two of these variables even reverses to positive within concentrated industries, but consistently remains highly negative for competitive industries in Panel B. We conclude that our proxies for industry booms play a considerably stronger role in predicting industry busts in competitive industries as is predicted in Hypothesis 2A, and that this result is at a maximum in growth industries where it is likely that valuation uncertainty is high .

Panel D shows that industry new financing and industry relative investment are also somewhat important for industries with declining concentration and in particular, in the growth industries with declining concentration. This Panel further supports the possibility that high competition is important in understanding industry booms and busts, as theories of industrial organization suggest that declining concentration is one way to measure increasing competitiveness.

The significance of both firm-level and industry-level variables suggest that not only do industries suffer from high competition, but also, as in the case of operating cash flows, the most extreme firms also have more negative outcomes. Inferences from our PE model (not reported to conserve space) are essentially identical to, or stronger than, those presented.

B High Valuation and High Risk Industries

Table VIII reproduces the tests in Table VII for two additional industry subsamples, where two theories suggest that results should be strongest. We consider the high relative valuation tercile (first three columns), and the highest market risk tercile (last three columns). Our Hypothesis 2A, that results may be driven by a failure to consider the actions of rival firms in competitive industries, predicts that our results should be strongest when industry valuations are most extreme. Hypothesis 3B that the level of risk is important (Demarzo, Kaniel, and Kremer (2006b) (DKK)), or our Hypothesis 3A that changes in risk are important (Pastor and Veronesi (2005)), predict that our results should be strongest when risk is especially high. As before, Panels B and C further limit the sample to industries that are also in the most competitive and most concentrated terciles respectively. Panel D focuses on industries in the lowest tercile based on declining concentration. Hence, Panel A contains roughly one third of all industries, and Panels B, C and D contain roughly one ninth of all industries.

[Insert Table VIII here]

The first three columns in Panel A in Table VIII display results that are generally consistent with, but stronger than those in Table VII. We find continued support for the importance of new industry financing, and considerably stronger support for high industry valuation, in predicting future returns. We find little support for industry relative investment as being important.

Panel B shows that this return predictability in the first three columns is especially striking in competitive industries. Despite the reduced sample size, the

industry valuation coefficient is significant in every specification, and coefficients are roughly 60% larger than those in Panel A. These coefficients are significantly different from those of concentrated industries in Panel C in two of three specifications. The industry new finance coefficient is also similarly significant. We conclude that busts are more predictable in these ex-ante high relative valuation industries when ex-ante relative industry valuation and industry new finance are especially high.

The strong results for relative industry valuation in Panel B (competitive industries), and the absence of a similar result in Panel C (concentrated industries), supports the hypothesis that high competition is important in explaining the timing and severity of industry booms and busts. This difference is also economically large, as the industry valuation coefficient is actually positive in Panel C for concentrated industries. In industries with declining concentration, we find weaker evidence overall, but still some evidence that industries with high industry finance underperform. These broad findings, together with our findings that analysts are positively biased in competitive high relative valuation industries, provide strong support for optimism-based theories suggesting that firms and investors do not internalize the impact that high competition has on industry outcomes.

B.1 The Level of Systematic Risk

The last three columns in Table VIII examine our Hypothesis 3B that industries with the highest ex-ante market risk also experience predictable bust patterns. This test is motivated by two recent theories attempting to explain boom and bust patterns that also make specific predictions regarding the link between these patterns and systematic risk.

Demarzo, Kaniel, and Kremer (2006b) (DKK) present a theory of investment and relative wealth concerns, and suggest that predictable bust patterns should be largest in high systematic risk industries and in competitive industries. Our regressions for the high risk tercile in the last three columns of Table VIII test the prediction of DKK regarding the importance of systematic risk to industry booms and busts.

We find that the industry relative investment variable in these high market risk industries is especially negative and significant in competitive industries in Panel B, and not in concentrated industries, providing strong support for these predictions of DKK (unlike our findings in the highest valuation industries). Tests of significance of the difference in the coefficients in Panel B and C reveal that the coefficients are significantly different at the 5% level in all three specifications. Importantly, the economic size of the industry relative investment coefficient in Panel B (competitive

industries) dwarfs that in Panel C (concentrated industries) as it is roughly four to six times larger. Although not presented to save space, we do not find similar patterns when we examine the high idiosyncratic risk tercile rather than the high market risk tercile.

B.2 Changes in Systematic and Idiosyncratic Risk

Pastor and Veronesi (2005) posit that high valuations and subsequent busts are, in part, due to levels of systematic risk that can increase over time. Our findings regarding stock returns in the high market risk tercile support their predictions. As technologies are adopted, systematic risk rises, resulting in a negative return event (a bust) that is associated with stocks being penalized for their rise in systematic risk (Hypothesis 3A). We now test the hypothesis from Pastor and Veronesi (2005) that subsequent industry busts following industry booms are characterized by increased systematic risk and decreased idiosyncratic risk.

To test this prediction, and to test for changes in risk predicted by other theories including real option based theories, we regress ex-post changes in risk on our measures of relative valuation, investment and financing at the industry and firm level. For independent variables collected using data from calendar year t , the ex-ante risk level is measured from July of year $t+1$ to June of year $t+2$, and the ex-post risk level is measured from July of year $t+2$ to June of year $t+3$. This measure is forward looking as we ultimately seek to understand the impact that future changes in risk have on stock returns. However, we can also report that similar, somewhat stronger, results obtain if we use risk measured using one year earlier risk data. We include a lagged risk exposure term in each regression to control for the mean reverting nature of risk exposures. We also include year fixed effects to maintain our focus on cross sectional relationships across competitive and concentrated industries. The inclusion of year fixed effects also controls for the well-known increasing time trend associated with economy-wide risk (see Campbell, Lettau, Malkiel, and Xu (2001)).

[Insert Table IX: Changes in Risk in Competitive Industries]

Table IX displays the results for total risk, market risk, and idiosyncratic risk in competitive industries (first three rows), and concentrated industries (last three rows). The results for the high industry relative valuation term provide modest support for Pastor and Veronesi (2005), and suggest that market risk (Panel B) increases when relative valuations are high in competitive industries. The impact of market risk is considerably larger for competitive industries than for concentrated industries.

These findings are also consistent with the recent real options paper of Aguerrevere (2006). We also find results supporting Pastor and Veronesi (2005) for idiosyncratic risk in Panel C, as idiosyncratic risk falls while market risk increases. Regardless of specification, idiosyncratic risk drops considerably in competitive industries following high industry valuations but not in concentrated industries, where idiosyncratic risk actually increases. These results are consistent with Hypothesis 3A.

Because a key focus of our study is industrial organization, we also examine whether an additional risk factor based on industry competition, as suggested by Hou and Robinson (2005) (Hypothesis 2B), can explain our results. We construct such a factor by first sorting industries into terciles based on their ex-ante concentration levels (based on sales Herfindahl indices as discussed earlier). This new factor is then defined as the equal weighted return of firms in the highest concentration tercile industries minus the equal weighted return of firms in the lowest concentration tercile industries. After including a control for this competitive risk factor, we find that our results are materially unchanged. We also test whether including concentration as an additional independent variable in our return predictability regressions (i.e. concentration might be more accurately measured as a characteristic) can explain our results. Once again, our results are materially unchanged, and we conclude that this form of competitive risk cannot explain our findings. Because our paper conditions on concentration along with valuation and financing activity, and Hou and Robinson (2005) condition on industry concentration alone, these findings are not inconsistent. Rather, we conclude that our findings are distinct.

The evidence presented in this section suggests that risk based explanations, especially theory presented by DeMarzo, Kaniel, Kremer(2006a,b), Pastor and Veronesi (2005), and Aguerrevere (2006), can explain part of the link between high industry valuations, high industry investment, and subsequent return reversals in competitive industries.

However a large fraction of the results remain unexplained. For example, because high new financing is associated with a rise in both systematic and idiosyncratic risk, it appears less likely that current risk based explanations can explain all of the patterns observed. Explanations that might be consistent with the importance of industry financing, and some of our broader findings include herding based explanations, and behavioral explanations including market timing. However, theoretical work has not yet examined the role that industrial organization might play in these alternate theoretical settings. What is clear throughout our findings is that large differences in changes in cash flow, risk and returns exist based on product market competition.

C Can Ex Post Changes in Risk Explain Our Results?

In this section we examine if future risk changes, after the period for which we compute our abnormal returns, might explain or reduce the ability of relative industry valuation, investment, and high financing to predict stock returns. Future risk changes might be important if market participants are reacting to anticipated risk changes rather than just contemporaneous risk changes.

We test this hypothesis using a two-stage approach. First, for a return observation in year $t+1$ (given that our right-hand-side variables are indexed as year t), we regress our monthly firm-level style matched abnormal returns on changes in the four risk factors (MKT, HML, SMB, UMD) and idiosyncratic risk from year t to year $t+2$. We also include controls for the year t risk levels given that our previous section's results show that risk exposures are mean reverting. These regressions are non-predictive, as we examine changes in risk across the same period in which returns are measured. Second, we take the residuals of this first stage regression and regress them on our usual set of relative valuation, relative investment, and relative financing variables.

We present the results in Table X. We present results for competitive industries, and for subsamples based on high growth, high relative valuation, and high market risk. We also present analogous results for concentrated industries. The coefficients and significance levels can be compared to those in the analogous subsamples in Tables VII and VIII. Pastor and Veronesi (2005) predict that changes in risk will explain all or part of the return predictability we reported in these earlier tables, while Demarzo, Kaniel, and Kremer (2006b) predict that changes in risk will explain little of this return predictability (underperformance is driven by relative wealth concerns, not changes in risk attributes).

[**Insert Table X here**]

Comparing the coefficients and significance levels in Table X with those in our earlier tables yields some support for the Pastor and Veronesi (2005) prediction that risk increases following periods of high industry relative valuation can explain some of the return predictability we find. In particular, we find support for their predictions in the subsample where it should matter most: industries in the high risk tercile. Here we find that changes in risk entirely reduce the explanatory power of the industry high valuation variable in competitive industries. We also find that controls for changes in risk account for some return predictability in the broad set of competitive industry firms, but also note that this sample did not exhibit very strong predictability in the first place. We thus conclude that our results support Pastor

and Veronesi (2005) in the high risk tercile, which is also where their theory suggests their predictions should hold most firmly. We find very little change in concentrated industries, where returns do not appear to be predictable with or without controls for changes in risk.

