What Drives Fixed Asset Holding and Risk-Adjusted Performance of Corporate in China? An Empirical Analysis

Dong, Yan and Leung, Charles Ka Yui and Cai, Dongliang

Southwestern University of Finance and Economics in China, City University of Hong Kong

2011

What Drives Fixed Asset Holding and Risk-Adjusted Performance of Corporate in China? An Empirical Analysis[♠]

Yan Dong
Southwestern University of Finance and Economics, China

Charles Ka Yui Leung[♦]
City University of Hong Kong, Hong Kong

Dongliang Cai
Southwestern University of Finance and Economics, China

This version: Feb., 2011.

Abstract:

This paper attempts to shed light on the over-investment debate by investigating listed firms in China. Firms with higher level of fixed asset holding, higher level of overhead expenses, and being covered by the tax-favor policy in China are found to be associated with a lower risk-adjusted performance. In addition, the tax-favor policy itself encourages fixed asset investment. In contrast to some of the previous literature, state-ownership of firms, dividend policy, and ownership concentration are not robust predictors of risk-adjusted performance, and debt level, managerial shareholding, and profit per unit of asset are not robust predictors of fixed asset investment.

Keyword: fixed asset holding, corporate real estate, over-investment theory, state-ownership, tax-favor policy

JEL Classification: G30, G31, L21, R30

[♠] Acknowledgement: The authors would like to thank Julan Du, Tim Riddiough, Ko Wang, colleagues of Hong Kong and anonymous referees for helpful discussion, and the City University of Hong Kong and Southwestern University of Finance and Economics for financial support.

[♦] Correspondence: Leung, Department of Economics and Finance, City University of Hong Kong, Kowloon Tong, Hong Kong. (email) kycleung@cityu.edu.hk.

1. Introduction

This study is motivated by several strands of the literature. First, it is related to the phenomenal economic growth of China. Figure 1 demonstrates that, after accounting for inflation, the real GDP of China has increased by almost 100% in less than a decade. Among the many explanations that have been suggested, the over-investment theory is among the few that have received attention in the media and academic circles.[1] For instance, several authors have studied the issue mainly from the domestic side, including Aziz and Cui (2007), Chinn (2006), Kuijs (2006), Liang (2006), and Makin (2006), among others. It would be fair to say that a consensus has yet to be reached.

(Figure 1 about here)

The over-investment theory can also be approached from the firm side. The concept is very simple: if Chinese firms do indeed over-invest, then the corresponding rates of return on capital would be low. Bai et al. (2006) provide a careful empirical study on the return of capital in China and find that the return is not actually low, which seems to suggest that China may not be over-investing. Cooper (2006, pp. 97-98) argues that, among other factors, "China contains millions of people on the move and other millions who desire and are able to upgrade significantly the quality of their housing … agriculture still accounts for nearly half of the labor force. China still has a relatively low capital-labor ratio in the productive sectors and ample unskilled labor; *thus the investment boom may continue for some years without pushing down rates of return*." Blanchard (2006, p. 92), however, finds that "*private firms have much higher rates of return than state firms,*" which suggests that the over-investment theory might receive more support when the ownership structure of firms is taken into consideration. This paper will provide an indirect test of these statements.

Many researchers in China have also joined the over-investment debate by studying the fixed asset investment behavior of companies listed on the Chinese stock market, as fixed asset investments arguably have more reliable data at the firm level. Wei (1999) and Zhao and Wang

[1] Clearly, it is beyond the scope of this paper to review the literature. Among others, see Chow (2002), and the references therein.

(1999) believe that there is no effective supervision in Chinese firms, which could result in over-investment in fixed assets. Yuan et al (1999) suggests that, because the cost of raising capital is relatively low, Chinese firms tend to over-invest in fixed assets. He and Ding (2001) analyze the fixed asset investment strategy of companies listed on the Shanghai Stock Market. They find that this decision is positively related to the cash flow volumes in these companies, instead of the volume of capital that firms can raise in the financial market. The analysis by Wei and Liu (2004) finds the same relationship between cash flow and fixed asset investment. In contrast, Quan, Jiang and Chen (2004) show that fixed asset investment in large and listed firms is less sensitive to cash flow. The empirical work of Jiang and Sheng (2005) suggests that company debt will not constrain firms' asset investments in most cases.

In light of these contributions, this paper attempts to complement the literature by focusing on fixed asset investment in China at the firm level. From casual observations and our private correspondence with industry participants, it seems that corporate real estate (CRE) constitutes a major share of the fixed assets. The reasons are easy to envisage. As documented by Gordon (1990), and Greenwood, Hercowitz and Krusell (1997), the real price of capital goods (adjusted for efficient units) has a clear downward trend. This means that the value of capital goods (such as machines and equipment) experience both physical depreciation (due to wear and tear) and economic depreciation (due to price drop). In contrast, land and property values in China have displayed an upward trend in recent years. In addition, the composition of fixed assets (CRE versus equipment) is itself endogenous, and the real estate boom in China seems to encourage corporations to shift more resources to CRE instead of equipment. In fact, the issue is so serious that the Chinese government recently ordered 78 state-owned enterprises, whose core business is not in the real estate sector, to withdraw from the real estate market (Hong Kong Economic Journal, 2010). Thus, throughout this paper, we will use "fixed asset investment" and CRE interchangeably, although conceptually they are clearly different subjects.[2]

[2] An anonymous referee correctly points out that machinery and corporate real estate are different subjects. On the other hand, from a theoretical point of view, the two share several common features. They are "inputs" of the production process. They can serve as "collateral," at least for bank borrowing. They can be resold to other firms through the secondary market. And as we argue in the paper, since corporate real estate tend to appreciate in value (especially in China), and machines tend to depreciate over time, the importance of corporate real estate in the "fixed asset holding" will increase over time. Recently, Jin et al (2010) also use "corporate real estate" as a proxy for "fixed asset holding" and find that it is very important in explaining both the business cycle dynamics as well as housing market

This paper attempts to shed light on several research questions. First, does fixed asset investment enhance (or damage) the performance of firms? For instance, if a higher share of fixed asset investment is found to be associated with a lower level of performance or with efficiency measures, then it would be consistent with the "over-investing" theory. Second, this paper will study the determinants of fixed asset investment in Chinese firms. For instance, is the behavior of Chinese firms consistent with the pattern previously reported in the literature, based on data from the United States? Does a particular institutional setting (such as state-ownership) or policy (such as tax policy) play a role? This paper attempts to shed light on these questions.

There are several additional benefits to the study of fixed asset investment. First, relative to investment in research and development, investment in fixed assets is easier to measure. It is also easier to compare across firms from different sectors. While Cooper (2006), among others, suggests that China will continue to experience an investment boom, our firm-level approach should help us to assess whether particular kinds of firms tend to invest more than others. Moreover, fixed asset investment also seems to be a very important component of the total investment of a typical firm in China.

In addition, it may be related to the macroeconomic activities. As corporate real estate (CRE) typically constitutes a significant share of the "fixed asset investment," and real estate can serve as collateral for bank lending, the fluctuation of real estate prices have the potential to influence the lending capacity of corporate and hence the macroeconomic activities, as demonstrated recently by Jin et al. (2010). Thus, this study of CRE may also contribute to our understanding of the borrowing behavior of Chinese firms. Even though investment data are not accessible to us, as China has not yet adopted the "mark-to-the-market" principle in accounting, the asset holding data could well reflect the investment pattern of different firms, thus analysis of these data would still shed light on the relevant issues.

