The Re-examination of Asset Growth Effect

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Abstract

This paper re-examines the cross-sectional relation between firm asset growth and subsequent stock returns. The asset growth effect exists and is robust to previously documented determinants of the cross-section of returns. The effect is weaker among large-capitalization stocks and dampens after its discovery. The predictive power of asset growth comes from various subcomponents of growth. Intra-industry tests show that asset growth effect is pervasive across industries, and is robust to controls of firm size, value, and momentum. Asset growth effect decreases among highly concentrated industries when corporate oversight increases, supporting a mispricing-based explanation.

1 Introduction

Asset growth effect is first documented by Cooper, Gulen, and Schill (2008), who find that firms with high asset growth rates are followed by abnormally low returns, whereas firms that experience low asset growth rates are followed by abnormally high returns. During the period from 1968 to 2003 in the U.S., they show that the risk-adjusted spread between the low and high asset growth firms is highly significant at 8% per year for value-weighted decile portfolios. In this paper, I re-examine the asset growth effect and provides extensions to the original paper.

The motivation for my re-examination is twofold. First, the paper by Cooper, Gulen, and Schill (2008) contributes significantly to the asset pricing literature. Previous studies documented effects of investment and financing activities on returns using *components* of firm's assets, such as sales growth (Lakonishok, Shleifer, and Vishny 1994), capital investment growth (Titman, Wei, and Xie 2004), and accruals (Sloan 1996, Hirshleifer, Hou, Teoh, and Zhang 2004). Cooper, Gulen, and Schill (2008) are the first to document the effect of *total* asset growth on the subsequent cross-sectional stock returns. This one measure of asset growth is simple yet comprehensive. Lipson, Mortal, and Schill (2011) show that the total asset growth rate largely subsumes the explanatory power of other growth measures. Besides, the validity and robustness of the asset growth effect are acknowledged in the follow-up studies. In the five-factor model, Fama and French (2015) include the risk premium of asset growth rate as the CMA (conservative minus aggressive) factor in their five-factor model.

Second, this paper leaves room for extensions to explain the asset growth effect. The asset growth effect can be explained by mispricing and risk, with evidence supporting both camps. On the risk side, Tobin (1969), Cochrane (1991), (1996), Li, Livdan, and Zhang (2009), among others link investment with a reduction in discount rates. Besides, Watanabe, et. al. (2013) use international evidence to support rational asset pricing, as they find a stronger effect on more developed markets where stocks are more efficiently priced. However, most follow-up researches have found evidence to support the mispricing-based explanation. In their original paper, Cooper, Gulen, and Schill (2008) find that overreaction to past firm performance, corporate oversight, and overconfidence helps to explain the asset growth effect. Lam and Wei (2011) and Lipson, Mortal, and Schill (2011) find that various measures of limits-to-arbitrage, such as idiosyncratic stock return volatility, analyst coverage, analyst forecast dispersion, etc., explain the asset growth effect. Thus, it would be meaningful to re-examine the asset growth effect and explore its possible explanations.

To better understand the asset growth effect, I first replicate the paper of Cooper, Gulen, and Schill (2008). Consistent with their findings, I document a strong negative correlation between asset growth rates and subsequent abnormal returns during the sample period from 1968 to 2003. The spread between the value-weighed portfolio annualized raw returns for firms in the highest growth decile and those in the lowest growth decile is significant at -10.96%. After adjusting for risks, the value-weighted annual spread is still significant at -6.21%. I also find that the asset growth effect persists up to 5 years after formation for equal-weighted portfolios. When repeating the analysis across three size-grouped portfolios, I find that the asset growth effect is weaker among large-cap firms. In addition, when analyzing the asset growth effect during different subperiods, I find that the anomaly dampens in equal-weighted measures and disappears in value-weighted measures during the post-discovery period from 2004 to 2018.

I find that the asset growth effect remains strong after controlling for other standard determinants of the cross-section of returns. In fact, the asset growth rate outperforms other control variables including book-to-market ratios, capitalization, short- and long-horizon lagged returns, sales growth, and capital investment growth. Contrary to Cooper, Gulen, and Schill (2008), I find that accrual measures explain the cross-sectional stock returns with a higher statistical significance than asset growth. The effect is consistent for different size groups. I further decompose total asset growth into different components from both left-hand (investment) and right-hand (financing) side of the balance sheet, and find consistent results as Cooper, Gulen, and Schill (2008). The findings show that asset growth rate is a comprehensive measure that outperforms the components of asset growth rate by benefiting from the predictability of all components of asset growth.

Then, I extend the work of Cooper, Gulen, and Schill (2008) by examining the intra-industry asset growth effect. To the best of my knowledge, I'm the first one to examine the asset growth effect at the industry level. I group firms into 48 industries using classifications from Fama and French (1997). During the period from 1968 to 2018, I find evidence of a significant asset growth effect within each industry. The average return spread between the top and bottom asset growth portfolios is -8.69% using equal-weighted measures and -3.98% using value-weighted measures. The return-predictive power of asset growth remains significant after controlling for size, book-to-market, short- and long-horizon lagged returns and outperforms these control variables. Meanwhile, I find the magnitude of the asset growth effect varies substantially across industries. For example, the equal-weighted annual return spreads between the bottom and top asset growth portfolios formed within each industry ranges from -23% to 3%. However, only one industry has an insignificantly positive return spread in equal-weighted measure. Such finding proves the robustness of asset growth effect in the U.S. stock market.

Last, I use the intra-industry data to evaluate a plausible economic cause of the asset growth effect. My approach integrates the work of Titman, Wei, and Xie (2004), Hou and Robinson (2006), as well as Giroud and Mueller (2010) from the corporate finance literature. Specifically, I test the hypothesis that an increase in corporate oversight due to the increased threat of a hostile takeover during the period from 1984 to 1989 should dampen the asset growth effect if the mispricing explanation is true. Since more concentrated industries experience more pressure on corporate oversight when hostile takeover increases (Giroud and Mueller 2010), the asset growth effect should be more heavily dampened for those concentrated industries. My finding supports the empire builder explanation of Titman, Wei, and Xie (2004) and adds evidence to the mispricing-based explanation of asset growth effect.

The remainder of the paper is organized as follows. Section 2 describes the data sources and gives summary statistics. Section 3 tabulates the main results from replicating the paper of Cooper, Gulen, and Schill (2008). Section 4 extends the results by providing intra-industry evidence of the asset growth effect. Section 5 concludes.

2 Data

2.1 Sample Selection

I use all NYSE, Amex, and NASDAQ firms listed on the CRSP monthly stock return files and the Compustat annual industrial files from 1963 to 2018. All the replication results follow Cooper, Gulen, and Schill (2008) exclude financial firms with four-digit SIC codes between 6000 and 6999, whereas my intra-industry extension results use all firms in the sample. Some of the variables require 5 years of accounting data, so I start all of my analysis at the end of June 1968. All the replication results have the same sample period as the original paper and end in June 2003, whereas my extension results end in June 2018. Follow Fama and French (1993), I exclude the first 2 years of firm observations on Compustat to mitigate backfilling biases. Follow Fama and French (1992), I form all of my accounting variables at the end of June in year *t*, using accounting information from fiscal year-end *t*-1 from Compustat. For market value in the denominator, such as the market value in BM, I use the market value in December of year *t*-1 from CRSP. For firm capitalization, such as MV, I use the market value in June of year *t* from CRSP. I merge the CRSP and Compustat database using the CCM link table. All of the variables are updated annually, at the end of June each year. The exact formulas for all variables in my analysis except for the industry concentration characteristics can be found in the appendix of Cooper, Gulen, and Schill (2008).

2.2 Characteristics of Portfolios Sorted on Asset Growth Rate

[Insert Table 1 here]

To measure asset growth effect, the annual firm asset growth rate (*ASSETG*), is calculated as the percentage change in total assets from fiscal year ending in calendar year *t*-2 to fiscal year ending in calendar year *t*-1. Table 1 provides the summary statistics of the formation period firm characteristics of the 10 portfolios sorted annually on asset growth rates for the sample period from 1968 to 2003.

The decile 10 firms are the high asset growth firms, and the decile 1 firms are the low asset growth firms. The difference between median asset growth rates of the high and low decile is substantial at 102.57%. The difference between the lagged asset growth rate deciles is also significant at 20.82%, suggesting persistence in asset growth rates. The middle deciles have the largest capitalization and total assets. I also find that high growth firms have a lower book-to-market ratio, a higher earnings-to-price ratio, a lower leverage ratio, and a higher return-on-asset ratio. On the stock performance side, high growth firms earn lower returns for the past 6-months, but significantly higher returns over the past three years.

2.3 Industry Level Descriptive Statistics

[Insert Table 5 here]

Table 5 provides the summary statistics for the 48 industry portfolios during the sample period from 1968 to 2018. I sorted firms into 48 industry portfolios follow Fama and French (1997). The sample consists of 240,949 firm-year observations, with the largest part of the sample from Business Services (*BusSv*), which takes up 9.19% of the total observations. Banking (*Banks*) and Trading (*Fin*) are the second and third largest parts of the sample respectively. Business Services (*BusSv*), Banking (*Banks*), and Pharmaceutical Products (*Drugs*) take up the largest share of market value respectively, with the remaining industries each account for less than 7% of the total observation and total capitalization.

The last three columns of Table 5 provide the mean, median, and standard deviation of the asset growth rates (*ASSETG*) for each industry averaged across sample periods. The differences of the mean and median of asset growth rates between industries are small, with the smallest mean and median asset growth rates being 7.26% and 3.77% from Textiles (*Txtls*) and Coal (*Coal*) respectively, and the largest mean and median asset growth rates being 32.22% and 10.05% from Telecommunications (*Telcm*) and Healthcare (*Hlth*) respectively. The industry differences in standard deviations are dispersed, ranging from 23.49% to 1051.80% from Utilities (*Ulti*) and Insurance (*Insur*) respectively.

3 Main Results

3.1 Cross-Sectional Tests

Following Cooper, Gulen, and Schill (2008), I calculate the monthly equal- and value-weighted returns for portfolios sorted on asset growth rates for the next 12 months. I also control for firm capitalization by double-sorting firms into capitalization terciles using the 30^{th} and 70^{th} NYSE market equity percentiles and asset growth deciles. I further examine the long-run effects of asset growth by calculating the 5-year returns before and after portfolio formation. In addition, I adjusted for risk by computing the Fama and French (1993) three-factor alphas. My results are shown in Table 2.

[Insert Table 2 here]

In Panel A of Table 2, I show that there is momentum in the asset growth rates. The asset growth rates are persistent in 5 years before and after the sorting year. The spreads between high and low growth firms are significant at 20.87%, 8.66%, 4.76%, and 2.53% in years -2, -3, -4, and -5. After portfolio formation, the spread continues to be significant at 18.36%, 8.56%, 4.44%, and 2.52% in years 1, 2, 3, and 4.