Despite the strong results in the high market risk tercile, we find that accounting for changes in risk cannot explain all of our predictable bust patterns. First and foremost, comparing the significance of industry relative investment in Table X to earlier results shows that we find almost no change in the economic size of the industry investment coefficient when controls for changes in risk are accounted for in virtually all specifications. Because Demarzo, Kaniel, and Kremer (2006b) attribute lower returns in competitive industries with high investment to relative wealth concerns, we expect that changes in risk will not be able to explain the observed return patterns if their predictions hold. Our findings regarding the relative industry investment variable support this finding, and thus support DKK more broadly.

We also find that changes in risk cannot explain the high industry relative valuation term in the high relative valuation tercile. Because optimism has direct theoretical links to high valuations, which is further supported by our findings regarding analyst optimism, these results are consistent with a failure of investors, analysts, and managers alike to fully internalize the affect that excessive competition has on ex-post outcomes. Regarding the industry new finance term, we also continue to see strong negative coefficients when we adjust returns for changes in risk in all competitive industry specifications.

Overall, we conclude that our results provide some support for Pastor and Veronesi (2005), DeMarzo, Kaniel, and Kremer (2006a,b), and for theories linked to high competition in competitive industries. We find specific support for each of these theories in subsamples where each theory is expected to matter most. However, the significance of industry finance and also industry relative valuation in the highest valuation industries, which remains even after adjusting for risk, are consistent with market participants failing to fully incorporate the effects of industry competition in competitive industries.

D Economic Magnitude of Stock Market Returns

We examine the economic magnitude of both firm and industry-level stock returns in the year following our ex-ante measures of relative industry valuation, investment, and financing.

[Insert Table XI here]

In Table XI, we calculate both firm- and industry-level abnormal returns for quintile portfolios based on ex-ante relative industry valuation, industry investment, and industry new financing. At the industry level, abnormal returns are equal weighted averages of firm abnormal returns in the given month over all firms residing in the given three digit SIC code. A firm's abnormal return is its raw monthly return minus the monthly return of a portfolio matched on the basis of NYSE/AMEX breakpoints of size, industry-adjusted book to market, and past year returns as in Daniel, Grinblatt, Titman, and Wermers (1997). As in earlier tests, to ensure all accounting data is public before return predictability is measured, we assign monthly abnormal returns occurring between July of year $t+1$ and June of year $t+2$ to portfolios on the basis of accounting data with fiscal years ending in year t .

The tables show that the magnitude of stock price underperformance by industries with high relative industry valuation in competitive industries is economically relevant. For example, Table XI shows that, at the industry level, the highest quintile of relative industry valuation underperforms the lowest quintile by over 3% percentage points annually. Table XI shows that, at the firm level, the highest quintile of relative industry valuation has abnormal performance that is roughly ten percentage points (per year) lower than the lowest quintile. This high underperformance is unique to the highest valuation quintile in competitive industries, indicating that this group of industries is where the effects of high competition are most prevalent. Similar magnitudes obtain for new industry financing and investment.

E Additional Robustness Tests

We examine the robustness of our stock-market results using additional tests of return predictability. These robustness tests are in addition to using the Market-to-Book and PE based model of relative valuation discussed earlier. Mitchell and Stafford (2000) (MS) show that some abnormal return predictability tests, such as those based on buy and hold returns, or those based on matching portfolios, might produce overly-aggressive inferences. We follow MS and conduct tests using the two-step method they recommend as follows: (1) compute regression intercepts using the three Fama-French factors (we also include momentum), and (2) subtract the average regression intercept of randomly chosen firms residing in the same style grouping. These industry-level and firm-level tests reveal that our main results are robust to the MS method.

VII Conclusions

Our paper examines real and financial outcomes of industry booms and busts and whether these outcomes are related to industry-level characteristics. We document significant booms and subsequent busts in the economy. We find that increases in industry valuations above predicted levels are followed by significantly lower operating cash flows and stock returns in competitive industries. Firms in these industries have especially negative cash flows and negative abnormal stock returns following episodes of high industry financing and high relative industry valuation.

Our findings are economically significant both for operating cash flows and stock returns. In competitive industries, a one standard deviation increase in industry financing is associated with a 6.5 percent ex-post decline in operating cash flows. In the stock market, style and risk-adjusted abnormal stock returns for a competitive industry portfolio in the highest quintile of ex-ante relative industry valuation are over three percentage points lower than a similar portfolio in the lowest quintile. At the firm level, abnormal stock returns in competitive industries are more than ten percentage points lower in the high industry valuation quintile than in a similar portfolio in the lowest quintile.

Additional adjustments for contemporaneous changes in risk do explain some of our findings, which is consistent with the model of Pastor and Veronesi (2005), and the real option model of Aguerrevere (2006). Support for each of these theories appears most sharply in subsamples where they are predicted to be most relevant. We also find support for relative wealth model of Demarzo, Kaniel, and Kremer (2006b) in our relative industry investment variable.

However, in subsamples where analyst optimism is most present, even after we fully adjust for risk, and risk changes, abnormal stock returns remain lower when the industry is experiencing high new financing and when the industry has a high valuation in competitive industries. We also find that analyst forecasts of future earnings per share are biased upwards in these industries. These results are most consistent with a lack of coordination and the externality of high investment and financing generating poor outcomes in competitive industries. This effect is likely to be greatest if industry participants fail to consider, or do not have incentives to consider, the effect of competition when making investment and financing decisions. In contrast, in concentrated industries these relations are weak and generally insignificant, consistent with market participants internalizing the effects of their actions on industry-wide prices, cash flows, and stock returns.

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Table I: Examples of Industry Booms in Competitive Industries

Three Digit SIC Code	Industry Name	Decade/Year	Weighted Market to Book	Average Firm Mkt Value	Wgt % Above Predicted Valuation	% Above Predicted Valuation	CSTAT Concentration (Herfindahl)	Fitted Concentration (Herfindahl)
<i>Competitive Industries</i>								
1970s								
799	Amusement Parks and Recreation	1979	5.18	191.70	68.4%	44.6%	0.12	0.18
385	Ophthalmic Goods	1978	3.08	20.00	89.6%	51.3%	0.25	0.20
173	Electrical Work	1979	2.01	86.70	43.2%	52.5%	0.15	0.19
131	Oil and gas extraction	1979	2.73	349.94	68.2%	66.6%	0.13	0.18
287	Fertilizers and Agriculture Chemicals	1979	2.97	244.12	80.9%	77.1%	0.29	0.19
1980s								
232	Men's Apparel	1986	2.53	362.23	86.0%	97.5%	0.09	0.20
422	Farm Product Warehousing+Storage	1989	1.43	130.23	98.8%	98.8%	0.25	0.23
233	Women's Apparel	1985	4.90	153.42	106.7%	106.2%	0.13	0.20
329	Abrasive Products	1988	3.65	319.11	127.7%	109.0%	0.14	0.24
783	Motion Picture Theaters	1985	3.19	230.19	118.1%	109.1%	0.28	0.23
385	Ophthalmic Goods	1984	4.85	125.72	146.6%	125.3%	0.42	0.24
1990s								
737	Business Services	1999	20.27	2,790.01	94.3%	70.7%	0.04	0.13
367	Semiconductors + Elect. Components	1999	11.37	4,500.18	99.1%	76.6%	0.04	0.18
122	Coal mining	1999	7.65	5,461.49	96.0%	76.9%	0.09	0.22
272	Publishing and Printing	1995	8.68	643.04	82.9%	82.6%	0.14	0.21
324	Cement Manufacturing	1994	2.13	1,106.86	91.9%	90.5%	0.19	0.22
422	Farm Product Warehousing+Storage	1996	4.40	229.42	137.4%	128.0%	0.20	0.20
2000s								
122	Coal mining	2001	2.46	1,594.03	102.3%	100.2%	0.11	0.23
245	Prefabricated Buildings	2003	9.77	233.23	102.5%	100.4%	0.14	0.20
783	Motion Picture Theaters	2005	32.77	1,423.60	137.5%	111.6%	0.35	0.21
391	Jewelry, Precious Metal	2004	31.56	200.76	124.5%	112.8%	0.67	0.23
442	Farm Product Warehousing+Storage	2004	1.47	1,446.76	116.6%	132.7%	0.26	0.24

Explanation: This table lists the top five industries with the highest relative valuation in each decade for competitive industries. Competitive industries are those in the lowest tercile of the fitted sales based HHI (Herfindahl index) in each year. We present each three digit SIC industry's Relative Valuation identifying information and the year in which it's relative valuation peaked. Weighted market to book equity is the industry's value weighted average of firm market-to-book ratios. Average firm market values are reported in millions. Percent relative valuation is the log difference in actual market value and predicted market value, where predicted values are based on valuation models presented in Rhodes-Kropf, Robinson, and Viswanathan (2005), using 10 years of lagged data. In particular, we compute expected valuation by (1) regressing year $t-10$ to $t-1$ firm observations of log market cap on four variables (market to book ratio, log net income, a dummy for negative net income, and the firm's leverage ratio). These long-term regression coefficients are used to compute predicted valuations in year t , and relative valuation is the actual year t log market cap minus the predicted year t log market cap (predictions are based on each firm's year t characteristics). CSTAT concentration is the sales weighted Herfindahl index for each industry (based on segment data when available) using COMPUSTAT data only. The fitted concentration index is based on three digit SIC codes and is the inferred level of industry concentration from three databases: Department of Commerce manufacturing HHI data, Bureau of Labor Statistics employee data, and Compustat sales data. We make one deviation from selecting the top five industries in each decade: we add two industries (one in the 1980s and one in the 1990s) from the top ten that have a very large number of firms (we list them due to their importance).