2. Why hold fixed assets?

Standard economic theory would suggest that whether a person rents or owns does not matter,

---

dynamics. Thus, using CRE and "fixed asset holding" interchangeably may be a compromise given the data limitation.

as long as the capital market is perfect. However, if the capital market is imperfect, which may indeed be the case in China, firms may prefer to rent rather than own a fixed asset because they may prefer to maintain some level of cash flow to self-insure against possible liquidity risk in the future.[3] Thus, firms with growth opportunities or facing severe financial constraints may prefer to rent rather than own fixed assets.

On the other hand, there are also reasons why companies may prefer to hold fixed assets. First, a rental market may not yet be established, hence firms are forced to own certain assets (for instance, special machinery) if they need to employ them. In addition, there is a tax advantage. Investment in fixed assets can be tax-exempted. To encourage economic growth, the Chinese government published "The contemporary law for tax adjustment of the fixed-asset investment in different industries in China" in 1999. This law gives a lower value-added tax rate for certain industries (such as manufacturing, petroleum, cars, agriculture, technology innovation, shipping, metallurgy, etc.) that are perceived to play an important role in economic growth. Some fixed-asset investment items from these industries are subject to only 5%, or even 0% tax, while comparable investment in other industries would be subject to 50% tax.

The demand for fixed asset holding may also be driven by the production mode. Some industries, such as manufacturing, may prefer to hold more fixed assets. Moreover, very few Chinese listed companies distribute dividends, which enable them to invest even more. Finally, in the Chinese stock market, many listed companies have high state-ownership. Historically, state-owned firms are perceived to be more likely to acquire fixed assets. This perception is consistent with the results of Blanchard (2006). Later on, we will examine whether this impression is still true in our data.

Another reason may be related to the recent boom in the real estate market in China. For instance, Peng et al. (2008) find that "the property price index for Shanghai increased by an average of about 13% per annum in 2001–2004." Figure 2 displays the ratio of house prices relative to GDP. It shows that, at the national level, house prices have increased at least as fast as GDP. In other words, real estate investment can be a good "hedge." Thus, some firms may have

[3] Among others, see Gorton (2010) for more discussion on this.

an incentive to acquire real estate as part of their fixed asset investment.[4] [5]

(Figure 2 about here)

3. Data and Empirical Strategy

Following recent Chinese researches which focus on the micro data, this paper also concentrate the efforts on corporate level data.[6] The data used in this study were collected from the China Stock Market and Accounting Research Database (CSMAR), which is based on the annual reports and employed by several recent researches. Our sample consists of companies listed on the Shanghai and Shenzhen stock exchanges throughout the years 2003 to 2007. Because the annual reports of listed firms are usually audited by world-renowned accounting agencies, the data used in this paper carry some credibility.[7] Missing annual reports and missing observations in the CSMAR Database reduce the sample size. Also, one firm with negative assets is dropped from the sample. Therefore, our full sample consists of 1218 companies and 5512 firm-year observations. Subsample 1 contains 4625 observations, which are firms with positive profit only, and subsample 2 contains 3978 observations, which are firms with positive efficiency only. The detailed definitions are provided in Table 1. It is clear that by construction, firms with positive efficiency will have positive profit in the first place.

(Table 1 about here)

We have collected information on the fixed asset holding, debt ratio, sales (income), profit/total assets, state-ownership, salary of senior manager/income, dividend, CEO/Chairman, industries, etc. These variables are included for sound economic reasons. As Du et al. (2007) explained in detail, managers may not invest to maximize the return for investors, but might

---

[4] Throughout this paper, we will use the term "properties" and "real estate" interchangeably. Henceforth, we will also abuse the vocabulary slightly to assume that "real estate" includes both "buildings" and "land."

[5] Needless to say, if most firms attempt to buy real estate now to hedge the risk of even higher prices in the future, it may lead to a self-fulfilling price increase in real estate. This paper focuses on the firm level analysis and leaves this question for future research. For an analysis of the China housing markets, see Leung and Wang (2007), Leung et al (2010), Wu, Gyourko and Deng (2010), among others.

[6] Allen et al (2005), Calomiris et al (2010), Cull and Xu (2005), Fan et al (2007), Firth et al (2006), Gul et al (2010), Jiang et al (201), among others. The data source of our paper and theirs are very similar, and in some cases exactly identical.

[7] The accounting year for listed firms in China is from January 1 to December 31. Foreign firms are not subject to this rule, and they are excluded from our sample. Thus, all firms in our sample have the same accounting year, which facilitates the comparison.

instead use investment for private benefit, including "empire building'' or other private motives. Thus, it is necessary to include some corporate governance variables in the firm-level empirical analyses. The rationale is simple. If the senior management has only minor share ownership, the private cost of their inefficient investment may be small. Similarly, if firms are cash-constrained or reserving cash for other investments, they may be less willing to buy corporate real estate. However, firms may be able to finance their real estate investment through long-term debt, as the real estate can be used as collateral. As a result, we would expect a positive association between the holding of corporate real estate and long-term debt holding. Due to space limitations, we refer interested readers to Du et al. for a more extensive discussion and literature review.

We will first present some summary statistics to provide an overview of the dataset; these are shown in Table 2a.[8] To establish the robustness of our results, note that we have three samples: the full sample, sub-sample 1, and sub-sample 2. For most variables, such as the CDs, CDR, Debt, Dual, Jensen-alpha, etc., there are very few changes across different samples. Needless to say, there are exceptions. For the efficiency variable, once we restrict our attention to firms with positive efficiency, the mean is much closer to zero, and the standard deviation shrinks dramatically from 776 (full sample) to 53 (sub-sample 2). The EPS variable (the net profit per unit of share) increases from about 0.23 (full sample) to about 0.46 (sub-sample 2). Table 2b also summarizes the expected sign of different variables in the Jensen alpha regression.

(Table 2a, b about here)

It may be instructive to recall our research questions:

(1) Do firms in China "over-invest" in their fixed asset investment (FAH)? Are the risk-adjusted performances of firms affected by the FAH?

(2) Does the tax-favor policy lead to more FAH in the target industries?

(3) What are the other determinants of FAH in Chinese firms?

To approach the corporate real estate problem, as Du et al. (2007) explained, some

[8] In the original sample, there is one firm which shows negative assets. Because it is not clear how to interpret this, we simply remove that firm from the sample and find that the summary statistics are virtually unchanged.

econometric issues need to be resolved. Clearly, since this dataset includes all listed firms in the Chinese stock market over a period with significant economic development in China, serious heterogeneity issues may arise. In particular, the firm-fixed effect and time-specific effect may be present in the dataset. Ignoring their presence may lead to significant bias, as explained in Hsiao (2003). Recently, Hsiao and Tahmiscioglu (2008) show that through a data transformation, it is possible to "eliminate" both the firm-fixed effect and time-specific effect and obtain an unbiased estimator. To our knowledge, this is the first study which employs this new technique in panel data method. Therefore, some additional details are presented in appendix I. We will present econometric data based on the original data and the "adjusted data."