In Panel B.1 and Panel B.2 of Table 2, I show the equal-weighted and value-weighted portfolio raw returns in the 5 years before and after portfolio formation. Over the 5 years before portfolio formation, high growth portfolio outperforms low growth portfolio by 318.6% and 429.12% in equal- and value-weighted measures. After portfolio formation, the performance between high and low growth portfolios are reversed. The high growth portfolio earns 1.74% (*t*-statistic = -8.02) less than low growth portfolio each month in equal-weighted measures for the first year after portfolio formation, and 0.96% (*t*-statistic = -4.41) less in value-weighted measures, and continues to underperform low growth portfolio over the 5 years after portfolio formation. In the 5 years after portfolio formation, high growth portfolio underperforms low growth portfolio by 86.97% and 53.91% in equal- and value-weighted measures.

In Panel C.1 of Table 2, I present the equal-weighted portfolio three-factor alphas for all firms and firms grouped into capitalization terciles. I present the value-weighted results in Panel C.2. Using the equal-weighed portfolios, the spread between high and low growth firms is -1.58% (*t*-statistic = -5.47) for all firms. The value-weighted result is -0.53% (*t*-statistic = -2.74). While the results are significant and robust across different size subgroups using equal-weighted measure, the statistical significance of the spread in the large size subgroup for value-weighted measures is quite low (*t*-statistic = -1.95). Though the asset growth effect is present across all size groups, the effect is more prevalent across small stocks.

In Panel D.1 and Panel D.2 of Table 2, I examine the consistency of asset growth effect over time. In Panel A, B, and C, my sample period ends in 2003 in accordance with Cooper, Gulen, and Schill (2008). I add the subperiod from 2004 to 2018 in Panel D to examine the post-discovery asset growth effect. The asset growth effect is significant and robust for the sample period before 2003 for value-weighted groups. But the statistical significance is smaller for the period after 2003 (*t*-statistic = -1.75). The value-weighted portfolio spreads have low statistical significance for subperiods before 2003. And the high-low spread is positive for the 2004 to 2018 subperiods. This finding is consistent with Schwert (2003) which shows that anomalies attenuate after their discovery.

Overall, the findings suggest that asset growth rates are a strong predictor of future *abnormal* returns. Firms with higher (lower) asset growth rates are followed by lower (higher) stock returns in the future. However, the asset growth effect is more prevalent among small firms and disappears after its discovery.

3.2 Fama-MacBeth Regressions

Following Cooper, Gulen, and Schill (2008), I perform Fama and MacBeth (1973) cross-sectional regressions of annual firm stock returns on asset growth and other firm characteristics over the sample period from 1968 to 2009. I run a horserace of asset growth rate with other variables, including book-to-market ratio, capitalization, 6-month lagged returns, and 36-month lagged returns, to control for size, value, momentum, and momentum reversal. In accordance with Cooper, Gulen, and Schill (2008), I include lagged asset growth rate, accruals, capital investment, and growth rate in sales. I perform the regressions on all firms, and on small, medium, and large size firms. I also adjust the autocorrelations in standard error using the Newey-West (1987) method.

[Insert Table 3 here]

In Panel A of Table 3, I report the results of multiple regressions on all firms. Model 1 confirms that asset growth is not subsumed by other important control variables, and has the highest statistical significance (*t*-statistic = -5.14) compared to book-to-market (*BM*), capitalization (*MV*), lagged 6-month returns (*BHRET6*), and lagged 36-month returns (*BHRET36*). The results for small, medium, and large sized firms in Panel B, C, and D are consistent with the results for all firms, with the asset growth being the most significant variable among all control variables, though the statistical significance of asset growth for large firms is much smaller (*t*-statistic = -1.81). In model 2, the coefficient on the lagged asset growth (*L2ASSETG*) is also significant for all firms as well as small and medium size-grouped firms.

I further examine if the asset growth effect is subsumed when I include other important growth rate variables. Following Cooper, Gulen, and Schill (2008), I include 5-year growth rates in sales (*5YSALESG*) from Lakonishok, Shleifer, and Vishny (1994), growth in capital investment (*CI*) from Titman, Wei, and Xie (2004), *ACCRUALS* from Sloan (1996), a cumulative accruals measure of net operating assets divided by total assets (NOA/A) from Hirshleifer et al. (2004), and 5-year asset growth rates (*5YASSETG*). Consistent with the findings in Cooper, Gulen, and Schill (2008), I find that asset growth remains strongly statistically significant in all models for all firms and firms across the size groups except for the large size group. Despite the lower statistical significance in large firms, asset growth still outperforms other control variables except for accrual measures (*ACCRUALS* and *NOA/A*).

Overall, Fama-MacBeth regressions confirm that asset growth is not subsumed by previously documented predictors of the cross-section of returns. On the contrary, asset growth appears to be the most statistically significant predictor of the cross-sectional future returns. However, contrary to the findings in Cooper, Gulen, and Schill (2008), my regression results show that asset growth loses munch of the predictive power on large-capitalization stocks.

3.3 Decomposing Asset Growth Rates

I examine which component of asset growth explains the aggregate asset growth effect in this section. In accordance with Cooper, Gulen, and Schill (2008), I decompose the total assets from the left- and right-hand side of the balance sheet. From the left-hand side of the balance sheet, total asset growth (*ASSETG*) can be decomposed into cash growth ($\Delta Cash$), noncash current asset growth ($\Delta CurAsst$), property, plant, and equipment growth (ΔPPE), and other asset growth ($\Delta OthAssets$). From the right-hand side of the balance sheet, total asset growth (*ASSETG*) can be decomposed into operating liabilities growth ($\Delta OpLiab$), retained earnings growth (ΔRE), stock financing growth ($\Delta Stock$), and debt financing growth ($\Delta Debt$). The details of variable construction can be found in the Appendix of Cooper, Gulen, and Schill (2008). I use Fama and MacBeth (1973) regressions of annual stock returns on the lagged components of asset growth and perform the regressions for all firms as well as for the size subgroups. I also adjust the autocorrelations in standard error using the Newey-West (1987) method.

[Insert Table 4 here]

Consistent with the findings in Cooper, Gulen, and Schill (2008), I find that from an asset investment standpoint, Panel A in Table 4 shows that increase in current assets, property, plant, and equipment, and other assets are associated with significant negative coefficients (*t*-statistics range from -5.35 to -4.68), whereas cash growth is not significant. When doing a horserace of all four investment components, I find that growth in current assets, property, plant, and equipment, and other assets are significant. The results are also robust for all size subgroups in Panel B, C, and D. Growth in cash is never significant. Consistent with the previous section, the statistical significance largely decreases for large capitalization groups, but the growth in property, plant, and equipment remains statistically significant for large size firms (*t*-statistic = -3.57).

From the financing side of the balance sheet, I find that for the all-firms group the increase in operating liabilities, stock financing, and debt financing are associated with negative future abnormal returns, but the relationship with retained earnings is not significant. Growth in debt and operating liabilities is associated with the strongest effects (*t*-statistic = -4.32 and -4.26 respectively). Within size groups, growth in debt financing has the strongest effect for small firms, but growth in stock financing has the strongest effect for medium and large firms.

The decomposition results show the strong predictability of components of total asset growth. As a comprehensive variable, the total asset growth benefits from the predictability of all the subcomponents from the left- and right-hand side of the balance sheet. The major source of the asset growth effect can vary across different firm characteristics. For example, stock financing growths explains the abnormal return in large firms, while debt financing growth explains the abnormal return in small firms. The results in this section suggest that asset growth predicts the cross-section of returns better than any individual investment or financing component of the balance sheet.

4 Extensions

4.1 Asset Growth Effect in Industry Level

I extend the work of Cooper, Gulen, and Schill (2008) by examining the asset growth effect within 48 industries during the sample period from 1968 to 2018. I use two measures, *SPREAD* and *SLOPE*, to quantify the magnitude of the asset growth effect within each industry. To calculate the return spread, I sort stocks in each industry at the end of June in year t into portfolios on *ASSETG*. To ensure there are a sufficient number of observations, I form tercile portfolios if the number of stocks in an industry is less than 50 on average each year. I form quintiles for stocks between 50 and 100. If the number of stocks in an industry is larger than 100 on average each year, I form deciles. Then I compute the one-year buy-and-hold returns for the top and bottom bucket portfolios. Then I calculate *SPREAD* as the time-series average of top-bucket portfolio return minus the bottom-bucket portfolio return.

The second measure of the asset growth effect is *SLOPE*. Within each industry every year, I regress annual stock returns from July in year t to June in year t+1 on the asset growth rate at the fiscal year ending in calendar year t. *SLOPE* is the time-series average of the cross-sectional regression coefficient. I calculate both equal-weighted and value-weighted measures of SPREAD and SLOPE. The weights for the value-weighted SPREAD are based on the capitalization of each stock. The value-weighted SLOPE is obtained from weighted-least-squares regressions, where the market capitalization of each stock is used as the weights of the regression. I also adjust the autocorrelations in standard error using the Newey-West (1987) method.

[Insert Table 6 here]

Table 6 shows the magnitude of the asset growth effect in each of the 48 industries. The first two columns report the spread and *t*-statistics of the forming period asset growth rates. The smallest asset growth spread of 36% coming from Alcoholic Beverages (*Beer*). The differences between the top- and bottom-buckets of asset growth rates are also statistically significant for most industries. Only 2 out of 48 industries have *t*-statistics smaller than 3. While the highest t-statistics for the asset growth spread is 14.68 from Textiles (*Txtls*).

Columns 3, 4, 5, and 6 measure the equal-weighted *SPREAD* and *SLOPE*, as well as their *t*-statistics. The results show that the asset growth effect is quite pervasive in within-industry samples. 45 out of 48 industries have negative portfolio spreads, and the 3 industries with positive spreads are not significant (*t*-statistics smaller than 0.4). Only the Real Estate (*RlEst*) industry has a positive yet insignificant portfolio slope, while all other portfolio slopes are negative. Since the sample size of within-industry firms is much smaller than the whole sample, it is reasonable that the statistical significance would reduce compared to the result using all firms. Still, 14 out of 48 industries have *t*-statistics smaller than -3 for *SPREAD*, and 13 industries have *t*-statistics smaller than -3 for *SLOPE*. I also find a relatively big dispersion in the magnitude of asset growth effect across industries. The smallest asset growth *SPREAD* is -23% from Wholesale (*Whlsl*), and the largest *SPREAD* of 3% comes from Candy and Soda (*Soda*). The equal-weighted *SLOPE* ranges from -52% (*Guns*) to 7% *(RlEst*).