Table II: Examples of Industry Booms in Concentrated Industries

Three Digit SIC Code	Industry Name	Decade/Year	Weighted Market to Book	Average Firm Mkt Value	Wgt % Above Predicted Valuation	% Above Predicted Valuation	CSTAT Concentration (Herfindahl)	Fitted Concentration (Herfindahl)
<i>Concentrated Industries</i>								
1970s								
516	Plastics Materials and Basic Forms	1979	1.24	309.89	16.9%	24.9%	0.74	0.36
517	Petroleum Stations + Terminals	1979	1.14	1,252.48	33.7%	34.9%	0.51	0.49
348	Ordnance and Accessories	1979	1.42	34.43	35.3%	35.3%	0.41	0.34
387	Watches, Clocks, and Clockwork	1975	0.54	5.58	59.6%	50.4%	0.40	0.29
321	Flat Glass	1978	1.16	145.93	56.6%	57.8%	0.57	0.38
1980s								
322	Glass Containers	1983	1.31	231.46	119.1%	97.3%	0.40	0.32
211	Tobacco manufactures	1988	2.52	10,304.94	63.7%	98.7%	0.27	0.60
253	Public Building and Related Furniture	1986	1.22	42.38	69.1%	99.1%	0.38	0.44
277	Greeting Cards	1985	2.27	571.78	71.1%	100.3%	0.63	0.58
396	Fasteners, Buttons, Needles, and Pins	1985	3.14	92.95	100.4%	100.4%	0.31	0.35
1990s								
387	Watches, Clocks, and Clockwork	1993	5.95	100.28	103.0%	121.4%	0.54	0.50
301	Tires and Inner Tubes	1992	3.93	3,794.58	126.2%	124.4%	0.68	0.90
376	Guided Missiles and Space Vehicles	1995	2.87	7,040.29	116.9%	138.1%	0.23	0.56
792	Theatrical Producers	1998	3.98	1,240.59	199.7%	167.6%	0.46	0.55
228	Yarn and Thread Mills	1996	1.45	207.02	175.3%	175.3%	0.34	0.38
2000s								
375	Motorcycles, Bicycles, and Parts	2003	4.59	7,893.29	63.1%	90.5%	0.51	0.48
207	Vegatable Oil Mills	2004	2.92	200.07	83.3%	92.4%	0.16	0.65
179	Structural Steel Erection	2005	1.97	133.38	118.3%	118.3%	0.23	0.50
332	Iron and Steel Foundaries	2004	2.86	2,075.31	134.0%	156.7%	0.33	0.36
518	Beer+Ale Distributors and Wholesale	2005	2.19	1,351.28	233.8%	233.8%	0.49	0.49

Explanation: This table lists the top five industries with the highest relative valuation in each decade for concentrated industries. Concentrated industries are those in the highest tercile of the fitted sales based HHI (Herfindahl index) in each year. We present each three digit SIC industry's identifying information and the year in which it's relative valuation peaked. Weighted market to book equity is the industry's value weighted average of firm market-to-book ratios. Average firm market values are reported in millions. Percent relative valuation is the log difference in actual market value and predicted market value, where predicted values are based on valuation model presented in Rhodes-Kropf, Robinson, and Viswanathan (2005), using 10 years of lagged data. In particular, we compute expected valuation by (1) regressing year $t-10$ to $t-1$ firm observations of log market cap on four variables (market to book ratio, log net income, a dummy for negative net income, and the firm's leverage ratio). These long-term regression coefficients are used to compute predicted valuations in year t , and relative valuation is the actual year t log market cap minus the predicted year t log market cap (predictions are based on each firm's year t characteristics). CSTAT concentration is the sales weighted Herfindahl index for each industry (based on segment data when available) using COMPUSTAT data only. The fitted concentration index is based on three digit SIC codes and is the inferred level of industry concentration from three databases: Department of Commerce manufacturing HHI data, Bureau of Labor Statistics employee data, and Compustat sales data.

Table III: Summary statistics

Variable	Mean	Standard Deviation	Minimum	Maximum	Number of Observations
<i>Panel A: Entire Sample</i>					
Industry Relative Valuation	-.007	.452	-2.133	2.195	116,322
Industry New Financing	.024	.064	-.408	.766	116,322
Industry Relative Investment	-.039	.422	-3.322	2.687	116,322
Firm Relative Valuation	-.028	.698	-3.368	3.308	116,322
Firm New Financing	.022	.157	-.849	1.790	116,322
Firm Relative Investment	.001	.833	-3.953	3.328	116,322
Operating Cash Flow Change	-.009	.139	-1.447	1.780	109,077
Abnormal Return	.000	.182	-1.192	23.504	1,431,128
<i>Panel B: Competitive Industries</i>					
Industry Relative Valuation	.058	.374	-1.695	1.469	64,079
Industry New Financing	.028	.058	-.281	.586	64,079
Industry Relative Investment	-.057	.334	-2.412	2.553	64,079
Firm Relative Valuation	-.032	.745	-3.368	3.308	64,079
Firm New Financing	.033	.183	-.849	1.790	64,079
Firm Relative Investment	-.000	.888	-3.715	3.328	64,079
Operating Cash Flow Change	-.010	.165	-1.447	1.780	59,644
Abnormal Return	.001	.201	-1.192	13.867	803,992
<i>Panel C: Concentrated Industries</i>					
Industry Relative Valuation	.014	.440	-2.133	1.676	14,303
Industry New Financing	.019	.073	-.408	.766	14,303
Industry Relative Investment	-.038	.462	-3.322	2.426	14,303
Firm Relative Valuation	-.025	.612	-3.325	2.821	14,303
Firm New Financing	.009	.119	-.727	1.375	14,303
Firm Relative Investment	.001	.713	-3.953	2.848	14,303
Operating Cash Flow Change	-.009	.099	-1.235	1.175	13,493
Abnormal Return	-.001	.145	-.954	5.196	173,245

Explanation: The table displays summary statistics for the entire sample (Panel A), and for subgroupings based on the level of ex-ante fitted concentration (Panels B and C). The fitted concentration index is based on three digit SIC codes and is the inferred level of industry concentration from three databases: Department of Commerce manufacturing HHI data, Bureau of Labor Statistics employee data, and Compustat sales data. The independent variables are constructed from observed levels of firm-specific relative valuation, relative investment, and new financing. A firm's "new financing" is the sum of its net equity issuing and net debt issuing activity in year t (normalized by assets). A firm's relative valuation is based on empirical measure of industry valuation presented in Rhodes-Kropf, Robinson, and Viswanathan (2005), using 10 years of lagged data. In particular, we compute expected valuation by (1) regressing year $t-10$ to $t-1$ firm observations of log market cap on four variables (market to book ratio, log net income, a dummy for negative net income, and the firm's leverage ratio). These long-term regression coefficients are used to compute predicted valuations in year t , and relative valuation is the actual year t log market cap minus the predicted year t log market cap (predictions are based on each firm's year t characteristics). relative investment is computed using the same method, replacing log investment with log market cap. Relative industry valuation, relative industry investment, and industry new financing are the equal weighted averages of each quantity over all firm observations in year t . Each firm-level variable is equal to its raw value minus its industry average. Operating cash flow is defined as operating income (COMPUSTAT annual item 13) divided by assets (COMPUSTAT annual item 6). A firm's abnormal return is its raw monthly return minus the monthly return of a portfolio matched on the basis of NYSE/AMEX breakpoints of size, industry-adjusted book to market, and past year returns as in Daniel, Grinblatt, Titman, and Wermers (1997).

Table IV: Regressions predicting Firm-level Operating Cash Flow Changes

Variable	Whole Sample			Growth Industries		
	OLS w/ Year Clusters	OLS w/ Year + Ind. Clusters	Random Firm Effects	OLS w/ Year Clusters	OLS w/ Year + Ind. Clusters	Random Firm Effects
Panel A: Sample-wide results						
Industry Relative Valuation	-0.005 (-1.53)	-0.005 (-1.26)	-0.006 (-1.66) ^c	-0.019 (-2.33) ^b	-0.019 (-2.72) ^a	-0.019 (-2.21) ^b
Firm Relative Valuation	-0.001 (-0.43)	-0.001 (-0.64)	-0.003 (-1.49)	-0.001 (-0.38)	-0.001 (-0.60)	-0.003 (-0.85)
Industry Relative Investment	-0.015 (-4.44) ^a	-0.015 (-3.86) ^a	-0.018 (-5.04) ^a	-0.019 (-3.89) ^a	-0.019 (-2.98) ^a	-0.021 (-4.17) ^a
Firm Relative Investment	-0.005 (-4.10) ^a	-0.005 (-4.57) ^a	-0.008 (-5.40) ^a	-0.007 (-4.39) ^a	-0.007 (-3.69) ^a	-0.009 (-5.20) ^a
Industry New Finance	-0.081 (-2.87) ^a	-0.081 (-3.49) ^a	-0.052 (-1.84) ^c	-0.104 (-3.04) ^a	-0.104 (-3.17) ^a	-0.099 (-2.97) ^a
Firm New Finance	-0.016 (-2.17) ^b	-0.016 (-1.43)	0.007 (0.92)	-0.018 (-2.19) ^b	-0.018 (-1.22)	-0.005 (-0.52)
Observations	99,883	99,883	99,883	43,231	43,231	43,231
Panel B: Competitive Industries						
Industry Relative Valuation	-0.010 (-2.00) ^{b,f}	-0.010 (-1.26)	-0.009 (-1.98) ^b	-0.028 (-2.37) ^{b,e}	-0.028 (-2.63) ^{a,e}	-0.026 (-2.19) ^{b,f}
Firm Relative Valuation	0.001 (0.32)	0.001 (0.45)	-0.002 (-0.53)	0.001 (0.42) ^d	0.001 (0.58) ^d	0.000 (0.11) ^e
Industry Relative Investment	-0.021 (-3.77) ^a	-0.021 (-2.97) ^a	-0.025 (-4.05) ^{a,f}	-0.024 (-3.38) ^{a,f}	-0.024 (-2.23) ^b	-0.027 (-3.49) ^{a,e}
Firm Relative Investment	-0.005 (-2.76) ^a	-0.005 (-3.45) ^a	-0.008 (-3.61) ^a	-0.007 (-3.03) ^a	-0.007 (-2.94) ^a	-0.009 (-3.58) ^a
Industry New Finance	-0.090 (-1.78) ^c	-0.090 (-2.23) ^b	-0.075 (-1.42)	-0.109 (-1.80) ^c	-0.109 (-1.91) ^c	-0.109 (-1.77) ^c
Firm New Finance	-0.021 (-2.70) ^a	-0.021 (-1.47)	-0.003 (-0.41)	-0.020 (-2.42) ^b	-0.020 (-1.15)	-0.011 (-1.18)
Observations	53,978	53,978	53,978	26,451	26,451	26,451
Panel C: Concentrated Industries						
Industry Relative Valuation	0.001 (0.18) ^f	0.001 (0.22)	0.001 (0.15)	-0.001 (-0.19) ^e	-0.001 (-0.16) ^e	-0.005 (-0.91) ^f
Firm Relative Valuation	-0.002 (-1.07)	-0.002 (-1.01)	-0.003 (-1.70) ^c	-0.010 (-4.03) ^{a,d}	-0.010 (-3.78) ^{a,d}	-0.012 (-4.30) ^{a,e}
Industry Relative Investment	-0.011 (-3.18) ^a	-0.011 (-3.16) ^a	-0.013 (-3.45) ^{a,f}	-0.007 (-1.36) ^f	-0.007 (-1.05)	-0.006 (-1.16) ^e
Firm Relative Investment	-0.004 (-2.48) ^b	-0.004 (-1.91) ^c	-0.007 (-4.08) ^a	-0.005 (-1.77) ^c	-0.005 (-1.20)	-0.008 (-2.61) ^a
Industry New Finance	-0.058 (-1.84) ^c	-0.058 (-2.17) ^b	-0.017 (-0.69)	-0.098 (-1.36)	-0.098 (-1.78) ^c	-0.062 (-1.05)
Firm New Finance	0.001 (0.07)	0.001 (0.06)	0.023 (1.68) ^c	0.024 (0.77)	0.024 (0.84)	0.037 (1.32)
Observations	18,914	18,914	18,914	6,167	6,167	6,167
Panel D: Industries with Declining Concentration						
Industry Relative Valuation	-0.017 (-1.93) ^{c,e}	-0.017 (-2.65) ^{a,d}	-0.017 (-1.94) ^{c,f}	-0.032 (-2.83) ^{a,e}	-0.032 (-3.02) ^{a,e}	-0.031 (-2.72) ^{a,e}
Firm Relative Valuation	-0.002 (-1.36)	-0.002 (-1.17)	-0.005 (-2.47) ^b	-0.004 (-1.93) ^c	-0.004 (-1.70) ^c	-0.007 (-2.64) ^a
Industry Relative Investment	-0.020 (-3.76) ^{a,f}	-0.020 (-3.37) ^a	-0.019 (-3.33) ^a	-0.013 (-1.83) ^c	-0.013 (-1.47)	-0.013 (-1.71) ^c
Firm Relative Investment	-0.006 (-3.18) ^a	-0.006 (-3.38) ^a	-0.008 (-3.44) ^a	-0.008 (-3.97) ^a	-0.008 (-2.94) ^a	-0.011 (-3.92) ^a
Industry New Finance	-0.094 (-3.26) ^a	-0.094 (-3.10) ^a	-0.076 (-2.66) ^{a,f}	-0.134 (-2.88) ^a	-0.134 (-2.85) ^a	-0.131 (-2.89) ^a
Firm New Finance	-0.005 (-0.80)	-0.005 (-0.32)	0.008 (1.10)	-0.004 (-0.44)	-0.004 (-0.17)	0.006 (0.68)
Observations	43,732	43,732	43,732	22,187	22,187	22,187