Another issue is endogeneity and causality. It may be that firms that are inefficient, or managers who are uncompetitive, choose to invest heavily in real estate, as their opportunity costs are arguably lower. It may also be the other way round: previous heavy investment in corporate real estate may constrain firms to make more profitable investments. Because the real estate market is relatively illiquid, firms may be "trapped" in past "mistakes" in over-investment in real estate. However, as the time span of our data is relatively short, it is unlikely that our data set would be able to resolve this causality question. To remain neutral on this issue, we adopt a Probit model, which only indicates the likelihood of certain phenomena occurring, given a particular set of variables. As a comparison, we also ran an OLS regression; however, as the results are similar, and OLS may be subject to more econometric doubts, we will present only the results from the Probit model. In the text, we will mainly present the results with all firms included. In the appendix II, which will be available upon request, we remove all "real estate firms" and re-run all the regressions.[9] We find that the results are indeed very similar. Thus, we will focus on the discussion on the "all firm case" in the text.

Except for the "data adjustment," our econometric strategy is fairly standard, to facilitate comparison with the literature. To address research questions (1) and (2), we follow the finance literature in using Jensen's alpha as a measure of risk-adjusted measure of performance. Table 3 presents the Probit model for the firm-level Jensen-alpha across different samples. Clearly, other things being equal, a higher share of FAH in the total asset is associated with a *lower* value of

[9] The full version of this paper will be available from IDEAS, http://ideas.repec.org/

Jensen-alpha (statistically significant in 5 of the 6 cases considered). In other words, it seems that investment in more fixed assets does adversely affect the performance of corporations in China. Moreover, we find that the tax-favor industry dummy is associated with a *lower* value of Jensen-alpha (statistically significant in 5 of the 6 cases considered). Thus, the tax policy does not seem to bring any immediate benefits to the shareholders. Furthermore, in four out of the six cases, a higher level of overhead expenses (OE) is associated with a *lower* level of Jensen-alpha, which seems to be consistent with the agency theory, as higher levels of OE often means higher levels of subsidy to the senior management.[10]

(Table 3a about here)

While these variables show a consistent pattern in their relationship with corporate performance, this is not the case for some other variables. For instance, with the original data, a higher level of state-ownership is *always* associated with a *higher* Jensen-alpha, which makes state-ownership a *positive* factor. However, after the firm-fixed effect and time-specific effect are taken into consideration, a higher level of state-ownership is *always* associated with a *lower* Jensen-alpha, which makes state-ownership a *negative* factor. Similarly, the coefficients of the cash dividend dummy are always statistically significantly and *positive* in the Jensen-alpha regression with the original data. However, it is consistently statistically significant and *negative* after the firm-fixed effect and specific-time effect are taken into consideration. The same phenomenon also occurs in the case of CR, which measures ownership concentration by the proportion of shares held by the top 10 shareholders. With the original data, the coefficients are always statistically significant and *positive,* suggesting that a higher concentration of ownership will enhance the risk-adjusted measure of performance of corporations. However, after adjusting for the firm-fixed effect and specific-time effect, the coefficients are always statistically significantly and *negative*, suggesting that a higher concentration of ownership actually depresses the risk-adjusted performance for firms in China.

[10] Senior managers in China, especially in state-owned enterprises, do not usually receive high salaries. Nonetheless, their private expenses, such as meals, transportation, holidays, and shopping, can be covered by company expenses. Thus, overhead expenses (OE) can be interpreted as the hidden income of senior managers. In Chinese academic circles, it is often regarded as a proxy for management cost. High OE will lead to a lower level of efficiency.

To provide a tentative summary, these results seem to suggest that, while the level of state-ownership, the dividend policy of firms, and the concentration of ownership are all important factors, their effects may not be as robust as some previous authors thought. This may also be related to our interpretation of the firm-fixed and specific-time effects. Nonetheless, these results may also justify why we should focus on the holding of fixed asset investments and the tax-favor policy, which seem to give more robust results. Because the main focus of this paper is on fixed asset investment, we simply present these results and leave further exploration to future research.

Thus far, we have followed the literature and pooled the firms listed on the Shanghai and Shenzhen markets together. However, it is possible that the firms listed on the two markets are different. For instance, very large Chinese firms tend to be listed on the Shanghai rather than Shenzhen market. Some people argue that the liquidity in the Shanghai market is higher, while others argue that firms are listed on the Shanghai market only if they have certain connections. For our purposes, it is sufficient to test whether the listing decision may affect the risk-adjusted performance of firms. Therefore, we introduce one more dummy variable, SH, which takes the value of one if the firm is listed in Shanghai, and zero if it is listed in Shenzhen. We re-run the regression and the results can be found in the appendix II, which will be available upon request. Most results are preserved with a few notable differences. First, after controlling for the firm-fixed effect and specific-time effect, the coefficients for DUAL (which takes the value of one when the Chairman of the company and the CEO are the same person, and zero otherwise) are statistically significant and *negative*. This is consistent with Du et al. (2008), who found that better corporate governance (which in this case means the Chairman and CEO are a different person) will improve the risk-adjusted performance of firms. In addition, other things being equal, the coefficients of the Shanghai dummy are always statistically significant and *negative*. This is consistent with the conjecture that the Shanghai market provides a higher level of liquidity, and hence investors would accept a lower return. It is also possible that being listed on the Shanghai market may incur additional costs to the firm (such as a financial contribution from the firm to Shanghai city, or the need to provide more subsidies to senior managers in the form of “overhead expenses” etc.), leading to a lower Jensen-alpha value. Since our focus is on fixed asset holding, it is sufficient for us to know that the introduction of the Shanghai dummy does not affect our principal results, and we will leave the explanation of the negative coefficient for future research.

It may be argued that Jensen's alpha is the not the most appropriate measure. Jensen's alpha is a risk-adjusted measure of firm performance, while we may be more interested in the investment risk, which is measured by the "Beta." To address this concern, we repeat our analysis, with Jensen's alpha replaced by "Beta risk." Table 3b reports the results of the baseline cases. Results when the Shanghai-listing dummy is included can be found in the appendix II. It is clear that FAH (fixed asset investment) is statistically and negatively related to the beta, meaning that an increase in the proportion of fixed assets to total assets is associated with a decrease in the systematic risk (which is Beta). However, after controlling for the time and firm-fixed effect, the statistical significance disappears. It seems that there are important idiosyncratic factors which affect firm performance.

(Table 3b about here)

To address research question (3), we run another Probit regression and present the results in Table 4. Because real estate and other fixed assets are typically illiquid, it is not surprising that FAH for the previous period is a very consistent predictor of FAH for the current period. The statistical significance and positivity of the coefficients across all six samples are in some ways expected. Once again, the coefficients of the tax-favor policy dummy are statistically significant and positive across all six samples. Combined with the results from the previous table, this means that the tax-favor policy encourages those industries to invest more in fixed assets, which on its own tends to be associated with lower levels of risk-adjusted measure of firm performance. In addition, even controlling for the effect of FAH, the tax-favor policy exerts a direct and negative effect on the Jensen's Alpha. Thus, the *tax-favor policy suppresses the firm performance* both directly and indirectly.