The last four columns measure the value-weighted *SPREAD* and *SLOPE*, as well as their respective *t*-statistics. Compared to the equal-weighted results, the asset growth effect is less pervasive using value-weighted measures. Out of the 48 industries, 34 and 37 has negative *SPREAD* and *SLOPE.* There is also a large dispersion in the value-weighted asset growth effect. The value-weighted SPREAD ranges from -17% (*FabPr*) to 9% (*Fun*), and the value-weighted SLOPE ranges from -60% (*Coal*) to 26% (*Argic*).

These within-industry measures highlight the economic significance of the asset growth effect across industries. The asset growth effect for all firms is not driven by a few industries but by most industries in the sample. After controlling for the industry fixed effect by using industry-level subgroups, the asset growth effect is still pervasive. This finding further proves the robustness and comprehensiveness of the asset growth effect.

4.2 Fama-MacBeth Regressions in Industry Level

In section 3.2, I use Fama and MacBeth (1973) regression to show that the asset growth effect is robust to the control of many firm characteristics, including size, value, and momentum effects for all firms and firms in different size groups. In this section, I run the Fama and MacBeth (1973) regression for each industry subgroup for the sample period from 1968 to 2018 to determine if the asset growth effect within each industry will be subsumed by other important firm characteristics. The control variables I use are the same as in model 1 of Table 3. I also adjust the autocorrelations in standard error using the Newey-West (1987) method.

[Insert Table 7 here]

I show the results of Fama and MacBeth regressions within each industry in table 7. The results show that the intra-industry asset growth effect is quite robust to the control of firm characteristics variables. 20 out of the 48 industries have a statistically significant coefficient for asset growth rate (*t*-statistic smaller than -1.96). Despite the low statistical significance in some of the industries, asset growth is still the most powerful explanatory variable compared to size, value, and momentum measures. For the value measure (*BM*), 13 out of the 48 industries have statistically significant coefficients. Less than 5 industries have statistically significant coefficients for size (*MV*), momentum (*BHRET6*), and momentum reversal (*BHRET36*) each.

Overall, the cross-sectional regression results show that within industry asset growth is not subsumed by previously documented predictors of the cross-section of returns. On the contrary, asset growth appears to be the most statistically significant predictor of the cross-sectional future returns within each industry subgroups.

4.3 Industry Concentration and Asset Growth Effect

In this section, I evaluate the explanation for the asset growth effect using cross-industry analysis. Overinvestment is one of the explanations among the mispricing-based argument for asset growth effect. Corporate managers with less oversight have the empire-building tendency, and invest in projects with negative net present values, thus reducing firm value. Titman, Wei, and Xie (2004) link this observation to the investment effect. Investors may overreact to firm investment and subsequently correct their overvaluation, causing a negative abnormal return for high-minus-low asset growth portfolios. This line of reasoning thus predicts a negative relation between corporate oversight and asset growth effect. Giroud and Mueller (2010) show that competition mitigates managerial slack, so firms in more concentrated industries are more heavily affected by the increase in the threat of hostile takeover. Therefore, during a period of an increased threat of hostile takeover in the 1984 to 1989 period, the asset growth effect should decrease more for those concentrated industries compared to competitive industries.

I measure industry concentration using the well-grounded variable Herfindahl-Hirschman Index (HHI) from industrial organization theory. Following Hou and Robinson (2006), I use net sales, total assets, and book equity to calculate market share, and call the variables *HHI(Sales)*, *HHI(Assets)*, and *HHI(Equity)* respectively. Panel A of Table 8 shows the correlation between these three industry concentration measures. *HHI(Sales)* and *HHI(Assets)* are highly correlated, while *HHI(Equity)* has a low correlation with the other two industry concentration measures.

[Insert Table 8 here]

In Panel B and C, the dependent variable captures the industry-level magnitude of the asset growth effect, while the independent variable captures the level of industry concentration. In Panel B, I narrow the sample period to the time with a high treat of hostile takeover from 1984 to 1989, whereas in Panel C I calculate regression results for the whole sample period from 1968 to 2018. The overreaction to overinvestment argument predicts a positive coefficient between *HHI* and *SPREAD* as well as *SLOPE* (remember that *SPREAD* and *SLOPE* are negative, so a lower *SPREAD* and *SLOPE* means a stronger asset growth effect) during the period of increased hostile takeover.

The result in Panel B is in accordance to the prediction of my hypothesis, coefficients on different measures of HHI for both the equal- and value-weighted *SPREAD* and *SLOPE* are all positive, except for when three measures of HHI are put together in a horserace. The statistical significance is low for all groups except for the equal-weighted spread. However, the regressions of equal-weighted spread on industry concentration measures have significantly positive coefficients (*t*-statistics ranges from 2.325 to 2.648). Despite the lower statistical significance in other groups, the economic intuition is straight forward. In Panel C where the whole sample period is included, the sign of coefficients varies in different models and is not significant overall.

Therefore, the overinvestment effect is mainly concentrated during the 1984 to 1989 period. These findings further support the overinvestment-based explanation in the behavioral camp.

5 Conclusion

I replicated the paper by Cooper, Gulen, and Schill (2008) and document a substantial and robust asset growth effect in firm returns consistent to the original paper. Over the sample period from 1968 to 2003, the annual spread between high asset growth firms and low ones is highly significant at -19.03% using equal-weighted measures, and -10.96% using value-weighted measures. After adjusting for risk factors, the asset growth effect is still robust and outperforms other standard variables such as size, value, and momentum. The predictive power of the asset growth effect comes from various components of a firm's investment or financing activities, and cannot be explained by any single component in a firm's balance sheet. However, the asset growth effect is weaker among large firms and dampens after its discovery. I further examine the industry-level asset growth effect and find the effect robust and pervasive at intra-industry level. Consistent with the mispricing explanation, I find that more concentrated industries experience weaker asset growth effect during a period of increased corporate oversight.

As an attempt to replicate Cooper, Gulen, and Schill (2008), this paper is very preliminary and shallow due to my lack of experience, the time constraint, and data limitation. Nevertheless, this paper re-examines the work of Cooper, Gulen, and Schill (2008), and finds consistent results. Besides, this paper adds evidence to the industry-level asset growth effect and supports the mispricing explanation of asset growth effect.

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Table 1

Asset Growth Deciles: Financial and Return Characteristics

At the end of June of each year *t* over 1968 to 2002, stocks are sorted into deciles by *ASSETG*, which is the percentage change in total assets from the fiscal year ending in calendar year *t*-2 to year *t*-1. This table reports the financial and return characteristics in the year prior to the portfolio formation date. *L2ASSETG* is the 1 year lagged value of *ASSETG*. *ASSETS* is the total assets, in millions of $, from the fiscal year ending in calendar year *t*-1. *MV* is the market value, in millions of $, at the end of June of year *t*. The accounting variables (book-to-market ratio (*BM*), earnings-to-price ratio (*EP*), leverage (*Leverage*), return on assets (*ROA*), and *ACCRUALS*) are calculated in the fiscal year ending in calendar year *t*-1. *BHRET6* is the holding period return over January to June in year *t*. *BHRET36* is the 36-month buy and hold return over July(*t*-3) to June(*t*). *ISSUANCE* is a 5-year change in the number of equity shares outstanding. The numbers in each cell other than *MV-AVG* are time-series averages of yearly cross-sectional medians. *MV-AVG* is the time-series average of yearly cross-sectional mean of the market value in millions of $. All numbers are in decimal form, with the exception of *ASSETS*, *MV*, and *MV-AVG*, which are in millions of $. The details on the construction of these variables can be found in the Appendix of Cooper, Gulen, and Schill (2008).

Decile	ASSETG	L2ASSETG	ASSETS	MV	MV-AVG	BM	EP	Leverage	ROA	BHRET6	BHRET36	ACCRUALS	ISSUANCE
1 (Low)	-0.2201	-0.0010	21.3274	14.9891	119.1300	0.8275	-0.2110	0.1960	-0.0495	0.0679	-0.3689	-0.1099	0.0077
2	-0.0726	0.0279	49.8554	26.8573	277.3230	1.0688	-0.0123	0.2385	0.0695	0.0872	-0.1308	-0.0695	-0.0792
3	-0.0113	0.0424	96.1984	52.3883	587.6725	1.0420	0.0547	0.2552	0.1094	0.0905	0.0397	-0.0491	-0.0980
4	0.0288	0.0577	137.1889	84.9354	908.3428	0.9820	0.0768	0.2473	0.1269	0.0813	0.1794	-0.0365	-0.0889
5	0.0629	0.0739	161.7921	108.1698	1134.7186	0.9049	0.0837	0.2230	0.1380	0.0761	0.2728	-0.0308	-0.0642
6	0.0990	0.0919	148.2271	113.3484	1208.6683	0.8169	0.0842	0.1964	0.1458	0.0708	0.3320	-0.0219	-0.0317
7	0.1431	0.1149	142.6923	124.3158	1102.3652	0.7339	0.0811	0.1659	0.1508	0.0667	0.3892	-0.0143	0.0165
8	0.2099	0.1432	104.5511	105.9105	875.0505	0.6417	0.0764	0.1431	0.1552	0.0657	0.4996	-0.0001	0.0692
9	0.3403	0.1749	88.1564	104.9793	929.8825	0.5534	0.0680	0.1405	0.1502	0.0520	0.5966	0.0129	0.1795
10 (High)	0.8056	0.2072	70.1619	91.1616	605.2559	0.4495	0.0520	0.1369	0.1179	0.0150	0.7773	0.0390	0.3616
Spread (10-1)	1.0257	0.2082	48.8346	76.1724	486.1258	-0.3780	0.2629	-0.0591	0.1674	-0.0529	1.1462	0.1488	0.3538
t(spread)	14.86	28.98	5.50	5.31	3.34	-5.70	7.46	-2.66	9.70	-2.92	17.04	22.79	11.59

Table 2

Asset Growth Decile Portfolio Returns and Characteristics in Event Time

At the end of June of each year t over 1968 to 2018, stocks are sorted into deciles by $ASSETG$, which is the percentage change in total assets from the fiscal year ending in calendar year t-2 to year t-1. Portfolios are formed based on June(t) asset growth decile cutoffs, held for 1 year from July(t) to June(t+1), and rebalanced. Panel A reports the average annual asset growth rates for 10 years around the portfolio formation year t. The year -1 row reports the asset growth rates from fiscal year ending in calendar year t-2 to t-1, year 1 reports the asset growth rates from fiscal year ending in calendar year t-1 to t, etc. Panel B reports average monthly raw returns of equal- and value-weighted portfolios for 10 years around the portfolio formation year t. The year -1 row reports the portfolio returns over July(t-1) to June(t), year 1 reports the portfolio returns over July(t) to June(t+1), etc. the [-5,-1] ([1,5]) is the cumulative portfolio return over the 5 years prior (after) the portfolio formation period. Panel C reports three-factor alphas of the equal- and value-weighted portfolios for all firms and for three size-sorted groups. The size groups are formed by sorting firms into three groups (small, mediun, and large) using the 30^{th} and 70^{th} NYSE market equity percentiles in June of year t. Panel D reports the subperiod three-factor alphas of the equal- and value-weighted portfolios. The sample period is from 1968 to 2002, with the exception of Panel D. All numbers are in decimal form except for the t-statistics.