Explanation: Regressions examine the effect of relative firm- and industry-level valuation (industry booms), investment and also new finance on firm-level changes in operating cash flows. We report regression coefficients and t-statistics (in parentheses) for various panel data regression models. t-statistics (in parentheses) are from standard errors that are adjusted for clustering over time and industry, and are corrected for heteroskedasticity. One observation is one firm in one year, and the dependent variable is the firm's change in operating cash flow from year t to year $t+1$. Operating cash flow is defined as operating income (COMPUSTAT annual item 13) divided by assets (COMPUSTAT annual item 6). Competitive and concentrated industries are those in the lowest and highest tercile based on industry concentration (HHI). Growth industries are those in the lowest tercile based on industry-average book to market ratios (which are first winsorized at the 5/95% level prior to taking industry averages). * a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from opposing tercile (competitive versus concentrated industries in Panels B, C, and decreasing versus increasing concentration in Panel D) at the 1%, 5%, and 10% levels, respectively.

Table V: Regressions predicting Firm-level Operating Cash Flow Changes

Variable	Whole Sample			Growth Industries		
	OLS w/ Year Clusters	OLS w/ Year + Ind. Clusters	Random Firm Effects	OLS w/ Year Clusters	OLS w/ Year + Ind. Clusters	Random Firm Effects
Panel A: Sample-wide results						
Industry Relative Valuation	-0.005 (-1.38)	-0.005 (-1.21)	-0.006 (-1.31)	-0.018 (-2.14) ^b	-0.018 (-2.51) ^b	-0.019 (-1.83) ^c
Firm Relative Valuation	-0.001 (-0.36)	-0.001 (-0.54)	-0.002 (-0.92)	-0.001 (-0.33)	-0.001 (-0.54)	-0.001 (-0.29)
Industry Relative Investment	-0.012 (-4.33) ^a	-0.012 (-3.16) ^a	-0.019 (-4.82) ^a	-0.014 (-2.41) ^b	-0.014 (-2.18) ^b	-0.022 (-2.96) ^a
Firm Relative Investment	-0.005 (-4.03) ^a	-0.005 (-4.52) ^a	-0.007 (-3.86) ^a	-0.007 (-4.28) ^a	-0.007 (-3.64) ^a	-0.009 (-3.88) ^a
Industry New Finance	-0.071 (-2.78) ^a	-0.071 (-3.19) ^a	-0.074 (-2.14) ^b	-0.087 (-2.69) ^a	-0.087 (-2.61) ^a	-0.105 (-2.46) ^b
Firm New Finance	-0.016 (-2.17) ^b	-0.016 (-1.42)	-0.004 (-0.54)	-0.018 (-2.19) ^b	-0.018 (-1.22)	-0.014 (-1.66) ^c
Change in EBITDA	0.003 (0.59)	0.003 (0.62)	0.001 (0.23)	0.013 (2.66) ^a	0.013 (2.39) ^b	0.012 (1.84) ^c
Change in CAPX	-0.009 (-2.03) ^b	-0.009 (-2.31) ^b	-0.008 (-1.85) ^c	-0.018 (-2.58) ^a	-0.018 (-2.84) ^a	-0.015 (-1.63)
Observations	99,435	99,435	73,810	42,878	42,878	33,430
Panel B: Competitive Industries						
Industry Relative Valuation	-0.009 (-1.60)	-0.009 (-1.19)	-0.008 (-1.46)	-0.028 (-2.17) ^b	-0.028 (-2.42) ^{b,f}	-0.025 (-1.91) ^c
Firm Relative Valuation	0.001 (0.41)	0.001 (0.57)	-0.001 (-0.48)	0.002 (0.49) ^e	0.002 (0.68) ^e	0.001 (0.14) ^f
Industry Relative Investment	-0.016 (-3.25) ^a	-0.016 (-2.28) ^b	-0.022 (-3.79) ^a	-0.019 (-1.92) ^c	-0.019 (-1.73) ^c	-0.025 (-2.42) ^b
Firm Relative Investment	-0.005 (-2.73) ^a	-0.005 (-3.43) ^a	-0.008 (-3.49) ^{a,f}	-0.007 (-2.97) ^a	-0.007 (-2.90) ^a	-0.009 (-3.48) ^a
Industry New Finance	-0.076 (-1.72) ^c	-0.076 (-2.01) ^b	-0.066 (-1.39)	-0.080 (-1.35)	-0.080 (-1.33)	-0.084 (-1.38)
Firm New Finance	-0.021 (-2.64) ^a	-0.021 (-1.44)	-0.003 (-0.40)	-0.020 (-2.38) ^b	-0.020 (-1.13)	-0.010 (-1.15)
Change in EBITDA	0.003 (0.39)	0.003 (0.42)	0.001 (0.14)	0.014 (1.61)	0.014 (1.48)	0.014 (1.56)
Change in CAPX	-0.012 (-1.67) ^c	-0.012 (-1.84) ^c	-0.012 (-1.74) ^c	-0.017 (-1.37)	-0.017 (-1.60)	-0.018 (-1.37)
Observations	53,631	53,631	52,868	26,138	26,138	25,874
Panel C: Concentrated Industries						
Industry Relative Valuation	0.000 (-0.04)	0.000 (-0.05)	0.001 (0.12)	-0.001 (-0.13)	-0.001 (-0.10) ^f	-0.006 (-0.89)
Firm Relative Valuation	-0.002 (-1.05)	-0.002 (-1.00)	-0.002 (-0.71)	-0.010 (-4.08) ^{a,e}	-0.010 (-3.82) ^{a,e}	-0.011 (-2.37) ^{b,f}
Industry Relative Investment	-0.011 (-2.88) ^a	-0.011 (-2.95) ^a	-0.014 (-2.53) ^b	-0.003 (-0.62)	-0.003 (-0.48)	-0.003 (-0.33)
Firm Relative Investment	-0.004 (-2.46) ^b	-0.004 (-1.89) ^c	-0.002 (-0.89) ^f	-0.005 (-1.77) ^c	-0.005 (-1.19)	-0.003 (-0.46)
Industry New Finance	-0.056 (-1.80) ^c	-0.056 (-2.09) ^b	-0.073 (-2.22) ^b	-0.088 (-1.29)	-0.088 (-1.60)	-0.104 (-1.49)
Firm New Finance	0.001 (0.06)	0.001 (0.05)	-0.003 (-0.18)	0.025 (0.78)	0.025 (0.86)	-0.003 (-0.07)
Change in EBITDA	0.004 (0.96)	0.004 (0.84)	0.001 (0.28)	0.021 (2.67) ^a	0.021 (2.74) ^a	0.019 (1.61)
Change in CAPX	-0.004 (-1.37)	-0.004 (-1.11)	-0.004 (-1.19)	-0.016 (-2.35) ^b	-0.016 (-2.25) ^b	-0.009 (-0.93)
Observations	18,875	18,875	13,112	6,157	6,157	4,024
Panel D: Industries with Declining Concentration						
Industry Relative Valuation	-0.017 (-1.90) ^{c,e}	-0.017 (-2.59) ^{a,e}	-0.016 (-1.85) ^{c,f}	-0.031 (-2.61) ^{a,e}	-0.031 (-2.79) ^{a,e}	-0.031 (-2.46) ^{b,f}
Firm Relative Valuation	-0.002 (-1.32)	-0.002 (-1.12)	-0.005 (-2.40) ^b	-0.004 (-1.90) ^c	-0.004 (-1.66) ^c	-0.007 (-2.59) ^a
Industry Relative Investment	-0.017 (-3.05) ^a	-0.017 (-2.82) ^a	-0.016 (-2.74) ^a	-0.008 (-1.12)	-0.008 (-0.88)	-0.008 (-1.10)
Firm Relative Investment	-0.006 (-3.13) ^a	-0.006 (-3.35) ^a	-0.008 (-3.35) ^a	-0.008 (-3.91) ^a	-0.008 (-2.92) ^a	-0.011 (-3.82) ^a
Industry New Finance	-0.086 (-3.11) ^{a,f}	-0.086 (-2.84) ^a	-0.070 (-2.50) ^{b,f}	-0.114 (-2.64) ^a	-0.114 (-2.37) ^b	-0.114 (-2.66) ^a
Firm New Finance	-0.006 (-0.91)	-0.006 (-0.36)	0.007 (1.00)	-0.004 (-0.55)	-0.004 (-0.21)	0.005 (0.56)
Change in EBITDA	0.008 (1.80) ^c	0.008 (1.35)	0.007 (1.72) ^c	0.019 (2.88) ^a	0.019 (2.54) ^b	0.017 (2.67) ^a
Change in CAPX	-0.009 (-1.71) ^c	-0.009 (-1.82) ^c	-0.008 (-1.70) ^c	-0.021 (-2.23) ^b	-0.021 (-2.43) ^b	-0.019 (-1.99) ^b
Observations	43,389	43,389	43,389	21,881	21,881	21,881