For other variables, the results do not seem to be as clear. For instance, the coefficients of DEBT are statistically significant and *positive* for the original data, meaning that a higher debt ratio relative to total assets is associated with a higher ratio of fixed asset investment relative to total assets. However, after the firm-fixed effect and specific-time effect are taken into consideration, the coefficients become *negative* and statistically significant. Similarly, the coefficients of STO are statistically significant and *positive* for the original data, meaning that a

higher level of state ownership is associated with a higher proportion of fixed asset investment relative to total assets. However, once the firm-fixed effect and specific-time effect are adjusted for, the coefficients become *negative* and the statistical significance is unfortunately lost. Other variables that fail to deliver robust results include ROA (the amount of profit for each unit of asset), MSR, and CD (the cash dividend dummy). In the appendix, we provide supplementary regressions and the qualitative results seem to be unaffected. The most consistent (and positive) factors to explain fixed asset investment are the previous FAH (which only confirms the persistence of FAH) and the tax-favor-policy. Other variables are still subject to changing sign or even the disappearance of statistical significance. It suffices to say that further research is needed to gain a better understanding of the determinants of FAH.

(Table 4 about here)

To examine the possibility that the firms listed in Shanghai are intrinsically different from those listed in Shenzhen, we again introduce the Shanghai dummy and re-run the regression. As shown in the appendix II, the qualitative results are the same as in Table 4a (without the Shanghai dummy). In fact, the Shanghai dummy is never statistically significant. This suggests that listing in Shanghai per se does not affect fixed asset investment behavior. If the risk-adjusted measure of firm performance is indeed affected, it must be through some other channel. Again, we contend that the listing decision does not affect fixed asset holding and leave other issues for future research.

4. Concluding Remarks

This paper is motivated by the over-investment theory (or, over-investment debate), which attempts to explain the phenomenal economic growth of China. Our data set spans the period 2003 to 2007, and covers more than 1,000 listed firms in China. Our principal findings are that,:(1) a higher proportion of fixed asset investment is associated with a lower level of Jensen's alpha, suggesting that corporate real estate and other types of fixed asset investment may not enhance firm performance in the stock market after adjusting for risk; (2) the industries that are favored by "The contemporary law for tax adjustment of the fixed-asset investment in different

industries in China" issued in 1999, are associated with a lower Jensen's alpha, suggesting that the law may potentially damage firm performance (after adjusting for the risk); (3) the previous period FAH and the tax-favor industry dummy are the only robust determinants of the current period fixed asset holding (FAH), indicating that industries are favored by the law mentioned previously. Clearly, (1) is consistent with the findings of Du et al. (2008), which were based on U.S. data, while (2) and (3) together seem to confirm the conventional wisdom in the public finance literature that tax favors may do more harm than good, at least in the financial market. The law does encourage fixed asset investment, but an increase in fixed asset investment does not deliver better performance at the firm level (after adjusting for risk).

The result reported in the previous literature, suggesting that state-ownership of firms may encourage FAH and dampen risk-adjusted firm performance, is only partially confirmed in this updated dataset. It seems that whether or not the firm-fixed effect and specific-time effect are corrected for will crucially affect the results. Other variables, including the dividend policy of firms, the concentration of ownership, and the managerial proportion of share holdings, all suffer from the same issue. In other words, an increase in the proportion of fixed asset investments need not be associated with a decrease in the risk-adjusted firm performance. We are aware that our results are at odds with some of the earlier literature on Chinese corporate investment. This may be because we are using more up-to-date data. It may also be due to the fact that our econometric strategy, which is based on the recent work of Hsiao and Tahmiscioglu 2008, allows us to take into consideration both the firm-fixed effect and time-specific effect simultaneously. Clearly, more research is needed to clarify this.

To deepen our understanding of corporate investment, it would be helpful to conduct a cross-country comparison. Theoretical work would also be instructive. Some of these ideas are currently being pursued.

REFERENCES

Allen, F., J. Qian and M. Qian, (2005), Law, finance, and economic growth in China, Journal of Financial Economics, 77, 57–116.

Aziz, J., and L. Cui, (2007), Explaining China's low consumption: the neglected role of household income, IMF working paper.

Bai, C. E., C. T. Hsieh and Y. Qian, (2006), The return to capital in China, Brookings Papers on Economic Activity, 2, 61-88.

Bai, C. E., D. D. Li and Y. Wang, (1997), Enterprise Productivity and Efficiency: When Is Up Really Down? Journal of Comparative Economics, 24(3), 265-280.

Blanchard, O., (2006), The return to capital in China: discussion, Brookings Papers on Economic Activity, 2, 89-92.

Calomiris, C. W.; R. Fisman and Y. Wang, (2010), Profiting from government stakes in a command economy: Evidence from Chinese asset sales, Journal of Financial Economics, 96, 399-412.

Chinn, M., (2006), China: Over-investment or not, available at http://www.econbrowser.com/archives/2006/12/china_overinves_1.html

Chow, G., (2002), China's Economic Transformation. Oxford Blackwell Publishing.

Cooper, R., (2006), The return to capital in China: discussion, Brookings Papers on Economic Activity, 2, 93-98.

Cull, R. and L. C. Xu, (2005), Institutions, ownership, and finance: the determinants of profit reinvestment among Chinese firms, Journal of Financial Economics, 77, 117-146.

Du, J., C. K. Y. Leung and D. Chu, (2007), An empirical investigation of corporate real estate holding. Chinese University of Hong Kong, mimeo.

Fan, J. P. H.; T. J. Wong and T. Zhang, (2007), Politically connected CEOs, corporate governance, and Post-IPO performance of China's newly partially privatized firms, Journal of Financial Economics, 84, 330-357.

Firth, M., P. M.Y. Fung and O. M. Rui, (2006), Corporate performance and CEO compensation in China, Journal of Corporate Finance, 12, 693– 714.

Gordon, R., (1990), The measurement of durable goods prices, Chicago: Chicago University Press.

Gorton, G., (2010), Slapped by the Invisible Hand: the panic of 2007, Oxford: Oxford University Press.

Greenwood, J., Z. Hercowtiz and P. Krusell, (1997), Long-run implications of investment specific technological change, American Economic Review, 87, 342-362.

Gul, F. A., J. B. Kim and A. A. Qiu (2010), Ownership concentration, foreign shareholding, audit quality, and stock price synchronicity: Evidence from China, Journal of Financial Economics, 95, 425-442.

He, J., and J. Ding, (2001), Empirical Study of the listed Companies` Investment Choice in China, Securities Market Herald, 9, 44-47. *(in Chinese)*

Hong Kong Economic Journal, (2010), The Chinese government commanded 78 state-owned enterprises to withdraw from the real estate market, 19th March. (*in Chinese*)

Hsiao, C., (2003), Analysis of Panel Data, Cambridge: Cambridge University Press.

Hsiao, C.; A. K. Tahmiscioglu, (2008), Estimation of Dynamic Panel Data Models with Both Individual and Time Specific Effects, Journal of Statistical Planning and Inference, 138, 2698-2721.

Huang, G., and F. Song, (2006), The determinants of capital structure: evidence from China, China Economic Review, 17, 14-36.