Panel A: Average Annual Asset Growth Rates												
	Asset Growth Deciles											
YEAR	1 (Low)	2	3	4	5	6	7	8	9	10 (High)	Spread (10-1)	t(spread)
-5	0.0760	0.0743	0.0807	0.0776	0.0824	0.0906	0.1019	0.1107	0.1213	0.1013	0.0253	5.77
-4	0.0646	0.0682	0.0717	0.0739	0.0828	0.0914	0.1051	0.1134	0.1293	0.1122	0.0476	6.46
-3	0.0465	0.0517	0.0608	0.0689	0.0776	0.0926	0.1098	0.1266	0.1422	0.1331	0.0866	10.11
-2	-0.0025	0.0268	0.0421	0.0571	0.0733	0.0912	0.1144	0.1428	0.1754	0.2061	0.2087	28.01
-1	-0.2201	-0.0726	-0.0113	0.0288	0.0629	0.0990	0.1431	0.2099	0.3403	0.8056	1.0257	14.86
1	-0.0192	0.0090	0.0330	0.0530	0.0711	0.0884	0.1076	0.1314	0.1526	0.1644	0.1836	23.01
2	0.0215	0.0283	0.0452	0.0557	0.0702	0.0817	0.0920	0.1061	0.1115	0.1072	0.0856	11.70
3	0.0411	0.0433	0.0504	0.0579	0.0677	0.0752	0.0865	0.0889	0.0950	0.0855	0.0444	8.31
4	0.0535	0.0497	0.0550	0.0604	0.0654	0.0712	0.0793	0.0857	0.0919	0.0787	0.0252	5.07
5	0.0527	0.0558	0.0596	0.0608	0.0656	0.0718	0.0782	0.0821	0.0849	0.0767	0.0240	3.46

Table 2 – *Continued*

Panel B: Raw Return Portfolios												
Panel B.1: Equal-Weighted Portfolio Average Monthly Raw Returns												
	Asset Growth Deciles											
YEAR	1 (Low)	2	3	4	5	6	7	8	9	10 (High)	Spread (10-1)	*t*(spread)
-5	0.0090	0.0100	0.0101	0.0116	0.0121	0.0137	0.0153	0.0166	0.0186	0.0173	0.0083	6.75
-4	0.0068	0.0068	0.0082	0.0104	0.0120	0.0138	0.0157	0.0184	0.0201	0.0212	0.0143	11.86
-3	0.0018	0.0047	0.0069	0.0093	0.0121	0.0135	0.0157	0.0195	0.0239	0.0310	0.0292	18.73
-2	-0.0088	0.0000	0.0042	0.0080	0.0108	0.0129	0.0157	0.0198	0.0267	0.0398	0.0485	21.37
-1	0.0078	0.0097	0.0111	0.0115	0.0119	0.0127	0.0129	0.0140	0.0134	0.0134	0.0055	2.21
1	0.0194	0.0172	0.0156	0.0142	0.0136	0.0125	0.0119	0.0106	0.0081	0.0020	-0.0174	-8.02
2	0.0158	0.0159	0.0146	0.0138	0.0136	0.0133	0.0137	0.0126	0.0116	0.0070	-0.0088	-4.87
3	0.0178	0.0167	0.0159	0.0148	0.0139	0.0145	0.0145	0.0140	0.0137	0.0118	-0.0060	-3.84
4	0.0156	0.0164	0.0149	0.0141	0.0139	0.0136	0.0136	0.0130	0.0131	0.0128	-0.0027	-2.06
5	0.0168	0.0167	0.0160	0.0147	0.0138	0.0142	0.0130	0.0132	0.0135	0.0127	-0.0041	-2.89
Cumulative Return												
[-5,-1]	0.2164	0.4591	0.6525	0.8757	1.0586	1.2712	1.5142	1.9688	2.5219	3.4025	3.1860	11.25
[1,5]	1.5782	1.5831	1.4602	1.3322	1.2385	1.2086	1.1723	1.1000	0.9966	0.7085	-0.8697	-8.66

Panel B.2: Value-Weighted Portfolio Average Monthly Raw Returns												
	Asset Growth Deciles											
YEAR	1 (Low)	2	3	4	5	6	7	8	9	10 (High)	Spread (10-1)	*t*(spread)
-5	0.0121	0.0125	0.0118	0.0124	0.0143	0.0151	0.0164	0.0196	0.0235	0.0239	0.0118	6.09
-4	0.0106	0.0104	0.0112	0.0128	0.0133	0.0150	0.0168	0.0202	0.0267	0.0276	0.0170	7.83
-3	0.0060	0.0094	0.0097	0.0122	0.0138	0.0144	0.0158	0.0208	0.0269	0.0324	0.0264	9.97
-2	0.0038	0.0084	0.0090	0.0108	0.0133	0.0137	0.0166	0.0200	0.0262	0.0377	0.0339	13.74
-1	0.0210	0.0164	0.0144	0.0148	0.0143	0.0141	0.0148	0.0163	0.0199	0.0236	0.0026	0.97
1	0.0142	0.0121	0.0121	0.0114	0.0099	0.0098	0.0108	0.0084	0.0082	0.0046	-0.0096	-4.41
2	0.0133	0.0131	0.0125	0.0104	0.0102	0.0103	0.0100	0.0100	0.0093	0.0061	-0.0073	-3.63
3	0.0166	0.0135	0.0136	0.0129	0.0103	0.0109	0.0113	0.0115	0.0110	0.0105	-0.0062	-3.06
4	0.0124	0.0118	0.0123	0.0110	0.0110	0.0102	0.0104	0.0123	0.0117	0.0110	-0.0015	-0.74
5	0.0143	0.0126	0.0120	0.0124	0.0110	0.0101	0.0104	0.0112	0.0126	0.0118	-0.0025	-1.25
Cumulative Return												
[-5,-1]	0.9318	0.9928	0.9554	1.1816	1.3448	1.4583	1.7433	2.3451	3.7933	5.2230	4.2912	5.37
[1,5]	1.2794	1.1345	1.1154	1.0273	0.9334	0.8968	0.9479	0.9183	0.9425	0.7402	-0.5391	-4.34

Table 2 – *Continued*

Panel C. Equal- and Value-Weighted Portfolio Fama-French Alphas in Year 1 by Size Groups												
Panel C.1: Equal-Weighted Portfolio Fama-French Monthly Alphas												
	Asset Growth Deciles											
	1 (Low)	2	3	4	5	6	7	8	9	10 (High)	Spread (10-1)	*t*(spread)
All Firms	0.0070	0.0053	0.0035	0.0025	0.0021	0.0012	0.0007	-0.0004	-0.0029	-0.0088	-0.0158	-5.47
Small size	0.0074	0.0059	0.0043	0.0028	0.0030	0.0013	0.0003	-0.0003	-0.0040	-0.0095	-0.0170	-5.95
Medium Size	0.0001	0.0008	0.0011	0.0013	0.0006	0.0009	0.0012	-0.0006	-0.0012	-0.0072	-0.0072	-3.34
Large Size	0.0034	0.0014	-0.0002	0.0009	0.0005	-0.0001	0.0005	0.0002	-0.0006	-0.0035	-0.0069	-2.58
Panel C.2: Value-Weighted Portfolio Fama-French Monthly Alphas												
	Asset Growth Deciles											
	1 (Low)	2	3	4	5	6	7	8	9	10 (High)	Spread (10-1)	*t*(spread)
All Firms	0.0014	0.0008	0.0009	0.0011	0.0002	0.0004	0.0021	0.0000	0.0005	-0.0040	-0.0053	-2.74
Small size	0.0007	0.0017	0.0022	0.0004	0.0018	0.0010	-0.0007	-0.0012	-0.0046	-0.0103	-0.0110	-4.52
Medium Size	0.0009	0.0005	0.0006	0.0010	0.0002	0.0007	0.0013	-0.0001	-0.0010	-0.0060	-0.0069	-3.02
Large Size	0.0037	0.0010	0.0007	0.0011	0.0002	0.0005	0.0024	0.0002	0.0015	-0.0016	-0.0053	-1.95

Table 2 – *Continued*

Panel D. Equal- and Value-Weighted Asset Growth Decile Portfolio Fama-French Alphas in Year 1 by Subperiods												
Panel D.1: Equal-Weighted Portfolio Fama-French Monthly Alphas												
	Asset Growth Deciles											
Period	1 (Low)	2	3	4	5	6	7	8	9	10 (High)	Spread (10-1)	*t*(spread)
1968-1980	0.0027	0.0026	0.0019	0.0019	0.0023	0.0007	0.0007	0.0000	-0.0002	-0.0027	-0.0054	-3.01
1981-1990	0.0014	0.0009	0.0010	0.0022	0.0020	0.0023	0.0013	-0.0007	-0.0038	-0.0115	-0.0129	-4.06
1991-2003	0.0145	0.0117	0.0076	0.0055	0.0034	0.0021	0.0014	0.0003	-0.0043	-0.0127	-0.0271	-5.57
2004-2018	-0.0021	0.0000	0.0028	0.0011	0.0021	0.0020	0.0009	0.0006	-0.0018	-0.0069	-0.0048	-1.75
Panel D.2: Value-Weighted Portfolio Fama-French Monthly Alphas												
	Asset Growth Deciles											
YEAR	1 (Low)	2	3	4	5	6	7	8	9	10 (High)	Spread (10-1)	*t*(spread)
1968-1980	0.0040	0.0013	0.0017	0.0015	-0.0003	0.0004	0.0013	-0.0012	0.0010	-0.0005	-0.0045	-2.29
1981-1990	-0.0019	0.0009	0.0014	0.0015	0.0013	0.0019	0.0012	0.0003	-0.0011	-0.0053	-0.0033	-1.08
1991-2003	0.0009	0.0004	0.0003	0.0013	-0.0003	0.0002	0.0041	0.0015	0.0014	-0.0056	-0.0065	-1.70
2004-2018	-0.0042	0.0012	0.0016	-0.0001	0.0018	0.0013	-0.0007	0.0000	0.0015	-0.0029	0.0013	0.35