Explanation: Regressions examine the effect of relative firm- and industry-level valuation (industry booms), investment and also new finance on firm-level changes in operating cash flows. We report regression coefficients and t-statistics (in parentheses) for various panel data regression models. t-statistics (in parentheses) are from standard errors that are adjusted for clustering over time and industry, and are corrected for heteroskedasticity. One observation is one firm in one year, and the dependent variable is the firm's change in operating cash flow from year t to year $t+1$. Operating cash flow is defined as operating income (COMPUSTAT annual item 13) divided by assets (COMPUSTAT annual item 6). Competitive and concentrated industries are those in the lowest and highest tercile based on industry concentration (HHI). Growth industries are those in the lowest tercile based on industry-average book to market ratios (which are first winsorized at the 5/95 level prior to taking industry averages. Change in EBITDA and CAPX are the past year changes in earnings before interest and taxes plus depreciation and capital expenditures, winsorized at the 1/99 level. * a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from opposing tercile (competitive versus concentrated industries in Panels B, C, and decreasing versus increasing concentration in Panel D) at the 1%, 5%, and 10% levels, respectively.

Table VII: Regressions predicting monthly firm-level stock returns

Variable	Whole Sample			Growth Industries		
	Industry Clusters	Ind+Year Clusters	Fama-MacBeth	Industry Clusters	Ind+Year Clusters	Fama-MacBeth
Panel A: All Firms						
Industry Relative Valuation	-0.004 (-2.72) ^a	-0.004 (-2.64) ^a	-0.003 (-1.66) ^c	-0.010 (-3.86) ^a	-0.010 (-4.62) ^a	-0.009 (-2.89) ^a
Firm Relative Valuation	-0.003 (-6.70) ^a	-0.003 (-8.14) ^a	-0.002 (-7.16) ^a	-0.003 (-5.00) ^a	-0.003 (-5.91) ^a	-0.003 (-5.32) ^a
Industry Relative Investment	-0.003 (-1.68) ^c	-0.003 (-2.14) ^b	-0.003 (-2.09) ^b	-0.006 (-2.51) ^b	-0.006 (-3.04) ^a	-0.006 (-2.81) ^a
Firm Relative Investment	-0.002 (-8.74) ^a	-0.002 (-6.48) ^a	-0.002 (-5.17) ^a	-0.001 (-3.94) ^a	-0.001 (-3.26) ^a	-0.001 (-2.79) ^a
Industry New Finance	-0.031 (-4.65) ^a	-0.031 (-4.44) ^a	-0.025 (-3.76) ^a	-0.032 (-3.02) ^a	-0.032 (-2.88) ^a	-0.026 (-2.76) ^a
Firm New Finance	-0.016 (-8.06) ^a	-0.016 (-6.42) ^a	-0.014 (-5.96) ^a	-0.013 (-6.93) ^a	-0.013 (-4.07) ^a	-0.009 (-3.37) ^a
Observations	1,224,231	1,224,231	1,224,231	470,076	470,076	470,076
Panel B: Competitive Industries Only						
Industry Relative Valuation	-0.004 (-1.60)	-0.004 (-1.45)	-0.003 (-1.16)	-0.012 (-3.48) ^{a,e}	-0.012 (-3.67) ^{a,e}	-0.011 (-2.55) ^b
Firm Relative Valuation	-0.003 (-6.26) ^{a,e}	-0.003 (-7.22) ^{a,e}	-0.003 (-6.71) ^{a,e}	-0.003 (-4.18) ^{a,f}	-0.003 (-5.05) ^{a,e}	-0.003 (-4.39) ^a
Industry Relative Investment	-0.005 (-1.76) ^c	-0.005 (-2.08) ^b	-0.006 (-2.21) ^b	-0.009 (-2.85) ^{a,d}	-0.009 (-2.72) ^{a,d}	-0.008 (-2.36) ^{b,f}
Firm Relative Investment	-0.001 (-4.93) ^a	-0.001 (-4.39) ^a	-0.001 (-3.57) ^a	-0.001 (-2.70) ^a	-0.001 (-2.77) ^a	-0.002 (-2.76) ^a
Industry New Finance	-0.046 (-3.97) ^{a,f}	-0.046 (-4.07) ^{a,f}	-0.028 (-2.60) ^a	-0.059 (-3.41) ^{a,d}	-0.059 (-3.62) ^{a,d}	-0.039 (-2.03) ^b
Firm New Finance	-0.015 (-6.88) ^{a,f}	-0.015 (-5.25) ^{a,f}	-0.012 (-4.14) ^{a,e}	-0.013 (-6.80) ^a	-0.013 (-3.64) ^a	-0.005 (-1.19)
Observations	674,367	674,367	674,367	303,886	303,886	303,886
Panel C: Concentrated Industries Only						
Industry Relative Valuation	-0.003 (-1.37)	-0.003 (-1.28)	-0.002 (-1.11)	-0.001 (-0.35) ^e	-0.001 (-0.31) ^e	-0.001 (-0.27)
Firm Relative Valuation	-0.001 (-1.20) ^e	-0.001 (-1.32) ^e	-0.001 (-1.25) ^e	0.000 (-0.12) ^f	0.000 (-0.13) ^e	0.000 (-0.20)
Industry Relative Investment	-0.003 (-1.48)	-0.003 (-1.48)	-0.003 (-1.72) ^c	0.002 (0.81) ^d	0.002 (0.73) ^d	0.001 (0.18) ^f
Firm Relative Investment	-0.001 (-2.42) ^b	-0.001 (-1.85) ^c	-0.001 (-1.90) ^c	-0.001 (-0.78)	-0.001 (-0.61)	0.000 (0.23)
Industry New Finance	-0.016 (-1.25) ^f	-0.016 (-1.23) ^f	-0.021 (-1.56)	0.010 (0.57) ^d	0.010 (0.57) ^d	0.001 (0.03)
Firm New Finance	-0.024 (-5.22) ^{a,f}	-0.024 (-4.83) ^{a,f}	-0.025 (-4.66) ^{a,e}	-0.019 (-3.12) ^a	-0.019 (-2.68) ^a	-0.017 (-1.55)
Observations	153,298	153,298	153,298	48,521	48,521	48,521
Panel D: Declining Concentration Industries Only						
Industry Relative Valuation	-0.005 (-1.94) ^c	-0.005 (-1.67) ^c	-0.005 (-1.80) ^c	-0.009 (-2.06) ^b	-0.009 (-2.15) ^b	-0.010 (-2.46) ^b
Firm Relative Valuation	-0.003 (-5.81) ^{a,e}	-0.003 (-5.90) ^{a,e}	-0.003 (-5.78) ^{a,e}	-0.004 (-6.68) ^{a,e}	-0.004 (-5.13) ^{a,f}	-0.003 (-4.34) ^a
Industry Relative Investment	-0.006 (-2.21) ^{b,e}	-0.006 (-2.53) ^{b,d}	-0.005 (-1.88) ^{c,e}	-0.013 (-4.02) ^{a,d}	-0.013 (-4.47) ^{a,d}	-0.007 (-2.07) ^{b,d}
Firm Relative Investment	-0.002 (-7.03) ^a	-0.002 (-4.43) ^a	-0.002 (-3.95) ^a	-0.002 (-4.73) ^a	-0.002 (-2.64) ^a	-0.002 (-2.39) ^b
Industry New Finance	-0.029 (-2.80) ^a	-0.029 (-2.72) ^a	-0.032 (-2.93) ^a	-0.032 (-1.99) ^b	-0.032 (-1.97) ^b	-0.023 (-1.28)
Firm New Finance	-0.012 (-3.47) ^{a,f}	-0.012 (-3.32) ^{a,f}	-0.011 (-3.10) ^a	-0.009 (-2.30) ^b	-0.009 (-2.11) ^{b,f}	-0.007 (-1.77) ^c
Observations	429,019	429,019	429,019	206,565	206,565	206,565

Explanation: Regressions examine the effect of relative firm- and industry-level valuation (industry booms), investment and also new finance on firm-level monthly abnormal stock returns. We report regression coefficients and t-statistics (in parentheses) for various panel data regression models, and for the Fama-MacBeth regression method. t-statistics (in parentheses) are from standard errors that are adjusted for clustering over time and industry, and are corrected for heteroskedasticity. One observation is one firm in one month, and the dependent variable is the firm's monthly abnormal return. A firm's abnormal return is its raw monthly return minus the monthly return of a portfolio matched on the basis of NYSE/AMEX breakpoints of size, industry-adjusted book to market, and past year returns as in Daniel, Hirshleifer, Titman, and Wermers (1997). For monthly abnormal return observations between July of year t+1 and June of year t+2, independent variables are constructed using accounting data with fiscal years ending in year t. Competitive and concentrated industries are those in the lowest and highest tercile based on industry concentration (HHI). Growth industries are those in the lowest tercile based on industry-average book to market ratios (which are first winsorized at the 5/95% level prior to taking industry averages). * a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from opposing tercile (competitive versus concentrated industries in Panels B, C, and decreasing versus increasing concentration in Panel D) at the 1%, 5%, and 10% levels, respectively.