Jiang, G.; C. M.C. Lee and H. Yue (2010), Tunneling through intercorporate loans: The China experience, Journal of Financial Economics, 98, 1-20.

Jiang, W. and Y. Sheng, (2005), Asset Substitution and Creditor Protection, Finance and Economics Research, 12, 95-106. *(in Chinese)*

Jin, Y.; C. K. Y. Leung and Z. Zeng, (2010), Real Estate, the External Finance Premium and Business Investment: A Quantitative Dynamic General Equilibrium Analysis, forthcoming in Real Estate Economics.

Kuijs, L., (2006), How will China's saving-investment balance evolve? World Bank China Research Paper.

Leung, C. K. Y., K. K. Chow, M. S. Yiu and D. C. Tam, (2010), Market in Chinese Cities: Dynamic Modeling, In-Sampling Fitting and Out-of-Sample Forecasting, forthcoming in International Real Estate Review.

Leung, C. K. Y. and W. Wang, (2007), An Examination of the Chinese Housing Market through the Lens of the DiPasquale-Wheaton Model: A Graphical Attempt, International Real Estate Review, 10(2): 131-65.

Liang, H., (2006), China's investment strength is sustainable, Goldman Sachs working paper.

Quan L., X. Jiangand J. Chen, (2004), Demonstration: An Empirical Study of the Impact of Cash Flow on Investment Decision under Different Firm Size, Journal of Shanghai Jiaotong University, 3, 355-358. *(in Chinese)*

Makin, J., (2006), Does China save and invest too much? Cato Journal, 26(2), 307-315.

Peng, W., D. Tam and M. Yiu, (2008), The Property Market and the Macroeconomy of the Mainland: a Cross Region Study, Pacific Economic Review, 13(2): 240 – 58.

Wei, F. and X. Liu, (2004), Financing Constraints and Uncertainty effects to the investment Choice of Listed Companies, Economic Science, 2, 35-43. *(in Chinese)*

Wei, H., (1999), Financing Preference and Efficiency. Contemporary Finance & Economics, 6, 38-43. *(in Chinese)*

Wu, J., J. Gyourko and Y. Deng, (2010), Evaluating Conditions in Major Chinese Housing Markets, NBER Working Paper 16189.

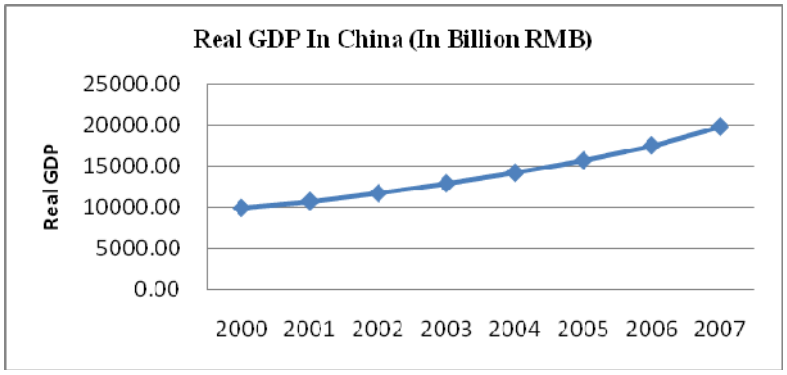
Yuan, G., J. Zheng and Z. Hu, (1999), An Empirical Study on the Preference and Capacity of Capital of Chinese listed firms, Managerial World, 1999(03). *(in Chinese)*

Zhao, G. and Y. Wang, (1999), Debts and the ways to the corporation administration, Finance and Economics, 6, 23-26. *(in Chinese)*

Zhao, S. and Y. Wang, (1999), The State-owned Firms Reform from the Perspective of the Managers`Market Development, Journal of University of Electronic Science and Technology of Xi`an, 1, 26-28. *(in Chinese)*

FIGURES

Figure 1. Real GDP in China from 2000 to 2007 (in Billion RMB)



Note that the Year 2000 is calculated as the base year.

Data Source: China Statistical Yearbook 2009, compiled by the National Bureau of Statistics of China

Figure 2. Housing Price Index/ GDP Index in China from 2000 to 2007

Data Source: online dataset of the National Bureau of Statistics of China; http://www.stats.gov.cn/tjsj/

Note that Both the Housing Price Index and GDP index are nominal indexes.

.

TABLES:

Table 1. List of Variables

Variable name	Explanation
CDs	Cash dividend (dummy variable 0=no dividend, 1=dividend)
CR	Percent of shares held by top 10 shareholders/total shares
DEBT	Debt/total asset
DUAL	1= CEO and Chairman are the same person; otherwise 0.
EFFICIENCY	(profit-depreciation-tax + interest payment)/ (fixed asset holding + inventory)
EPS	Net profit divided by total shares
FAH	Fixed assets/total assets
JENSEN ALFA	Jensen's alpha = Portfolio Return - [Risk Free Rate + Portfolio Beta * (Market Return - Risk Free Rate)]
LNPAY	LNPAY = Ln (total annual remuneration of current board of directors and senior managers)
MSR	Managerial shares/total shares
OE	Overhead expenses
ROA	Return of asset = profit/total asset
SH	SH=1 if the firm is listed on the Shanghai Stock Exchange SH=0 if the firm is listed on the Shenzhen Stock Exchange
SIZE	Size = Ln (asset)
STO	State owned shares/total shares
TAXFAVOR	TAXFAVOR=1 if this industry has received a special tax favor on investment, 0 otherwise. The tax favor is applied to industries such as manufacturing, petroleum, cars, agriculture, technology innovation, shipping, and metallurgy.

Table 2a. Summary Statistics

	Full sample	(No. of Obs. = 5512)	Subsample 1 (firms with positive profit)	(No. of Obs. = 4625)	Subsample 2 (firms with positive efficiency)	(No. of Obs. = 3978)
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
CDS	.3512337	.4773991	.3496216	.476902	.3944193	.488787
CR	58.03741	13.92745	57.93693	13.91901	58.3164	13.9843
DEBT	.0724802	.1138099	.0724066	.1077405	.0727111	.0962747
DUAL	.1139332	.3177599	.1161081	.3203892	.1128708	.3164746
EFFICI -ENCY	-10.28485	776.8082	-12.2621	848.026	1.077584	53.14381
EPS	.2278429	3.212522	.2714032	2.458388	.4588386	2.412534
FAH	.3145689	.1878599	.3163736	.1885543	.3147734	.1894271
JENSEN ALPHA	-.0235673	.0265477	-.0233436	.0246684	-.0228784	.0260667
LNPAY	14.005	.8578241	14.00087	.8586776	14.08471	.8351003
MSR	.0001087	.0013332	.0001185	.0014522	.0001287	.0015637
OE	18.10016	1.078647	18.09175	1.067724	18.08334	1.065607
ROA	-.3739496	28.91251	-.4475944	31.56331	.0529499	.5772647
SIZE	21.3172	1.07632	21.30929	1.066255	21.40118	1.031131
SH	.6139332	.4868904	.6004324	.4898624	.6136249	.4869795
STO	.3255011	.246879	.3241886	.2463527	.3298115	.2469107
TAX FAVOR	.6373367	.4808124	.6402162	.4799888	.6420312	.4794632