Table 3

Fama-MacBeth Regressions of Annual Stock Returns on Asset Growth and Other Variables

Annual stock returns from July 1968 to June 2003 are regressed on lagged variables. *ASSETG* is the asset growth rate defined as the percentage change in total assets from fiscal year ending in calendar year *t*-2 to fiscal year ending in calendar year *t*-1. *L2ASSETG* is the asset growth rate defined as the percentage change in total assets from fiscal year ending in calendar year *t*-3 to fiscal year ending in calendar year *t*-2. *BM* is the book-to-market ratio in the fiscal year ending in calendar year t-1. *MV* is the June(*t*) market value, *BHRET6* is the buy-and-hold return over January(*t*) to June(*t*). *BHRET36* is the buy-and-hold return over July(*t*-3) to June(*t*). *5YSALESG* is a 5-year weighted average rank of growth rate in sales. *5YASSETG* is a 5-year weighted average rank of asset growth rate. *CI* is the measure of abnormal capital investment as defined in Titman, Wei, and Xie (2004). *NOA/*A is net operating assets divided by total assets adjusted from Hirshleifer, Hou, Teoh, and Zhang (2004). *ACCRUALS* is from Sloan (1996). The details on the construction of these variables can be found in the Appendix of Cooper, Gulen, and Schill (2008). Size groups are defined by sorting firms into three groups (small, medium, and large) based on the NYSE market equity 30^{th} and 70^{th} percentiles in June of year *t*. Panel A reports regression for all firms, and Panel B, C, and D reports regression for small, medium, and large firms respectively. Beta estimates are time-series averages of annual cross-sectional regression betas. The *t*-statistics reported in parentheses are calculated using the Newey-West (1987) standard errors.

Panel A. All Firms													
Model		Constant	ASSETG	BM	MV	BHRET6	BHRET36	L2ASSETG	5YSALESG	CI	NOA/A	ACCRUALS	5YASSETG
1	Beta	0.1464	-0.0721	0.0152	0.0000	0.0285	-0.0046	.	.	.	.	.	.
	t-stat	4.35	-5.14	2.18	-1.14	1.45	-0.40	.	.	.	.	.	.
2	Beta	0.1519	-0.0658	0.0148	0.0000	0.0241	-0.0028	-0.0482	.	.	.	.	.
	t-stat	4.45	-5.73	2.15	-1.15	1.24	-0.24	-4.19	.	.	.	.	.
3	Beta	0.1471	-0.0672	0.0139	0.0000	0.0241	-0.0050	.	0.0002	.	.	.	.
	t-stat	3.69	-5.08	1.92	-1.40	1.32	-0.49	.	0.35	.	.	.	.
4	Beta	0.2141	-0.0985	0.0127	0.0000	0.0594	-0.0002	.	.	-0.0064	.	.	.
	t-stat	3.60	-8.40	1.49	-3.07	1.97	-0.02	.	.	-2.33	.	.	.
5	Beta	0.2190	-0.0722	0.0232	0.0000	0.0279	-0.0052	.	.	.	-0.1216	.	.
	t-stat	5.18	-4.71	3.68	-1.15	2.01	-0.46	.	.	.	-6.38	.	.
6	Beta	0.1375	-0.0501	0.0185	0.0000	0.0282	-0.0044	.	.	.	.	-0.2071	.
	t-stat	4.08	-4.89	2.48	-1.33	1.69	-0.39	.	.	.	.	-5.26	.
7	Beta	0.1574	-0.0671	0.0136	0.0000	0.0243	-0.0051	.	.	.	.	.	-0.0005
	t-stat	3.99	-5.13	1.89	-1.13	1.33	-0.49	.	.	.	.	.	-1.00

Table 3 – *Continued*

Panel B. Small Size Firms													
Model		Constant	ASSETG	BM	MV	BHRET6	BHRET36	L2ASSETG	5YSALESG	CI	NOA/A	ACCRUALS	5YASSETG
1	Beta	0.1840	-0.0791	0.0143	-0.0007	0.0260	-0.0140	.	.	.	.	.	.
	t-stat	3.98	-4.56	1.40	-2.53	1.45	-1.08	.	.	.	.	.	.
2	Beta	0.1890	-0.0728	0.0145	-0.0007	0.0219	-0.0129	-0.0512	.	.	.	.	.
	t-stat	3.97	-5.16	1.38	-2.43	1.27	-0.97	-3.76	.	.	.	.	.
3	Beta	0.1644	-0.0662	0.0131	-0.0007	0.0227	-0.0160	.	0.0022	.	.	.	.
	t-stat	3.45	-4.23	1.14	-2.16	1.42	-1.32	.	2.82	.	.	.	.
4	Beta	0.2697	-0.0932	0.0142	-0.0013	0.0526	0.0032	.	.	-0.0101	.	.	.
	t-stat	2.95	-3.52	1.23	-2.02	1.10	0.19	.	.	-3.08	.	.	.
5	Beta	0.2567	-0.0761	0.0222	-0.0006	0.0222	-0.0142	.	.	.	-0.1285	.	.
	t-stat	4.81	-4.36	2.26	-2.11	1.40	-1.23	.	.	.	-9.00	.	.
6	Beta	0.1756	-0.0590	0.0149	-0.0005	0.0255	-0.0156	.	.	.	.	-0.1688	.
	t-stat	3.79	-4.38	1.47	-1.51	1.80	-1.30	.	.	.	.	-4.95	.
7	Beta	0.1782	-0.0663	0.0133	-0.0006	0.0224	-0.0162	.	.	.	.	.	0.0010
	t-stat	3.75	-4.26	1.15	-2.04	1.40	-1.32	.	.	.	.	.	1.56

Table 3 – *Continued*

Panel C. Median Size Firms													
Model		Constant	ASSETG	BM	MV	BHRET6	BHRET36	L2ASSETG	5YSALESG	CI	NOA/A	ACCRUALS	5YASSETG
1	Beta	0.1083	-0.0637	0.0256	-0.0001	0.0673	0.0104	.	.	.	.	.	.
	t-stat	3.34	-4.28	3.52	-1.17	1.98	0.94	.	.	.	.	.	.
2	Beta	0.1140	-0.0591	0.0240	-0.0001	0.0652	0.0123	-0.0395	.	.	.	.	.
	t-stat	3.47	-4.42	3.80	-1.11	1.95	1.14	-2.70	.	.	.	.	.
3	Beta	0.1114	-0.0496	0.0200	-0.0001	0.0492	0.0125	.	0.0006	.	.	.	.
	t-stat	3.29	-3.29	2.42	-1.75	1.45	1.02	.	2.16	.	.	.	.
4	Beta	0.1349	-0.0744	0.0131	-0.0001	0.0773	0.0148	.	.	-0.0112	.	.	.
	t-stat	4.20	-5.41	1.38	-1.18	2.52	1.38	.	.	-1.50	.	.	.
5	Beta	0.1386	-0.0640	0.0308	-0.0001	0.0700	0.0095	.	.	.	-0.0509	.	.
	t-stat	3.08	-3.79	4.66	-0.97	2.34	0.83	.	.	.	-1.55	.	.
6	Beta	0.0939	-0.0402	0.0277	0.0000	0.0602	0.0150	.	.	.	.	-0.2369	.
	t-stat	2.67	-2.10	4.27	0.24	1.73	0.91	.	.	.	.	-3.43	.
7	Beta	0.1183	-0.0494	0.0202	-0.0001	0.0492	0.0121	.	.	.	.	.	0.0002
	t-stat	3.52	-3.28	2.70	-1.70	1.42	0.99	.	.	.	.	.	0.88
Panel D. Large Size Firms													
Model		Constant	ASSETG	BM	MV	BHRET6	BHRET36	L2ASSETG	5YSALESG	CI	NOA/A	ACCRUALS	5YASSETG
1	Beta	0.1115	-0.0678	0.0027	0.0000	0.0426	0.0073	.	.	.	.	.	.
	t-stat	4.92	-1.81	0.30	-0.77	1.05	1.49	.	.	.	.	.	.
2	Beta	0.1129	-0.0592	0.0020	0.0000	0.0397	0.0082	-0.0309	.	.	.	.	.
	t-stat	5.16	-2.00	0.25	-0.77	0.94	1.66	-1.08	.	.	.	.	.
3	Beta	0.1178	-0.0667	0.0014	0.0000	0.0325	0.0054	.	0.0000	.	.	.	.
	t-stat	4.89	-2.16	0.13	-0.79	0.76	1.46	.	-0.06	.	.	.	.
4	Beta	0.1333	-0.0725	0.0017	0.0000	0.0472	0.0093	.	.	-0.0112	.	.	.
	t-stat	5.16	-2.03	0.11	-1.26	1.20	2.40	.	.	-0.91	.	.	.
5	Beta	0.1683	-0.0756	0.0197	0.0000	0.0580	0.0099	.	.	.	-0.1089	.	.
	t-stat	4.31	-2.22	2.52	-0.77	1.43	1.62	.	.	.	-2.53	.	.
6	Beta	0.1056	-0.0515	0.0048	0.0000	0.0433	0.0019	.	.	.	.	-0.1362	.
	t-stat	4.71	-1.79	0.32	-0.92	1.10	0.30	.	.	.	.	-2.08	.
7	Beta	0.1239	-0.0650	0.0010	0.0000	0.0334	0.0045	.	.	.	.	.	-0.0003
	t-stat	4.93	-2.12	0.09	-0.66	0.77	1.07	.	.	.	.	.	-0.98

Table 4

Fama-MacBeth Annual Stock Return Regressions: Asset and Financing Decompositions

Annual stock returns from July 1968 to June 2003 are regressed on variables obtained from a balance sheet decomposition of asset growth into an investment aspect and a financing aspect. The investment decomposition defines total assets as the sum of Cash (*Cash*), Noncash current assets (*CurAsst*), Property, plant and equipment (*PPE*), and Other assets (*OthAssets*). The financing decomposition defines total assets as the sum of Retained earnings (*RE*), Stock (*Stock*), Debt (*Debt*), and Operating liabilities (*OpLiab*). Regressors are calculated as changes in these variables from the fiscal year ending in calendar year t-2 to t-1 scaled by total assets in the fiscal year ending in calendar year t-2. The details on the construction of these variables can be found in the Appendix of Cooper, Gulen, and Schill (2008). Size groups are defined by sorting firms into three groups (small, medium, and large) based on the NYSE market equity 30^{th} and 70^{th} percentiles in June of year t. Panel A reports regression for all firms, and Panel B, C, and D reports regression for small, medium, and large firms respectively. Beta estimates are time-series averages of annual cross-sectional regression betas. The t-statistics reported in parentheses are calculated using the Newey-West (1987) standard errors.