Table VIII: Regressions predicting firm-level stock returns in high relative valuation and high risk terciles

Variable	High Relative Valuation			High Market Risk		
	Industry Clusters	Fama-MacBeth	Ind+Year Clusters	Industry Clusters	Ind+Year Clusters	Fama-MacBeth
Panel A: All Firms						
Industry Relative Valuation	-0.014 (-3.51) ^a	-0.009 (-2.79) ^a	-0.014 (-4.12) ^a	-0.009 (-4.25) ^a	-0.009 (-3.85) ^a	-0.006 (-2.22) ^b
Firm Relative Valuation	-0.002 (-5.13) ^a	-0.002 (-4.25) ^a	-0.002 (-4.60) ^a	-0.003 (-5.21) ^a	-0.003 (-5.93) ^a	-0.003 (-5.67) ^a
Industry Relative Investment	-0.003 (-1.39)	-0.002 (-0.66)	-0.003 (-1.49)	-0.009 (-4.25) ^a	-0.009 (-4.18) ^a	-0.007 (-2.90) ^a
Firm Relative Investment	-0.001 (-1.61)	-0.001 (-2.01) ^b	-0.001 (-1.46)	-0.001 (-3.59) ^a	-0.001 (-3.26) ^a	-0.001 (-2.64) ^a
Industry New Finance	-0.035 (-3.31) ^a	-0.023 (-2.35) ^b	-0.035 (-3.54) ^a	-0.045 (-3.59) ^a	-0.045 (-3.45) ^a	-0.028 (-2.58) ^a
Firm New Finance	-0.023 (-7.82) ^a	-0.019 (-5.42) ^a	-0.023 (-5.36) ^a	-0.016 (-7.78) ^a	-0.016 (-4.76) ^a	-0.012 (-4.38) ^a
Observations	351,889	351,889	351,889	501,298	501,298	501,298
Panel B: Competitive Industries Only						
Industry Relative Valuation	-0.023 (-3.66) ^{a,d}	-0.015 (-2.37) ^b	-0.023 (-3.94) ^{a,d}	-0.012 (-4.15) ^{a,e}	-0.012 (-3.50) ^{a,e}	-0.009 (-2.08) ^b
Firm Relative Valuation	-0.003 (-3.75) ^a	-0.003 (-3.30) ^a	-0.003 (-3.74) ^a	-0.003 (-5.33) ^{a,d}	-0.003 (-5.90) ^{a,d}	-0.004 (-5.32) ^{a,d}
Industry Relative Investment	-0.008 (-1.91) ^{c,f}	-0.001 (-0.12)	-0.008 (-1.94) ^{c,f}	-0.012 (-4.31) ^{a,e}	-0.012 (-3.35) ^{a,e}	-0.013 (-3.05) ^{a,e}
Firm Relative Investment	0.000 (-0.21) ^f	0.000 (-0.48)	0.000 (-0.19) ^f	-0.001 (-2.03) ^b	-0.001 (-2.29) ^b	-0.001 (-1.89) ^c
Industry New Finance	-0.057 (-3.71) ^{a,e}	-0.045 (-2.29) ^b	-0.057 (-3.77) ^{a,e}	-0.080 (-4.01) ^{a,d}	-0.080 (-4.22) ^{a,d}	-0.034 (-1.60)
Firm New Finance	-0.024 (-6.85) ^a	-0.017 (-3.33) ^a	-0.024 (-4.78) ^a	-0.015 (-6.83) ^a	-0.015 (-4.23) ^a	-0.010 (-2.66) ^{a,e}
Observations	186,338	186,338	186,338	321,042	321,042	321,042
Panel C: Concentrated Industries Only						
Industry Relative Valuation	0.005 (0.91) ^d	-0.001 (-0.17)	0.005 (0.83) ^d	-0.002 (-0.59) ^e	-0.002 (-0.50) ^e	-0.002 (-0.52)
Firm Relative Valuation	-0.002 (-2.12) ^b	-0.003 (-1.79) ^c	-0.002 (-1.83) ^c	0.000 (0.39) ^d	0.000 (0.49) ^d	0.002 (1.39) ^d
Industry Relative Investment	0.001 (0.41) ^f	-0.002 (-0.47)	0.001 (0.41) ^f	-0.002 (-0.69) ^e	-0.002 (-0.72) ^e	-0.003 (-0.77) ^e
Firm Relative Investment	-0.002 (-2.10) ^{b,f}	-0.002 (-1.67) ^c	-0.002 (-1.98) ^{b,f}	0.000 (-0.33)	0.000 (-0.25)	0.000 (0.10)
Industry New Finance	0.016 (0.62) ^e	0.004 (0.18)	0.016 (0.68) ^e	0.001 (0.07) ^d	0.001 (0.08) ^d	-0.022 (-0.91)
Firm New Finance	-0.021 (-3.57) ^a	-0.027 (-3.16) ^a	-0.021 (-2.90) ^a	-0.022 (-3.21) ^a	-0.022 (-3.23) ^a	-0.034 (-3.78) ^{a,e}
Observations	51,445	51,445	51,445	65,905	65,905	65,905
Panel D: Declining Concentration Industries Only						
Industry Relative Valuation	-0.010 (-1.92) ^c	-0.006 (-0.96)	-0.010 (-1.82) ^c	-0.010 (-2.55) ^b	-0.010 (-2.42) ^b	-0.009 (-2.15) ^b
Firm Relative Valuation	-0.003 (-3.78) ^a	-0.002 (-2.09) ^b	-0.003 (-3.43) ^a	-0.004 (-5.08) ^a	-0.004 (-4.48) ^a	-0.004 (-4.56) ^a
Industry Relative Investment	-0.007 (-2.19) ^{b,e}	-0.002 (-0.68)	-0.007 (-1.94) ^{c,e}	-0.012 (-3.45) ^{a,e}	-0.012 (-3.72) ^{a,e}	-0.008 (-2.39) ^{b,e}
Firm Relative Investment	0.000 (-0.46)	-0.001 (-0.99)	0.000 (-0.56) ^f	-0.002 (-3.74) ^a	-0.002 (-2.56) ^b	-0.002 (-2.24) ^b
Industry New Finance	-0.038 (-2.52) ^b	-0.037 (-1.61)	-0.038 (-2.52) ^b	-0.034 (-1.80) ^c	-0.034 (-1.85) ^c	-0.023 (-1.18)
Firm New Finance	-0.018 (-3.27) ^{a,f}	-0.018 (-3.56) ^a	-0.018 (-3.38) ^a	-0.010 (-2.18) ^{b,e}	-0.010 (-2.24) ^{b,e}	-0.009 (-2.04) ^b
Observations	139,689	139,689	139,689	206,575	206,575	206,575

Explanation: Regressions examine the effect of relative firm- and industry-level valuation (industry booms), investment and also new finance on firm-level monthly abnormal stock returns. We report regression coefficients and t-statistics (in parentheses) for various panel data regression models, and for the Fama-MacBeth regression method. t-statistics (in parentheses) are from standard errors that are adjusted for clustering over time and industry, and are corrected for heteroskedasticity. One observation is one firm in one month, and the dependent variable is the firm's monthly abnormal return. A firm's abnormal return is its raw monthly return minus the monthly return of a portfolio matched on the basis of NYSE/AMEX breakpoints of size, industry-adjusted book to market, and past year returns as in Daniel, Hirshleifer, and Wermers (1997). For monthly abnormal return observations between July of year t+1 and June of year t+2, independent variables are constructed using accounting data with fiscal years ending in year t. Competitive and concentrated industries are those in the lowest and highest tercile based on industry concentration (HHI). High relative valuation industries are those in the highest tercile based on relative industry valuation. High market risk industries are those in the highest tercile based on industry's average market beta in the past year. * a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from opposing tercile (competitive versus concentrated industries in Panels B, C) at the 1%, 5%, and 10% levels, respectively.