Table 2b. Expected Sign of different variables on the Jensen's Alpha Regression

Variables	**Expected Sign**
FAH	Negative if firms over-invest; Positive if tax-advantage effect dominates
STO	Negative if state-owned firms are inefficient; Positive if state-owned firms have competitive advantage
CDS	Positive if dividend-paying signals the profitability of the firm; Negative if non-dividend-paying signals good growth opportunities and there is a significant external finance premium
DUAL	Positive if un-monitored managers tend to over-invest
MSR	Positive if managers have private incentive to over-invest
OE	Negative if managers over-compensate themselves
CR	Positive if the major shareholders solve the free-rider problem in corporate governance
SIZE	Negative if the firm exhibits diminishing marginal returns to scale; Insignificant if the firm exhibits constant returns to scale
TAXFAVOR	Positive if the tax-favor policy enhance the performance; Negative if the tax-favor policy encourage over-investment
_CONS	(theories do not provide any prediction on the intercept term)

Table 3a. Jensen's alpha and FAH[11]

(all firms included)

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
JENSEN ALPHA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.163898*	-.1778505*	-.0537834	-4.61e-08***	-4.13e-08***	-4.16e-08***
STO	.3557752***	.319256***	.3114815***	-.012302***	-.0100149***	-.0101054***
CDS	.5520284***	.5244555***	.4379631***	-.4192785***	-.406408***	-.4684545***
DUAL	-.0119715	.0037015	.0522378	-.2009325***	-.1793014***	-.2206937***
MSR	14.16026	13.43497	10.34369	-.7778318***	-.8047145***	-.6931924***
OE	-.0489703**	-.0582657**	.0441247	-.0343929**	-.0313704**	.0079563
CR	.0137678***	.0131211***	.0132469***	-.0069947***	-.0056688***	-.006745***
SIZE	.0015995	.0135847	-.0695877**	.0341305*	.0268192	.013374
TAXFAVOR	-.0954043***	-.1321726***	-.1698788***	-.0406806	-.0756741*	-.0990798**
_CONS	-.0481067	-.0727276*	-.1658069	-.639573**	-.4747125	-.7852838**
R^2	0.0613	0.0561	0.0495	0.0310	0.0293	0.0309
Number of obs.	5512	4625	3978	5512	4625	3978

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

[11] This table provides the results for whether a higher level of fixed asset holding leads to a lower level of risk-adjusted performance of firms.

Table 3b. Beta risk and FAH[12]

(all firms included)

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.4255677***	-.3642361***	-.392987***	2.18e-09	1.14e-10	-3.25e-09
CDS	.4993897***	.5193864***	.5541423***	-.0087488***	-.0076805***	-.0058359***
CR	.1176989***	.1438711***	.1873342***	-.2682122***	-.2777139***	-.278463***
DUAL	-.1614423***	-.1687806***	-.1711631***	-.2421135***	-.2788603***	-.3128901***
MSR	-4.304198	-4.823651	-1.683752	-.1645115**	-.1647322**	-.2811378***
OE	.0067303	.0120698	-.0795636***	.0055014	.0031437	-.0213946
SIZE	.0055279***	.0048857***	.0043481***	-.0099774***	-.0095362***	-.0083438***
STO	-.0341947	-.0573121**	.0132534	.0404164**	.027638	.0364093
TAXFAVOR	.0161199	.0069503	.0425231	.0416346	.0441332	.0688012
_CONS	.3169	.7394963	.8314517	-.9243672***	-.5598455*	-.3545901
R^2	0.0183	0.0187	0.0222	0.0121	0.0119	0.0122
Number of obs.	5512	4625	3978	5512	4625	3978

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

"Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

[12] This table provides the results for whether a higher level of fixed asset holding leads to a lower level of beta risk for firms.

Table 4. Determinants of FAH[13]

(all firms included)

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
FAH	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.363007***	2.37265***	2.480684***	2.386947***	2.387394***	2.471456***
DEBT	2.779517***	2.824479***	3.332848***	-.0771508***	-.1034453***	-.1235553***
ROA	.0015126	.0016081	-1.898716*	.0323866	.0428799*	.0771072**
MSR	-11.40781	38.62567	44.88193*	-.062224	.11021	.0352122
CDS	.097039*	.0900744	.2251664***	-.0714108	.0093584	.0554001
CR	.0000812	.0001766	.0002307	-.0046531	-.0039951	-.0044184
TAXFAVOR	.2856874***	.2713558***	.2750976***	.2952355***	.2905104***	.3006526***
STO	.589395***	.6358339***	.5885134***	-.0065187	-.005776	-.0047251
_CONS	-1.894962***	-1.916912***	-2.036388***	-3.27983***	-3.78276***	-4.279727***
R^2	0.5174	0.5162	0.5505	0.4951	0.4936	0.5218
Number of obs.	3907	2763	2132	3907	2763	2132

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

[13] This table provides the results for how the level of fixed asset holding of firms are related to some corporate level variables, such as the whether the firm pays dividend, the amount of debt of the firm, whether the firm belongs to tax-favored industries, etc.

Appendix IA: Data transformation to overcome both the firm-fixed effect and the time-specific effect

The exposition here mainly follows Hsiao and Tahmiscioglu (2008).
Suppose that the data-generating process is captured by the following equation (*)

$$y_{it} = \alpha_i + \lambda_t + \rho y_{i,t-1} + X_{it}\beta + \varepsilon_{it}$$

Where X_{it} is a vector of explanatory variables, α_i and λ_t are the (unobservable) firm-fixed effect and the time-specific effect respectively.

Now we need a few definitions. For any variable z_{it}, define the time-average of z_{it} as $\overline{z}_i = \left(\sum_{t=1}^{T} z_{it}\right)/T$, and the cross-sectional average of z_{it} as $\overline{z}_t = \left(\sum_{i=1}^{N} z_{it}\right)/N$.

From (*), we can take the cross-sectional average of the whole equation and get (*1)

$$\overline{y}_t \equiv \left(\frac{1}{N}\sum_{i=1}^{N} y_{it}\right) = \overline{\alpha} + \lambda_t + \rho\overline{y}_{t-1} + \overline{X}_t\beta + \overline{\varepsilon}_t$$

Where $\overline{\alpha} \equiv \frac{1}{N}\sum_{i=1}^{N}\alpha_i$, $\overline{y}_{t-1} \equiv \frac{1}{N}\sum_{i=1}^{N} y_{i,t-1}$, $\overline{X}_t = \frac{1}{N}\sum_{i=1}^{N} X_{it}$, $\overline{\varepsilon}_t \equiv \frac{1}{N}\sum_{i=1}^{N}\varepsilon_{it}$

Similarly, we can take the time average of the whole equation and get (*2)

$$\overline{y}_i \equiv \left(\frac{1}{T}\sum_{t=1}^{T} y_{it}\right) = \alpha_i + \overline{\lambda} + \rho\overline{y}_{i,-1} + \overline{X}_i\beta + \overline{\varepsilon}_i$$

Where $\overline{\lambda} \equiv \frac{1}{T}\sum_{t=1}^{T}\lambda_t$, $\overline{y}_{i,-1} = \frac{1}{T}\sum_{t=0}^{T-1} y_{i,t}$, $\overline{X}_i = \frac{1}{T}\sum_{t=1}^{T} X_{it}$, $\overline{\varepsilon}_i \equiv \frac{1}{T}\sum_{t=1}^{T}\varepsilon_{it}$