Panel A. All Firms								
Constant	ΔCash	ΔCurAsst	ΔPPE	ΔOthAssets	ΔOpLiab	ΔDebt	ΔStock	ΔRE
0.1470	-0.0085	.	.	.	.	.	.	.
5.24	-0.25	.	.	.	.	.	.	.
0.1548	.	-0.1622	.	.	.	.	.	.
5.57	.	-4.87	.	.	.	.	.	.
0.1535	.	.	-0.1468	.	.	.	.	.
5.16	.	.	-4.68	.	.	.	.	.
0.1491	.	.	.	-0.1285	.	.	.	.
5.33	.	.	.	-5.35	.	.	.	.
0.1614	0.0068	-0.1151	-0.1026	-0.0877	.	.	.	.
5.65	0.21	-3.51	-3.78	-3.55	.	.	.	.
0.1542	.	.	.	.	-0.0978	.	.	.
5.43	.	.	.	.	-4.26	.	.	.
0.1477	.	.	.	.	.	-0.1274	.	.
5.32	.	.	.	.	.	-4.32	.	.
0.1531	.	.	.	.	.	.	-0.1307	.
5.33	.	.	.	.	.	.	-2.89	.
0.1482	.	.	.	.	.	.	.	-0.0301
5.15	.	.	.	.	.	.	.	-0.58
0.1598	.	.	.	.	-0.0718	-0.0870	-0.1205	-0.0552
5.40	.	.	.	.	-3.72	-3.08	-3.22	-1.13

Table 4 – *Continued*

Panel B. Small Size Firms								
Constant	ΔCash	ΔCurAsst	ΔPPE	ΔOthAssets	ΔOpLiab	ΔDebt	ΔStock	ΔRE
0.1583	0.0034	.	.	.	.	.	.	.
4.48	0.08	.	.	.	.	.	.	.
0.1666	.	-0.1629	.	.	.	.	.	.
4.83	.	-5.00	.	.	.	.	.	.
0.1648	.	.	-0.1592	.	.	.	.	.
4.58	.	.	-5.02	.	.	.	.	.
0.1611	.	.	.	-0.1372	.	.	.	.
4.54	.	.	.	-5.99	.	.	.	.
0.1722	0.0115	-0.1161	-0.1069	-0.0930	.	.	.	.
4.91	0.34	-3.56	-3.83	-3.24	.	.	.	.
0.1658	.	.	.	.	-0.1089	.	.	.
4.78	.	.	.	.	-4.73	.	.	.
0.1597	.	.	.	.	.	-0.1270	.	.
4.68	.	.	.	.	.	-5.33	.	.
0.1647	.	.	.	.	.	.	-0.1270	.
4.69	.	.	.	.	.	.	-2.72	.
0.1594	.	.	.	.	.	.	.	-0.0095
4.55	.	.	.	.	.	.	.	-0.35
0.1703	.	.	.	.	-0.0844	-0.0890	-0.1138	-0.0495
4.77	.	.	.	.	-3.86	-3.48	-3.65	-1.90

Panel C. Medium Size Firms								
Constant	ΔCash	ΔCurAsst	ΔPPE	ΔOthAssets	ΔOpLiab	ΔDebt	ΔStock	ΔRE
0.1277	-0.0013	.	.	.	.	.	.	.
4.78	-0.04	.	.	.	.	.	.	.
0.1380	.	-0.1962	.	.	.	.	.	.
5.23	.	-4.81	.	.	.	.	.	.
0.1308	.	.	-0.0771	.	.	.	.	.
5.02	.	.	-2.76	.	.	.	.	.
0.1276	.	.	.	-0.0815	.	.	.	.
4.86	.	.	.	-2.88	.	.	.	.
0.1421	0.0184	-0.1814	0.0001	-0.0505	.	.	.	.
5.28	0.56	-4.42	0.00	-1.83	.	.	.	.
0.1313	.	.	.	.	-0.0734	.	.	.
5.11	.	.	.	.	-3.68	.	.	.
0.1278	.	.	.	.	.	-0.1816	.	.
5.04	.	.	.	.	.	-2.95	.	.
0.1325	.	.	.	.	.	.	-0.1408	.
5.20	.	.	.	.	.	.	-4.59	.
0.1276	.	.	.	.	.	.	.	-0.0151
5.11	.	.	.	.	.	.	.	-0.21
0.1386	.	.	.	.	-0.0524	-0.1485	-0.1481	0.0031
5.46	.	.	.	.	-2.59	-2.18	-4.41	0.04

Table 4 – *Continued*

Panel D. Large Size Firms								
Constant	ΔCash	ΔCurAsst	ΔPPE	ΔOthAssets	ΔOpLiab	ΔDebt	ΔStock	ΔRE
0.1212	0.0106	.	.	.	.	.	.	.
5.32	0.20	.	.	.	.	.	.	.
0.1264	.	-0.1179	.	.	.	.	.	.
5.80	.	-1.93	.	.	.	.	.	.
0.1313	.	.	-0.2020	.	.	.	.	.
5.66	.	.	-3.57	.	.	.	.	.
0.1223	.	.	.	-0.1122	.	.	.	.
5.59	.	.	.	-1.20	.	.	.	.
0.1352	0.0510	-0.0216	-0.1873	-0.0778	.	.	.	.
6.21	1.06	-0.28	-3.45	-0.87	.	.	.	.
0.1250	.	.	.	.	-0.0687	.	.	.
5.55	.	.	.	.	-1.98	.	.	.
0.1196	.	.	.	.	.	-0.1256	.	.
5.07	.	.	.	.	.	-1.62	.	.
0.1250	.	.	.	.	.	.	-0.2520	.
5.36	.	.	.	.	.	.	-2.29	.
0.1280	.	.	.	.	.	.	.	-0.1664
5.47	.	.	.	.	.	.	.	-1.27
0.1314	.	.	.	.	-0.0054	-0.2442	-0.2369	-0.0957
5.69	.	.	.	.	-0.18	-2.69	-2.16	-0.79

Table 5

Industry Portfolio Descriptive Statistics

This table provides summary statistics for the 48 industries defined by Fama and French (1997) from 1968 to 2018. Columns 2 and 4 report each industry's total number of firm-year observations and the average annual total market value (*MV*) in millions of $ respectively. The values of these statistics represented as percentages of the corresponding total are given in columns 3 and 5 respectively. The last three columns report the means, medians, and standard deviations of the asset growth rates (*ASSETG*) for each industry.

Industry	Firm-year obs	% of total obs	Total mkt value (USD$M)	% of total mkt value	Asset growth mean (%)	Asset growth median (%)	Asset growth stdev (%)
Argic	1,618	0.67	15,912	0.20	14.87	6.22	60.13
Food	4,932	2.05	159,743	1.99	12.89	6.88	43.63
Soda	1,427	0.59	43,369	0.54	13.04	7.27	39.83
Beer	1,614	0.67	115,816	1.45	9.34	5.94	25.32
Smoke	1,165	0.48	90,942	1.14	10.02	6.03	32.59
Toys	2,997	1.24	14,818	0.19	17.77	5.12	146.24
Fun	4,051	1.68	72,270	0.90	26.80	5.93	114.78
Books	3,060	1.27	45,731	0.57	12.95	6.47	70.68
Hshld	5,779	2.40	179,297	2.24	13.17	6.54	81.16
Clths	4,483	1.86	51,035	0.64	11.68	6.36	50.31
Hlth	4,650	1.93	51,033	0.64	29.54	10.05	162.34
MedEq	7,153	2.97	121,659	1.52	19.60	7.75	74.53
Drugs	11,121	4.62	636,209	7.95	29.98	6.74	130.20
Chems	5,165	2.14	165,162	2.06	13.65	6.09	92.72
Rubbr	2,966	1.23	13,987	0.17	13.92	5.57	76.73
Txtls	2,905	1.21	9,637	0.12	7.26	4.75	25.68
BldMt	7,057	2.93	61,563	0.77	10.70	6.27	41.05
Cnstr	3,660	1.52	34,494	0.43	18.12	7.71	102.64
Steel	4,470	1.86	48,809	0.61	12.01	5.34	80.99
FabPr	1,843	0.76	3,445	0.04	13.44	6.79	52.96
Mach	9,047	3.75	154,671	1.93	14.29	6.44	133.70
ElcEq	4,519	1.88	75,923	0.95	15.70	6.37	99.64
Autos	4,352	1.81	114,922	1.44	12.29	6.90	38.72
Aero	2,109	0.88	100,381	1.25	11.74	7.49	32.78
Ships	1,275	0.53	9,864	0.12	13.87	6.46	61.02
Guns	1,262	0.52	22,029	0.28	12.89	5.49	42.69
Gold	1,721	0.71	11,898	0.15	24.95	5.77	174.41
Mines	2,005	0.83	27,595	0.34	14.51	5.88	51.63
Coal	1,206	0.50	9,286	0.12	12.70	3.77	40.78
Oil	10,604	4.40	546,910	6.83	21.57	8.39	99.56
Util	8,546	3.55	329,877	4.12	9.38	6.77	23.49
Telcm	5,752	2.39	487,302	6.09	32.22	6.41	176.14
PerSv	3,333	1.38	27,588	0.34	20.45	6.77	182.23
BusSv	22,143	9.19	770,030	9.62	23.59	7.38	133.70

Comps	9,107	3.78	314,926	3.93	19.76	6.87	98.73
Chips	12,982	5.39	414,301	5.17	15.81	6.61	69.10
LabEq	5,776	2.40	88,614	1.11	13.36	6.92	44.02
Paper	3,490	1.45	101,645	1.27	10.61	6.12	39.66
Boxes	2,053	0.85	21,103	0.26	12.62	7.02	36.27
Trams	6,055	2.51	150,492	1.88	20.78	6.89	359.84
Whlsl	9,404	3.90	101,920	1.27	29.44	7.83	812.35
Rtail	13,272	5.51	523,758	6.54	14.83	8.44	58.14
Meals	5,290	2.20	99,657	1.24	15.83	6.40	64.14
Banks	21,293	8.84	737,379	9.21	13.34	7.83	39.24
Insur	8,225	3.41	387,483	4.84	32.10	8.52	1051.80
RlEst	3,225	1.34	14,401	0.18	24.44	3.94	244.41
Fin	15,881	6.59	220,073	2.75	18.69	9.43	75.30
Other	3,117	1.29	201,298	2.51	25.82	5.74	134.11
All	240,949	100.00	8,007,278	100.00	18.34	7.15	254.12

Table 6

Asset Growth and Stock Returns: Industry Level

This table reports the equal- and value-weighted measures of the asset growth effect by industry during the sample period from 1968 to 2018. In each year *t* within each industry, I sort stocks into quintile/decile buckets based on the asset growth rates measured over fiscal year ending in calendar year *t*-2 to *t*-1 if the number of stocks in that industry-year is greater than 50/100 respectively. If the number of stocks in that industry-year is smaller than 50, I sort stocks into tercile groups. *AGSPREAD* is the time-series average of the differences in the asset growth rates between the top and bottom asset-growth buckets. The industry-level asset growth effect is measured by *SPREAD* and *SLOPE*. *SPREAD* is the average annual return difference between the top and bottom asset-growth buckets. The portfolio returns are calculated based on the equal- and value-weighted holding period returns of stocks in the portfolio from July(*t*) to June(*t*+1). The measures of *SLOPE* are computed by the time-series average of the coefficients, which are obtained by regression buy-and-hold stock return from July(t) to June(*t*+1) on the asset growth rates measured over fiscal year ending in calendar year *t*-2 to *t*-1 for the equal-weighted measures. The value-weighted SLOPE is calculated based on weighted-least-squares regressions, where the weights are proportional to firms' market value in June(*t*). All the variables are reported in percentage points. The *t*-statistics reported in parentheses are calculated using the Newey-West (1987) standard errors.