Table IX: Regressions predicting annual changes in risk

Variable	Competitive Industries			Concentrated Industries		
	Industry Clusters	Ind+Year Clusters	Fama-MacBeth	Industry Clusters	Ind+Year Clusters	Fama-MacBeth
Panel A: Changes in Total Risk						
Industry Excess Valuation	-0.001 (-2.34) ^b	-0.001 (-1.86) ^c	0.000 (-0.27)	0.001 (1.43)	0.001 (1.27)	0.001 (1.18)
Firm Excess Valuation	-0.001 (-4.65) ^a	-0.001 (-5.27) ^a	-0.001 (-2.70) ^{a,e}	-0.001 (-2.74) ^a	-0.001 (-2.52) ^b	-0.001 (-2.39) ^{b,e}
Industry Excess Investment	-0.002 (-1.68) ^c	-0.002 (-2.09) ^b	-0.001 (-1.39)	-0.002 (-3.00) ^a	-0.002 (-2.81) ^a	-0.002 (-2.57) ^b
Firm Excess Investment	-0.001 (-3.30) ^a	-0.001 (-3.89) ^a	-0.001 (-3.61) ^a	0.000 (-1.55)	0.000 (-1.32)	0.000 (-0.54)
Industry New Finance	0.020 (4.32) ^a	0.020 (4.83) ^a	0.019 (3.96) ^a	0.014 (3.22) ^a	0.014 (3.23) ^a	0.021 (2.93) ^a
Firm New Finance	0.012 (5.38) ^{a,f}	0.012 (8.85) ^a	0.009 (7.83) ^{a,d}	0.012 (5.67) ^{a,f}	0.012 (4.60) ^a	0.012 (4.36) ^{a,d}
totrisk	-0.286 (-6.00) ^a	-0.286 (-7.74) ^a	-0.231 (-7.35) ^a	-0.127 (-3.42) ^a	-0.127 (-3.18) ^a	-0.128 (-2.57) ^b
Observations	50,137	50,137	50,137	11,964	11,964	11,964
Panel B: Changes in Market Beta						
Industry Excess Valuation	0.133 (1.91) ^c	0.133 (3.41) ^{a,f}	0.091 (1.60)	0.035 (0.86)	0.035 (0.99) ^f	0.033 (0.72)
Firm Excess Valuation	0.089 (10.73) ^a	0.089 (12.13) ^a	0.091 (10.64) ^a	0.066 (5.25) ^a	0.066 (4.73) ^a	0.068 (3.89) ^a
Industry Excess Investment	-0.178 (-2.91) ^{a,e}	-0.178 (-4.31) ^{a,d}	-0.107 (-2.16) ^b	-0.018 (-0.52) ^e	-0.018 (-0.58) ^d	-0.040 (-0.99)
Firm Excess Investment	-0.004 (-0.63)	-0.004 (-0.76)	-0.006 (-0.88)	0.009 (0.65)	0.009 (0.72)	0.004 (0.34)
Industry New Finance	-0.036 (-0.22)	-0.036 (-0.23)	0.245 (1.03)	0.138 (0.78)	0.138 (0.82)	0.337 (1.44)
Firm New Finance	0.158 (3.44) ^a	0.158 (4.59) ^a	0.155 (3.57) ^a	0.205 (3.72) ^a	0.205 (2.66) ^a	0.163 (1.71) ^c
pbetmkt	-0.625 (-29.31) ^a	-0.625 (-49.91) ^a	-0.608 (-24.47) ^a	-0.618 (-32.64) ^a	-0.618 (-34.52) ^a	-0.619 (-20.81) ^a
Observations	50,137	50,137	50,137	11,964	11,964	11,964
Panel C: Changes in Idiosyncratic Risk						
Industry Excess Valuation	-0.001 (-2.35) ^b	-0.001 (-1.95) ^c	0.000 (-0.48)	0.001 (1.54)	0.001 (1.38)	0.001 (1.24)
Firm Excess Valuation	-0.002 (-4.32) ^a	-0.002 (-5.15) ^a	-0.001 (-2.93) ^{a,e}	-0.001 (-2.69) ^a	-0.001 (-2.44) ^b	-0.001 (-2.41) ^{b,e}
Industry Excess Investment	-0.001 (-1.47)	-0.001 (-1.78) ^c	-0.001 (-1.26)	-0.002 (-2.84) ^a	-0.002 (-2.66) ^a	-0.002 (-2.48) ^b
Firm Excess Investment	-0.001 (-3.11) ^a	-0.001 (-3.68) ^a	-0.001 (-3.43) ^a	0.000 (-1.54)	0.000 (-1.29)	0.000 (-0.50)
Industry New Finance	0.020 (4.38) ^a	0.020 (5.08) ^a	0.018 (4.04) ^a	0.014 (3.25) ^a	0.014 (3.28) ^a	0.020 (2.82) ^a
Firm New Finance	0.012 (5.32) ^{a,e}	0.012 (8.82) ^{a,f}	0.009 (7.58) ^{a,d}	0.012 (5.78) ^{a,e}	0.012 (4.68) ^{a,f}	0.012 (4.31) ^{a,d}
asys	-0.285 (-5.92) ^a	-0.285 (-7.64) ^a	-0.228 (-7.24) ^a	-0.123 (-3.58) ^a	-0.123 (-3.28) ^a	-0.124 (-2.56) ^b
Observations	50,137	50,137	50,137	11,964	11,964	11,964

Explanation: Regressions examine the effect of relative firm- and industry-level valuation (industry booms), investment and new financing on yearly changes in risk. We report regression coefficients t-statistics (in parentheses) for various panel data regression models. t-statistics (in parentheses) are from standard errors that are adjusted for clustering over time and industry, and are corrected for heteroskedasticity. We report results for ordinary least squares (OLS) with year fixed effects (industry clustering adjustments), OLS with year fixed effects (industry and year clustering adjustments), and Fama-MacBeth regression methods. Results in all three panels of this table are restricted to competitive industries, which are those in the lowest fitted HHI tercile. One observation is one firm in one year. For independent variables collected using data from calendar year t, the dependent variable is the change in risk (ex-post risk minus ex-ante risk). Ex-ante risk is measured from July of year t+1 to June of year t+2, and ex-post risk is measured from July of year t+2 to June of year t+3 (similar results obtain if we use risk measured using one year earlier data). The dependent variable in Panel A is based on total risk, which is equal to the standard deviation of daily stock returns measured over one year. The market betas in Panel B are estimated using daily firm-level daily stock returns using one year of data. Idiosyncratic risk in Panel C is the standard deviation of the residuals of a regression of daily stock returns on the three Fama-French factors (HML, MKT, SMB) using one year of data. The explanatory variables are discussed in Table III. * a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from opposing tercile (competitive versus concentrated industries at the 1%, 5%, and 10% levels, respectively).

Table X: Regressions predicting change-in-risk adjusted monthly firm-level stock returns

Variable	Industry Clusters	Ind+Year Clusters	Fama-MacBeth	Industry Clusters	Ind+Year Clusters	Fama-MacBeth
All Competitive Industries						
Industry Relative Valuation	0.002 (1.18)	0.002 (1.01)	0.002 (0.63)	-0.005 (-1.85) ^c	-0.005 (-1.60)	-0.006 (-1.54)
Firm Relative Valuation	-0.002 (-4.80) ^{a,e}	-0.002 (-5.65) ^{a,e}	-0.003 (-4.68) ^{a,d}	-0.002 (-3.52) ^a	-0.002 (-3.78) ^{a,f}	-0.003 (-2.75) ^{a,e}
Industry Relative Investment	-0.005 (-2.07) ^b	-0.005 (-2.10) ^b	-0.005 (-2.00) ^b	-0.006 (-1.79) ^{c,e}	-0.006 (-1.47) ^e	-0.006 (-2.11) ^{b,e}
Firm Relative Investment	-0.001 (-3.30) ^a	-0.001 (-3.16) ^a	-0.001 (-2.56) ^b	-0.001 (-2.21) ^b	-0.001 (-2.22) ^b	-0.001 (-2.37) ^b
Industry New Finance	-0.040 (-3.82) ^a	-0.040 (-3.89) ^a	-0.022 (-1.43)	-0.048 (-3.25) ^{a,e}	-0.048 (-3.20) ^{a,e}	-0.034 (-1.28)
Firm New Finance	-0.017 (-6.54) ^{a,f}	-0.017 (-5.40) ^{a,f}	-0.013 (-4.12) ^{a,d}	-0.015 (-6.05) ^a	-0.015 (-3.83) ^a	-0.006 (-1.34) ^d
Observations	630,273	630,273	630,273	283,221	283,221	283,221
All Concentrated Industries						
Industry Relative Valuation	0.000 (-0.02)	0.000 (-0.01)	0.000 (-0.06)	0.001 (0.41)	0.001 (0.35)	-0.001 (-0.13)
Firm Relative Valuation	0.000 (-0.41) ^e	0.000 (-0.45) ^e	0.000 (-0.17) ^d	0.000 (-0.22)	0.000 (-0.24) ^f	0.000 (0.03) ^e
Industry Relative Investment	-0.002 (-1.26)	-0.002 (-1.21)	-0.002 (-0.98)	0.003 (1.18) ^e	0.003 (1.12) ^e	0.002 (0.79) ^e
Firm Relative Investment	-0.001 (-1.47)	-0.001 (-1.14)	-0.001 (-1.02)	0.000 (-0.52)	0.000 (-0.39)	0.000 (0.27)
Industry New Finance	-0.015 (-1.22)	-0.015 (-1.17)	-0.017 (-1.01)	-0.002 (-0.09) ^e	-0.002 (-0.09) ^e	-0.012 (-0.43)
Firm New Finance	-0.026 (-5.54) ^{a,f}	-0.026 (-5.13) ^{a,f}	-0.027 (-5.47) ^{a,d}	-0.027 (-3.35) ^a	-0.027 (-3.58) ^a	-0.034 (-3.79) ^{a,d}
Observations	148,059	148,059	148,059	47,994	47,994	47,994
High Relative Value Competitive Industries						
Industry Relative Valuation	-0.013 (-2.64) ^{a,d}	-0.013 (-2.67) ^{a,d}	-0.007 (-1.05)	-0.003 (-0.99)	-0.003 (-0.83)	-0.002 (-0.46)
Firm Relative Valuation	-0.002 (-3.10) ^a	-0.002 (-3.04) ^a	-0.002 (-2.53) ^b	-0.003 (-4.30) ^{a,e}	-0.003 (-4.47) ^{a,d}	-0.003 (-3.17) ^{a,d}
Industry Relative Investment	-0.009 (-1.77) ^{c,f}	-0.009 (-2.01) ^{b,e}	-0.002 (-0.53)	-0.011 (-3.33) ^{a,e}	-0.011 (-2.66) ^{a,e}	-0.012 (-2.16) ^{b,f}
Firm Relative Investment	0.000 (0.56) ^e	0.000 (0.50) ^f	0.000 (0.13)	-0.001 (-1.49)	-0.001 (-1.59)	-0.001 (-1.45)
Industry New Finance	-0.048 (-3.64) ^{a,e}	-0.048 (-3.39) ^{a,e}	-0.025 (-0.89)	-0.062 (-3.83) ^{a,e}	-0.062 (-3.56) ^{a,e}	-0.038 (-1.46)
Firm New Finance	-0.026 (-7.33) ^a	-0.026 (-5.00) ^a	-0.019 (-3.49) ^a	-0.018 (-6.34) ^a	-0.018 (-4.50) ^a	-0.012 (-3.28) ^{a,d}
Observations	177,987	177,987	177,987	300,318	300,318	300,318
High Relative Value Concentrated Industries						
Industry Relative Valuation	0.009 (1.76) ^{c,d}	0.009 (1.57) ^d	-0.001 (-0.09)	-0.001 (-0.45)	-0.001 (-0.38)	-0.003 (-0.61)
Firm Relative Valuation	-0.002 (-1.91) ^c	-0.002 (-1.61)	-0.002 (-1.12)	0.001 (0.83) ^e	0.001 (1.09) ^d	0.004 (2.21) ^{b,d}
Industry Relative Investment	0.002 (0.73) ^f	0.002 (0.66) ^e	0.001 (0.15)	-0.002 (-0.63) ^e	-0.002 (-0.60) ^e	-0.002 (-0.80) ^f
Firm Relative Investment	-0.002 (-1.97) ^{b,e}	-0.002 (-1.82) ^{c,f}	-0.002 (-1.49)	0.000 (-0.18)	0.000 (-0.14)	0.001 (0.35)
Industry New Finance	0.022 (0.83) ^e	0.022 (0.87) ^e	0.006 (0.20)	-0.010 (-0.51) ^e	-0.010 (-0.58) ^e	-0.028 (-0.89)
Firm New Finance	-0.020 (-3.50) ^a	-0.020 (-2.79) ^a	-0.027 (-2.85) ^a	-0.030 (-3.48) ^a	-0.030 (-4.08) ^a	-0.050 (-4.84) ^{a,d}
Observations	50,426	50,426	50,426	64,947	64,947	64,947
High Market Risk Competitive Industries						
Industry Relative Valuation	-0.003 (-0.99)	-0.003 (-0.83)	-0.003 (-0.46)	-0.003 (-0.99)	-0.003 (-0.83)	-0.002 (-0.46)
Firm Relative Valuation	-0.003 (-4.30) ^{a,e}	-0.003 (-4.47) ^{a,d}	-0.003 (-3.17) ^{a,d}	-0.003 (-4.30) ^{a,e}	-0.003 (-4.47) ^{a,d}	-0.003 (-3.17) ^{a,d}
Industry Relative Investment	-0.011 (-3.33) ^{a,e}	-0.011 (-2.66) ^{a,e}	-0.012 (-2.16) ^{b,f}	-0.011 (-3.33) ^{a,e}	-0.011 (-2.66) ^{a,e}	-0.012 (-2.16) ^{b,f}
Firm Relative Investment	-0.001 (-1.49)	-0.001 (-1.59)	-0.001 (-1.45)	-0.001 (-1.49)	-0.001 (-1.59)	-0.001 (-1.45)
Industry New Finance	-0.062 (-3.83) ^{a,e}	-0.062 (-3.56) ^{a,e}	-0.038 (-1.46)	-0.062 (-3.83) ^{a,e}	-0.062 (-3.56) ^{a,e}	-0.038 (-1.46)
Firm New Finance	-0.018 (-6.34) ^a	-0.018 (-4.50) ^a	-0.012 (-3.28) ^{a,d}	-0.018 (-6.34) ^a	-0.018 (-4.50) ^a	-0.012 (-3.28) ^{a,d}
Observations	300,318	300,318	300,318	47,994	47,994	47,994
High Market Risk Concentrated Industries						
Industry Relative Valuation	-0.001 (-0.45)	-0.001 (-0.38)	-0.003 (-0.61)	-0.001 (-0.45)	-0.001 (-0.38)	-0.003 (-0.61)
Firm Relative Valuation	0.001 (0.83) ^e	0.001 (1.09) ^d	0.004 (2.21) ^{b,d}	0.001 (0.83) ^e	0.001 (1.09) ^d	0.004 (2.21) ^{b,d}
Industry Relative Investment	-0.002 (-0.63) ^e	-0.002 (-0.60) ^e	-0.002 (-0.80) ^f	-0.002 (-0.63) ^e	-0.002 (-0.60) ^e	-0.002 (-0.80) ^f
Firm Relative Investment	0.000 (-0.18)	0.000 (-0.14)	0.001 (0.35)	0.000 (-0.18)	0.000 (-0.14)	0.001 (0.35)
Industry New Finance	-0.010 (-0.51) ^e	-0.010 (-0.58) ^e	-0.028 (-0.89)	-0.010 (-0.51) ^e	-0.010 (-0.58) ^e	-0.028 (-0.89)
Firm New Finance	-0.030 (-3.48) ^a	-0.030 (-4.08) ^a	-0.050 (-4.84) ^{a,d}	-0.030 (-3.48) ^a	-0.030 (-4.08) ^a	-0.050 (-4.84) ^{a,d}
Observations	64,947	64,947	64,947	283,221	283,221	283,221