Finally, we can take both the time and cross-sectional average of the equation (*) and get (*3)

$$\bar{y} \equiv \left(\frac{1}{NT} \sum_{i=1}^{N} \sum_{t=1}^{T} y_{it} \right) = \frac{1}{N} \sum_{i=1}^{N} \bar{y}_i = \frac{1}{T} \sum_{t=1}^{T} \bar{y}_t$$

$$= \bar{\alpha} + \bar{\lambda} + \rho \bar{y}_{-1} + \bar{X} \beta + \bar{\varepsilon}$$

Where $\bar{y}_{-1} = \frac{1}{N} \sum_{i=1}^{N} \bar{y}_{i,-1}$, $\bar{X} = \frac{1}{N} \sum_{i=1}^{N} \bar{X}_i$, $\bar{\varepsilon} = \frac{1}{N} \sum_{i=1}^{N} \bar{\varepsilon}_i$.

Then, if we subtract (*1) and (*2) from (*), and add back (*3), we get (**).

$$\left(y_{it} - \bar{y}_i - \bar{y}_t + \bar{y} \right) = \rho \left(y_{i,t-1} - \bar{y}_{i,-1} - \bar{y}_{t-1} + \bar{y}_{-1} \right)$$
$$+ \left(X_{it} - \bar{X}_i - \bar{X}_t + \bar{X} \right) \beta + \left(\varepsilon_{it} - \bar{\varepsilon}_i - \bar{\varepsilon}_t + \bar{\varepsilon} \right) \quad ,$$

Which is in the form

$$\Theta_t = \rho \Theta_{t-1} + \Omega_t \beta + \Xi_t \, .$$

Notice that ***both*** the firm-fixed effect α_i, and the time-specific effect λ_t are eliminated.

Moreover, we observe that $\Theta_t, \Omega_t, \Xi_t$ are all serially correlated, and

$$E\left(\Theta_t \Xi_t \right) \neq 0, E\left(\Omega_t \Xi_t \right) \neq 0,$$

which implies that the OLS estimate of (**) will be biased. We will instead use GLS for (**) and the Probit.

Appendix IB: Summary statistics by industry

Table B7: Summary statistics by industry

	No. of firms	Avg. size (real value)	Skewness of size	Avg.FAH	Avg. State ownership	Jensen's Alpha
X1 agriculture	120	1.64e+09	1.200635	0.255079	.3360117	-0.02391
X2 mining industry	81	3.50e+10	3.828829	0.461056	.4792746	-0.01892
X3 manufacture	3182	2.99e+09	12.19938	0.320415	.3407569	-0.02252
X4 energy	249	7.40e+09	4.550773	0.525603	.4120958	-0.02448
X5 construction	107	3.75e+09	2.196678	0.196786	.4252596	-0.02456
X6 transportation, warehousing	241	6.82e+09	3.690077	0.504383	.4105065	-0.02229
X7 communication	346	3.11e+09	9.63609	0.171273	.2201142	-0.02437
X8 whole sale and retail business	403	2.29e+09	4.931087	0.327243	.2956939	-0.02513
X9 financial firms	18	1.02e+09	1.468129	0.329371	.383003	0.027178
X10 real estate	236	3.75e+09	9.447016	0.105312	.2610726	-0.02148
X11 service	165	2.75e+09	1.483072	0.389084	.3491345	-0.02264
X12 IT and entertaining	43	1.54e+09	1.38333	0.326644	.2083465	-0.02329

Additional Appendices for Dong Leung and Cai, "What Drives Fixed Asset Holding and Risk-Adjusted Performance of Corporate in China? An Empirical Analysis"

APPENDIX II: Full set of Results

In the text, due to the space limit, we are unable to present all the results. This appendix provides all the details for different robustness checks.

Table 1. List of Variables

Variable name	Explanation
CDs	Cash dividend (dummy variable 0=no dividend, 1=dividend)
CR	Percent of shares held by top 10 shareholders/total shares
DEBT	Debt/total asset
DUAL	1= CEO and Chairman are the same person; otherwise 0.
EFFICIENCY	(profit-depreciation-tax + interest payment)/ (fixed asset holding + inventory)
EPS	Net profit divided by total shares
FAH	Fixed assets/total assets
JENSEN ALFA	Jensen's alpha = Portfolio Return - [Risk Free Rate + Portfolio Beta * (Market Return - Risk Free Rate)]
LNPAY	LNPAY = Ln (total annual remuneration of current board of directors and senior managers)
MSR	Managerial shares/total shares
OE	Overhead expenses
ROA	Return of asset = profit/total asset
SH	SH=1 if the firm is listed on the Shanghai Stock Exchange SH=0 if the firm is listed on the Shenzhen Stock Exchange
SIZE	Size = Ln (asset)
STO	State owned shares/total shares
TAXFAVOR	TAXFAVOR=1 if this industry has received a special tax favor on investment, 0 otherwise. The tax favor is applied to industries such as manufacturing, petroleum, cars, agriculture, technology innovation, shipping, and metallurgy.

Table 2. Summary Statistics

	Full sample (No. of Observations 5512)				Subsample 1 (firms with positive profit) (No. of Observations 4625)				Subsample 2 (firms with positive efficiency) (No. of Observations 3978)			
Variable	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
CDS	.3512337	.4773991	0	1	.3496216	.476902	0	1	.3944193	.488787	0	1
CR	58.03741	13.92745	2.08	99.48	57.93693	13.91901	2.08	99.48	58.3164	13.9843	2.08	99.48
DEBT	.0724802	.1138099	-.0004037	3.092443	.0724066	.1077405	-.0004037	2.32	.0727111	.0962747	-.0004037	.7916724
DUAL	.1139332	.3177599	0	1	.1161081	.3203892	0	1	.1128708	.3164746	0	1
EFFICI -ENCY	-10.28485	776.8082	-57500.99	3324.576	-12.2621	848.026	-57500.99	3324.576	1.077584	53.14381	.000086	3324.576
EPS	.2278429	3.212522	-164.78	85.95	.2714032	2.458388	-45.47	85.95	.4588386	2.412534	-2.31	85.95
FAH	.3145689	.1878599	-.206255	.9564393	.3163736	.1885543	-.206255	.9564393	.3147734	.1894271	-.206255	.9564393
JENSEN ALPHA	-.0235673	.0265477	-1.019917	.9487192	-.0233436	.0246684	-1.019917	.9487192	-.0228784	.0260667	-1.019917	.9487192
LNPAY	14.005	.8578241	10.26813	18.98911	14.00087	.8586776	10.26813	18.98911	14.08471	.8351003	10.4631	18.98911
MSR	.0001087	.0013332	0	.0776536	.0001185	.0014522	0	.0776536	.0001287	.0015637	0	.0776536
OE	18.10016	1.078647	13.78415	24.30578	18.09175	1.067724	13.78415	24.30578	18.08334	1.065607	13.78415	24.30578
ROA	-.3739496	28.91251	-2146.161	36.09082	-.4475944	31.56331	-2146.161	36.09082	.0529499	.5772647	.0000611	36.09082
SIZE	21.3172	1.07632	12.31425	27.30053	21.30929	1.066255	12.31425	27.30053	21.40118	1.031131	14.47972	27.30053
SH	.6139332	.4868904	0	1	.6004324	.4898624	0	1	.6136249	.4869795	0	1
STO	.3255011	.246879	0	.85	.3241886	.2463527	0	.85	.3298115	.2469107	0	.85
TAX FAVOR	.6373367	.4808124	0	1	.6402162	.4799888	0	1	.6420312	.4794632	0	1