			Equal-Weighted Measures				Value-Weighted Measures			
Industry	AGSPREAD	*t*-stat	SPREAD	*t*-stat	SLOPE	*t*-stat	SPREAD	*t*-stat	SLOPE	*t*-stat
Argic	0.61	7.44	-0.01	-0.21	-0.24	-1.06	0.05	0.94	0.26	0.77
Food	0.64	12.35	-0.03	-1.08	-0.04	-0.95	0.05	1.35	0.03	0.50
Soda	0.52	7.97	0.03	0.33	-0.01	-0.07	0.01	0.15	-0.10	-0.40
Beer	0.36	11.71	0.01	0.23	-0.17	-0.82	0.04	0.79	0.19	0.94
Smoke	0.46	7.47	-0.06	-0.95	-0.40	-1.55	-0.09	-1.51	-0.17	-1.54
Toys	0.91	4.38	-0.16	-4.92	-0.35	-2.63	-0.06	-1.47	-0.17	-1.57
Fun	1.31	6.18	-0.05	-1.72	-0.02	-0.67	0.09	1.56	0.23	2.00
Books	0.50	7.24	-0.07	-1.54	-0.20	-2.00	-0.06	-1.68	-0.24	-2.52
Hshld	0.79	8.83	-0.04	-1.07	-0.11	-2.09	0.03	0.95	-0.03	-0.52
Clths	0.70	11.76	-0.08	-2.88	-0.08	-1.63	0.03	0.82	0.08	1.40
Hlth	1.23	7.39	-0.08	-1.32	-0.03	-0.56	-0.05	-0.98	-0.06	-1.29
MedEq	1.59	7.70	-0.11	-1.92	-0.03	-0.92	0.05	0.86	-0.12	-2.46
Drugs	2.29	6.60	-0.18	-2.35	-0.13	-1.95	-0.10	-1.67	-0.09	-2.28
Chems	0.75	8.08	-0.08	-3.10	-0.11	-2.30	0.02	0.44	-0.08	-1.82
Rubbr	0.53	7.35	-0.06	-1.99	-0.10	-1.36	0.00	-0.10	-0.12	-1.28
Txtls	0.39	14.68	0.00	-0.02	-0.03	-0.66	0.03	0.60	0.00	-0.03
BldMt	0.90	11.37	-0.06	-2.17	-0.13	-5.46	-0.08	-2.38	-0.06	-1.05
Cnstr	0.92	9.64	-0.15	-3.78	-0.21	-2.98	-0.14	-2.91	-0.26	-4.28

Steel	0.69	5.22	-0.12	-3.96	-0.22	-5.06	-0.11	-1.96	-0.18	-2.20
FabPr	0.49	9.47	-0.15	-3.19	-0.39	-3.11	-0.17	-3.52	-0.58	-4.33
Mach	1.22	6.72	-0.13	-2.93	-0.13	-3.43	-0.06	-1.80	-0.08	-1.47
ElcEq	0.88	8.95	-0.17	-4.45	-0.23	-6.47	-0.09	-1.79	-0.05	-0.80
Autos	0.63	12.22	-0.09	-2.41	-0.19	-2.59	0.01	0.22	-0.03	-0.37
Aero	0.45	10.28	-0.08	-1.96	-0.28	-1.50	-0.07	-1.70	-0.31	-3.38
Ships	0.48	5.43	-0.11	-2.19	-0.20	-0.76	-0.17	-2.70	-0.41	-1.96
Guns	0.47	5.74	-0.11	-1.47	-0.52	-1.79	-0.05	-1.48	-0.30	-1.44
Gold	0.91	5.80	-0.03	-0.41	-0.02	-0.25	-0.13	-2.18	-0.26	-1.44
Mines	0.66	7.66	-0.19	-3.37	-0.29	-1.99	-0.07	-0.90	0.05	0.25
Coal	0.50	9.18	-0.05	-0.55	-0.40	-1.07	-0.03	-0.34	-0.60	-1.82
Oil	1.77	9.03	-0.06	-1.19	-0.06	-1.91	-0.01	-0.19	-0.02	-0.42
Util	0.48	8.04	-0.04	-3.95	-0.09	-2.80	-0.07	-4.97	-0.12	-3.65
Telcm	1.33	5.06	-0.19	-4.71	-0.10	-4.92	-0.05	-1.04	-0.01	-0.09
PerSv	0.72	5.63	-0.09	-2.57	-0.09	-1.51	-0.02	-0.39	-0.03	-0.32
BusSv	1.95	8.20	-0.15	-3.82	-0.06	-3.71	-0.03	-0.57	-0.02	-0.88
Comps	1.65	8.11	-0.06	-1.35	-0.04	-1.42	0.06	1.03	0.06	1.03
Chips	1.40	9.50	-0.15	-3.39	-0.09	-3.46	-0.15	-2.64	-0.03	-0.50
LabEq	0.74	13.94	-0.11	-4.32	-0.13	-3.49	-0.08	-2.52	-0.15	-3.38
Paper	0.48	10.45	-0.05	-1.49	-0.07	-1.01	-0.06	-1.99	-0.06	-0.76
Boxes	0.42	9.88	-0.08	-2.35	-0.15	-1.20	-0.06	-2.19	-0.12	-0.83
Trams	1.68	3.45	-0.10	-2.02	-0.08	-3.94	-0.08	-1.81	-0.04	-0.75
Whlsl	2.04	2.98	-0.23	-4.36	-0.14	-4.57	-0.05	-1.27	-0.15	-2.20
Rtail	1.02	7.29	-0.13	-2.14	-0.12	-3.02	0.03	0.48	0.04	0.74
Meals	0.80	7.37	-0.11	-3.86	-0.19	-4.55	-0.06	-1.28	-0.10	-1.43
Banks	0.84	8.75	-0.01	-0.40	-0.03	-1.92	0.00	-0.08	-0.02	-0.79
Insur	2.15	2.12	-0.02	-0.42	-0.07	-1.53	0.01	0.20	-0.11	-3.09
RlEst	0.95	5.57	0.01	0.22	0.07	0.67	-0.01	-0.15	0.05	0.64
Fin	1.65	10.11	-0.07	-1.38	-0.03	-0.88	-0.05	-0.90	0.01	0.41
Other	0.88	5.84	-0.09	-1.18	-0.16	-0.83	-0.11	-2.11	0.23	0.95

Table 7

Fama-MacBeth Regressions of Industry-Level Annual Stock Returns

Annual stock returns from July 1968 to June 2018 are regressed on lagged variables in each industry group. *ASSETG* is the asset growth rate defined as the percentage change in total assets from fiscal year ending in calendar year *t*-2 to fiscal year ending in calendar year *t*-1. *BM* is the book-to-market ratio in the fiscal year ending in calendar year t-1. *MV* is the June(*t*) market value, *BHRET6* is the buy-and-hold return over January(*t*) to June(*t*). *BHRET36* is the buy-and-hold return over July(*t*-3) to June(*t*). Beta estimates are time-series averages of annual cross-sectional regression betas. The *t*-statistics reported in parentheses are calculated using the Newey-West (1987) standard errors.

industry		Constant	ASSETG	BM	MV	BHRET6	BHRET36
Argic	Beta	-0.087	-0.225	0.073	0.001	0.219	-0.132
	t-stat	-0.412	-0.264	0.275	0.891	1.092	-0.592
Food	Beta	0.129	-0.042	0.042	0.000	-0.023	0.006
	t-stat	4.306	-0.948	1.408	-1.301	-0.750	0.454
Soda	Beta	0.929	-0.651	-1.190	0.000	2.452	-0.313
	t-stat	2.181	-0.830	-1.902	0.383	1.858	-2.162
Beer	Beta	0.173	-0.514	0.008	0.000	0.020	0.048
	t-stat	3.611	-2.961	0.447	1.283	0.120	1.063
Smoke	Beta	0.393	1.261	-0.663	0.000	1.613	0.028
	t-stat	4.229	1.011	-1.135	-0.774	0.736	0.416
Toys	Beta	0.098	-0.444	0.003	0.000	-0.016	-0.022
	t-stat	1.731	-2.609	0.068	1.115	-0.158	-0.640
Fun	Beta	0.149	-0.038	0.000	0.000	0.168	-0.004
	t-stat	3.810	-2.785	-0.023	1.071	2.572	-0.211
Books	Beta	0.108	-0.173	-0.001	0.000	-0.142	0.017
	t-stat	1.973	-1.587	-0.048	0.455	-1.849	0.591
Hshld	Beta	0.108	-0.040	-0.001	0.000	0.039	-0.013
	t-stat	3.342	-0.673	-0.026	-0.803	0.800	-0.694
Clths	Beta	0.137	-0.049	0.033	0.000	-0.020	-0.009
	t-stat	2.716	-0.672	1.342	0.555	-0.458	-0.597
Hlth	Beta	0.210	0.001	0.025	0.001	-0.028	0.091
	t-stat	3.394	0.021	2.283	0.706	-0.332	3.007
MedEq	Beta	0.104	-0.018	0.137	0.000	0.006	-0.015
	t-stat	1.952	-0.410	2.803	0.874	0.078	-0.700
Drugs	Beta	0.130	-0.031	0.124	0.000	-0.024	0.010
	t-stat	3.414	-0.325	2.751	-0.368	-0.523	0.544
Chems	Beta	0.125	-0.111	0.032	0.000	0.027	0.009
	t-stat	3.871	-2.701	1.190	-1.021	0.698	0.576
Rubbr	Beta	0.123	-0.082	0.103	0.000	-0.073	0.011
	t-stat	2.762	-0.678	2.146	-0.555	-0.924	0.487
Txtls	Beta	0.078	-0.371	-0.031	0.000	-0.090	0.060
	t-stat	1.011	-1.282	-0.382	-0.776	-0.599	1.247
BldMt	Beta	0.113	-0.140	0.036	0.000	-0.066	0.029
	t-stat	3.457	-3.396	3.236	-1.161	-0.970	1.291
Cnstr	Beta	0.117	-0.285	0.043	0.000	-0.125	0.070
	t-stat	2.553	-1.906	1.690	0.920	-1.418	3.453
Steel	Beta	0.101	-0.188	0.019	0.000	0.025	0.001
	t-stat	2.444	-3.337	1.217	-1.255	0.545	0.015
FabPr	Beta	0.348	-0.907	-0.164	0.000	0.211	-0.023