Explanation: Regressions examine the effect of relative firm- and industry-level valuation (industry booms), investment and also new finance on changes-in-risk-adjusted firm-level monthly abnormal stock returns. We report regression coefficients and t-statistics (in parentheses) for various panel data regression models, and for the Fama-MacBeth regression method. t-statistics (in parentheses) are from standard errors that are adjusted for clustering over time and industry, and are corrected for heteroskedasticity. One observation is one firm in one month, and the dependent variable is the firm's changes-in-risk-adjusted monthly abnormal return. To adjust returns for risk, we regress each year t+1 return on the change in risk (market, HML, SMB, momentum, and idiosyncratic risk) from year t to year t+2 (we also include the year t risk levels to control for the autocorrelation of risk exposures). A firm's (unadjusted) abnormal return is its raw monthly return minus the monthly return of a portfolio matched on the basis of NYSE/AMEX breakpoints of size, industry-adjusted book to market, and past year returns as in Daniel, Hirshleifer, Titman, and Wermers (1997). For monthly abnormal return observations between July of year t+1 and June of year t+2, independent variables are constructed using accounting data with fiscal years ending in year t. Competitive and concentrated industries are those in the lowest and highest tercile based on industry concentration (HHI). Growth industries are those in the lowest tercile based on industry-average book to market ratios (which are first winsorized at the 5/95% level prior to taking industry averages. High relative valuation industries are those in the highest tercile based on relative industry valuation. High market risk industries are those in the highest tercile based on industry's average market beta in the past year. * a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from opposing tercile (competitive versus concentrated industries) at the 1%, 5%, and 10% levels, respectively.

Table XI: Average firm level and industry level quintile portfolio abnormal returns

Variable	Firm Level Returns					Industry Level Returns				
	1	2	3	4	5	1	2	3	4	5
<i>Panel A: Sample-wide results</i>										
Industry Relative Valuation	1.894	1.572	0.310	1.440	-5.863	-0.024	-1.150	-0.905	-1.704	-2.140
Firm Relative Valuation	3.395	0.560	1.509	0.492	-1.155	-0.781	-1.008	-0.278	-1.175	-2.702
Industry Relative Investment	1.867	2.249	-0.142	-0.752	-3.823	-0.781	-1.008	-0.278	-1.175	-2.702
Firm Relative Investment	2.166	0.838	1.042	1.093	0.396	-0.961	-1.287	0.157	-1.418	-2.424
Industry New Finance	1.748	0.472	2.834	0.051	-5.220	-0.961	-1.287	0.157	-1.418	-2.424
Firm New Finance	2.150	2.303	1.597	0.321	-2.248	-0.961	-1.287	0.157	-1.418	-2.424
<i>Panel B: Competitive Industries</i>										
Industry Relative Valuation	1.991	2.377	0.951	4.399	-9.613	-0.266	-0.486	-1.202	-1.812	-3.671
Firm Relative Valuation	4.883	1.506	2.351	0.956	-1.058	-0.596	-0.434	-0.855	-2.072	-3.687
Industry Relative Investment	2.542	4.381	0.068	-1.577	-6.499	-0.596	-0.434	-0.855	-2.072	-3.687
Firm Relative Investment	3.084	1.276	1.955	1.935	1.437	-1.882	-1.735	1.112	-1.967	-2.705
Industry New Finance	2.245	1.083	4.915	0.863	-7.058	-1.882	-1.735	1.112	-1.967	-2.705
Firm New Finance	2.619	3.499	3.436	1.129	-2.469	-1.882	-1.735	1.112	-1.967	-2.705
<i>Panel C: Concentrated Industries</i>										
Industry Relative Valuation	2.070	0.136	-0.788	-3.029	-2.380	-0.180	-3.365	1.621	-3.934	-0.768
Firm Relative Valuation	-0.486	-1.377	-0.262	-0.277	-2.376	-0.180	-3.365	1.621	-3.934	-0.768
Industry Relative Investment	-1.371	1.272	0.055	-3.205	-2.544	-1.161	-0.962	-1.293	-0.720	-2.553
Firm Relative Investment	-0.314	-0.499	-0.931	0.050	-0.475	-1.028	-2.708	0.387	-1.550	-1.740
Industry New Finance	1.786	-1.449	-0.995	-1.702	-2.410	-1.028	-2.708	0.387	-1.550	-1.740
Firm New Finance	1.184	0.426	-1.835	-0.342	-3.792	-1.028	-2.708	0.387	-1.550	-1.740
<i>Panel D: Industries with Declining Concentration</i>										
Industry Relative Valuation	1.246	4.967	0.400	2.993	-5.449	-1.034	-0.940	-1.510	-1.401	-3.602
Firm Relative Valuation	4.706	1.533	2.232	1.424	-1.354	-1.034	-0.940	-1.510	-1.401	-3.602
Industry Relative Investment	5.996	3.459	-0.047	-0.212	-5.242	-1.723	-1.848	-1.498	-0.615	-2.832
Firm Relative Investment	3.231	1.626	2.053	1.436	1.535	-1.723	-1.848	-1.498	-0.615	-2.832
Industry New Finance	2.205	-1.654	6.252	1.365	-4.872	-2.366	-0.798	-0.451	-1.936	-2.969
Firm New Finance	2.197	3.184	2.376	1.200	-0.501	-2.366	-0.798	-0.451	-1.936	-2.969

Explanation: The table presents average risk-adjusted monthly firm-level stock returns for various portfolios. Reported abnormal returns are annual-equivalent monthly returns (actual monthly abnormal returns times twelve), and they are reported as percentages. The averages are based on the entire sample (1972 to 2004), and for both firm-level (one observation is one firm) and industry level returns (one observation is one industry). Within each portfolio, one observation is one firm in one month. A firm's abnormal return is its raw monthly return minus the monthly return of a portfolio matched on the basis of NYSE/AMEX breakpoints of size, industry-adjusted book to market, and past year returns as in Daniel, Hirshleifer, Titman, and Wermers (1997). For monthly abnormal return observations between July of year t+1 and June of year t+2, portfolio assignments are constructed using accounting data with fiscal years ending in year t. We form quintile portfolios based on industry averages of observed firm-specific relative valuation, relative investment, and new financing. A firm's "new financing" is the sum of its net equity issuing and net debt issuing activity in year t (normalized by assets). A firm's relative valuation is based on the empirical measure of industry valuation presented in Rhodes-Kropf, Robinson, and Viswanathan (2005). In particular, we compute expected valuation by (1) regressing year t-10 to t-1 firm observations of log market cap on four variables (market to book ratio, log net income, a dummy for negative log market cap minus the predicted year t log market cap regression coefficients are used to compute predicted valuations in year t, and relative valuation is the actual year t log market cap minus the predicted year t log market cap (predictions are based on each firm's year t characteristics). Relative investment is computed using the same method, replacing log investment with log market cap. Panel A includes all industries, Panel B includes competitive industries only (lowest fitted HHI tercile), Panel C includes concentrated industries only (highest fitted HHI tercile), and Panel D includes industries in the most negative tercile of change in fitted HHI.