	t-stat	2.559	-1.165	-0.942	-0.747	0.797	-0.200
Mach	Beta	0.114	-0.129	0.049	0.000	-0.007	-0.006
	t-stat	4.474	-4.484	2.384	-0.673	-0.183	-0.398
ElcEq	Beta	0.157	-0.200	0.000	0.000	0.013	-0.029
	t-stat	4.663	-4.030	0.014	-0.138	0.176	-1.622
Autos	Beta	0.133	-0.177	0.015	0.000	0.077	-0.039
	t-stat	4.031	-2.710	0.683	-1.289	2.091	-1.028
Aero	Beta	0.153	-0.279	0.133	0.000	-0.161	0.057
	t-stat	1.929	-1.899	1.196	0.773	-1.906	1.451
Ships	Beta	0.478	-1.335	-0.333	0.000	1.385	0.084
	t-stat	2.803	-1.618	-2.821	0.654	1.595	0.524
Guns	Beta	0.025	0.408	0.062	0.000	0.076	0.054
	t-stat	0.117	0.634	0.353	-1.446	0.099	0.294
Gold	Beta	-0.171	-2.419	-0.589	0.000	-0.580	-0.121
	t-stat	-0.417	-0.965	-1.354	0.434	-1.611	-0.404
Mines	Beta	0.131	-0.232	0.040	0.000	-0.073	-0.024
	t-stat	2.201	-1.694	0.459	-1.608	-0.640	-0.696
Coal	Beta	0.057	-4.256	0.156	0.002	-1.612	-3.945
	t-stat	0.129	-1.539	0.286	0.641	-1.162	-1.563
Oil	Beta	0.091	-0.054	0.069	0.000	-0.027	0.002
	t-stat	2.275	-1.690	2.778	-0.595	-0.911	0.143
Util	Beta	0.071	-0.069	0.061	0.000	-0.121	0.037
	t-stat	3.389	-2.333	6.767	-3.267	-2.034	2.527
Telcm	Beta	0.170	-0.119	0.003	0.000	-0.028	-0.054
	t-stat	3.673	-2.657	0.145	-1.955	-0.514	-1.341
PerSv	Beta	0.004	-0.356	0.093	0.002	-0.040	0.098
	t-stat	0.048	-3.874	1.572	0.602	-0.495	2.336
BusSv	Beta	0.159	-0.074	0.016	0.000	-0.037	-0.004
	t-stat	4.091	-5.963	1.240	-1.624	-2.157	-0.449
Comps	Beta	0.112	-0.102	0.044	0.000	-0.001	0.012
	t-stat	2.720	-2.526	1.956	-0.168	-0.025	0.621
Chips	Beta	0.145	-0.054	0.049	0.000	0.019	-0.017
	t-stat	2.903	-4.158	2.409	-0.817	0.570	-1.688
LabEq	Beta	0.136	-0.048	0.092	0.000	0.038	-0.024
	t-stat	2.240	-0.979	1.930	0.835	0.725	-1.283
Paper	Beta	0.111	-0.049	0.049	0.000	0.005	-0.033
	t-stat	2.996	-0.644	2.065	-0.820	0.102	-1.754
Boxes	Beta	0.016	0.067	0.158	0.000	-0.173	-0.045
	t-stat	0.274	1.127	1.490	-1.088	-0.330	-1.852
Trams	Beta	0.163	-0.055	-0.010	0.000	-0.022	-0.009
	t-stat	5.761	-1.141	-0.684	-1.387	-0.529	-0.664
Whlsl	Beta	0.121	-0.167	0.029	0.000	0.014	0.014
	t-stat	5.231	-4.466	2.506	1.283	0.499	1.087
Rtail	Beta	0.111	-0.135	0.040	0.000	0.008	-0.001
	t-stat	3.764	-3.622	2.368	-0.940	0.295	-0.102
Meals	Beta	0.091	-0.090	0.028	0.000	0.195	-0.015
	t-stat	2.291	-1.927	1.449	2.088	3.767	-0.562
Banks	Beta	-0.273	0.008	0.150	0.000	-0.520	0.067
	t-stat	-0.760	0.097	1.225	1.149	-0.768	0.735
Insur	Beta	0.120	-0.171	0.020	0.000	-0.025	0.010

	t-stat	3.642	-1.974	0.708	-0.909	-0.581	0.688
RlEst	Beta	0.065	-0.098	0.044	0.000	0.110	-0.029
	t-stat	1.262	-1.349	3.268	0.611	1.737	-0.804
Fin	Beta	0.155	-0.050	0.037	0.000	0.064	0.020
	t-stat	5.203	-2.466	1.349	-0.797	1.251	0.902
Other	Beta	-0.241	0.887	0.385	0.000	-0.550	-0.036
	t-stat	-0.588	1.569	0.979	1.305	-1.061	-1.339

Table 8

Cross-Industry Analysis: Industry Concentration and the Asset Growth Effect

Panel A reports the Pearson correlations between industry concentration measures for the sample period from 1968 to 2018. The *HHI(Assets)* for each industry is formed by first calculating the sum of squared assets-based market shares of all firms in that industry in a given year and then averaging over the past 3 years. *HHI(Equity)* and *HHI(Sales)* are computed analogously, using total book equity and sales in place of assets. Panel B and C report the results of the cross-industry regressions which examine the relationship between industry concentration and the asset growth effect. The dependent variables are the within-industry time-series averages of the asset growth effect measures, *SPREAD* and *SLOPE*. *SPREAD* is the average annual return difference between the top and bottom asset-growth buckets. The portfolio returns are calculated based on the equal- and value-weighted holding period returns of stocks in the portfolio from July(t) to June(t+1). The equal-weighted *SLOPE* is computed by the time-series average of the coefficients, which are obtained by regression buy-and-hold stock return from July(t) to June(t+1) on the asset growth rates measured over fiscal year ending in calendar year t-2 to t-1. The value-weighted SLOPE is calculated based on weighted-least-squares regressions, where the weights are proportional to firms' market value in June(t). The explanatory variables are the industry concentration measures, *HHI(Assets)*, *HHI(Equity)*, and *HHI(Sales)*. Panel B reports the 1984 to 1989 subperiod regression results, and Panel C reports the result on the whole sample period from 1968 to 2018. The t-statistics reported in parentheses are calculated using the Newey-West (1987) standard errors.

Panel A. Correlation table

	HHI(Assets)	HHI(Equity)	HHI(Sales)
HHI(Assets)	1.00	0.06	0.95
HHI(Equity)		1.00	0.06
HHI(Sales)			1.00

Table 8 - *Continued*

Panel B. 1984-1989 Subperiod								
	Equal-Weighted SLOPE				*Value-Weighted SLOPE*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Constant	-0.119	-0.144	-0.119	-0.092	-0.103	-0.130	-0.123	-0.095
	-2.205	-2.120	-2.234	-2.039	-1.669	-1.571	-1.921	-1.778
HHI(Assets)	0.648	.	.	-0.822	0.478	.	.	-1.274
	1.369	.	.	-0.648	0.902	.	.	-0.728
HHI(Sales)	.	0.812	.	2.301	.	0.659	.	1.725
	.	1.387	.	1.138	.	0.927	.	0.633
HHI(Equity)	.	.	0.605	-0.914	.	.	0.570	-0.002
	.	.	1.348	-1.138	.	.	1.056	-0.002
R^2	0.020	0.039	0.020	0.055	0.006	0.013	0.009	0.019
	Equal-Weighted SPREAD				*Value-Weighted SPREAD*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Constant	-0.071	-0.072	-0.073	-0.067	-0.011	-0.019	-0.022	-0.013
	-2.598	-2.906	-2.705	-2.411	-0.364	-0.702	-0.765	-0.425
HHI(Assets)	0.346	.	.	-0.113	0.177	.	.	-0.487
	2.325	.	.	-0.246	1.299	.	.	-1.216
HHI(Sales)	.	0.360	.	0.505	.	0.233	.	0.441
	.	2.648	.	1.300	.	1.761	.	0.988
HHI(Equity)	.	.	0.334	-0.057	.	.	0.234	0.227
	.	.	2.445	-0.157	.	.	1.762	0.722
R^2	0.022	0.030	0.023	0.030	0.005	0.010	0.009	0.014

Panel C. Full Sample Period								
	Equal-Weighted SLOPE				*Value-Weighted SLOPE*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Constant	-0.078	-0.083	-0.144	-0.078	-0.049	-0.057	-0.084	-0.050
	-3.692	-3.833	-8.417	-3.646	-2.281	-2.743	-4.480	-2.340
HHI(Assets)	-0.379	.	.	-0.420	-0.204	.	.	-0.547
	-2.241	.	.	-1.003	-1.276	.	.	-1.062
HHI(Sales)	.	-0.374	.	0.043	.	-0.170	.	0.379
	.	-2.009	.	0.090	.	-1.011	.	0.702
HHI(Equity)	.	.	0.001	0.002	.	.	-0.003	-0.003
	.	.	0.154	0.459	.	.	-1.112	-0.981
R^2	0.005	0.005	0.000	0.005	0.001	0.001	0.000	0.002
	Equal-Weighted SPREAD				*Value-Weighted SPREAD*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Constant	-0.092	-0.098	-0.088	-0.094	-0.033	-0.032	-0.040	-0.032
	-8.971	-9.570	-12.309	-9.129	-3.045	-3.022	-5.472	-3.014
HHI(Assets)	0.029	.	.	-0.370	-0.041	.	.	0.025
	0.516	.	.	-2.419	-0.738	.	.	0.162
HHI(Sales)	.	0.069	.	0.435	.	-0.047	.	-0.073
	.	1.139	.	2.580	.	-0.803	.	-0.442
HHI(Equity)	.	.	0.003	0.002	.	.	0.001	0.001
	.	.	0.945	0.883	.	.	0.470	0.559
R^2	0.000	0.001	0.001	0.004	0.000	0.000	0.000	0.000