Table 3a. Jensen's alpha and FAH

Panel 1: all firms included

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
JENSEN ALPHA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.163898*	-.1778505*	-.0537834	-4.61e-08***	-4.13e-08***	-4.16e-08***
STO	.3557752***	.319256***	.3114815***	-.012302***	-.0100149***	-.0101054***
CDS	.5520284***	.5244555***	.4379631***	-.4192785***	-.406408***	-.4684545***
DUAL	-.0119715	.0037015	.0522378	-.2009325***	-.1793014***	-.2206937***
MSR	14.16026	13.43497	10.34369	-.7778318***	-.8047145***	-.6931924***
OE	-.0489703**	-.0582657**	.0441247	-.0343929**	-.0313704**	.0079563
CR	.0137678***	.0131211***	.0132469***	-.0069947***	-.0056688***	-.006745***
SIZE	.0015995	.0135847	-.0695877**	.0341305*	.0268192	.013374
TAXFAVOR	-.0954043***	-.1321726***	-.1698788***	-.0406806	-.0756741*	-.0990798**
_CONS	-.0481067	-.0727276*	-.1658069	-.639573**	-.4747125	-.7852838**
R^2	0.0613	0.0561	0.0495	0.0310	0.0293	0.0309
Number of obs.	5512	4625	3978	5512	4625	3978

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

"Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
JENSEN ALPHA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.1032442	-.0774855	.0069221	-3.99e-08***	-3.24e-08***	-2.74e-08**
STO	.3510178***	.3222243***	.3242315***	-.0128749***	-.0110138***	-.0104687***
CDS	.5431654***	.5331583***	.4794498***	-.4098599***	-.4133346***	-.4774616***
DUAL	-.0200957	-.0009508	.0280191	-.2088788***	-.212526***	-.2285033***
MSR	14.08645	13.81102	11.87924	-.7673108***	-.8174016***	-.7014263***
OE	-.0374122	-.0557001**	.0350816	-.0281317*	-.0208429	.0189343
CR	.014218***	.0138907***	.0147368***	-.007348***	-.0058883***	-.0062618***
SIZE	-.0166127	-.0035368	-.1059512***	.0253652	.0154639	-.0044069
TAXFAVOR	-.0711599*	-.113134***	-.1238203***	-.0209044	-.0584339	-.0652635
_CONS	.0648752	.1610174	.7144428	-.5928217*	-.4602045	-.5516316
R^2	0.0607	0.0583	0.0574	0.0288	0.0279	0.0277
Number of obs.	5276	4430	3802	5276	4430	3802

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

"Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table 3b. Jensen's alpha and FAH (with SH dummy)

Panel 1: all firms included

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
JENSEN ALPHA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.1733586*	-.1890388*	-.0695322	-4.47e-08***	-4.03e-08***	-4.05e-08***
STO	.3467302***	.3102583***	.3001259***	-.0124606***	-.010177***	-.0103123***
CDS	.5761716***	.5486881***	.4668418***	-.4168296***	-.4047349***	-.4681302***
DUAL	-.0207398	-.0049829	.0430209	-.2007746***	-.1793363***	-.2209687***
MSR	9.916897	10.06499	6.679038	-.8178088***	-.8468049***	-.7440704***
OE	-.0484233**	-.0574054**	.0465172	-.0355685**	-.0324435**	.007464
CR	.0142719***	.0136106***	.0139097***	-.0068777***	-.0055392***	-.0066041***
SIZE	.0033998	.0145848	-.0706338**	.0338913*	.0261835	.0112576
TAXFAVOR	-.0998055***	-.1345407***	-.1737336***	-.0441515	-.0781496**	-.1024548**
SH	-.147412***	-.1364402***	-.1705478***	-.0850105**	-.0842352**	-.0969829**
_CONS	-.0334894	-.055216	-.1196511	-.5865449*	-.4192155	-.7072454*
R^2	0.0634	0.0580	0.0524	0.0317	0.0300	0.0318
Number of obs.	5512	4625	3978	5512	4625	3978

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

***significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
JENSEN ALPHA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.1144359	-.0918268	-.0128298	-3.89e-08***	-3.17e-08***	-2.69e-08**
STO	.3401792***	.311481***	.3087059***	-.0130336***	-.0111768***	-.0106627***
CDS	.5677857***	.5591373***	.5107386***	-.4074087***	-.411549***	-.4768382***
DUAL	-.030206	-.0115418	.0155636	-.2098515***	-.2139389***	-.2305173***
MSR	9.993884	10.41945	8.042761	-.8103639***	-.8653437***	-.7554739***
OE	-.0373412	-.0553669**	.036755	-.0295312**	-.022281	.0182402
CR	.0147255***	.0144028***	.0154487***	-.0072214***	-.005733***	-.0060893***
SIZE	-.0143794	-.0018042	-.1058061***	.0250692	.0147706	-.0068008
TAXFAVOR	-.0770652**	-.1171719***	-.1299***	-.0254648	-.0620979	-.0696535
SH	-.1487577***	-.1445982***	-.1829064***	-.0921509**	-.096702**	-.1050486**
_CONS	.0821605	.1789326	.7574467*	-.5313535*	-.3924157	-.461198
R^2	0.0629	0.0604	0.0606	0.0296	0.0288	0.0288
Number of obs.	5276	4430	3802	5276	4430	3802

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table 3c. Beta risk and FAH

Panel 1: all firms included

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.4255677***	-.3642361***	-.392987***	2.18e-09	1.14e-10	-3.25e-09
CDS	.4993897***	.5193864***	.5541423***	-.0087488***	-.0076805***	-.0058359***
CR	.1176989***	.1438711***	.1873342***	-.2682122***	-.2777139***	-.278463***
DUAL	-.1614423***	-.1687806***	-.1711631***	-.2421135***	-.2788603***	-.3128901***
MSR	-4.304198	-4.823651	-1.683752	-.1645115**	-.1647322**	-.2811378***
OE	.0067303	.0120698	-.0795636***	.0055014	.0031437	-.0213946
SIZE	.0055279***	.0048857***	.0043481***	-.0099774***	-.0095362***	-.0083438***
STO	-.0341947	-.0573121**	.0132534	.0404164**	.027638	.0364093
TAXFAVOR	.0161199	.0069503	.0425231	.0416346	.0441332	.0688012
_CONS	.3169	.7394963	.8314517	-.9243672***	-.5598455*	-.3545901
R^2	0.0183	0.0187	0.0222	0.0121	0.0119	0.0122
Number of obs.	5512	4625	3978	5512	4625	3978

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

***significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.4091701***	-.3365842***	-.3846822***	1.77e-09	6.67e-10	-2.99e-09
CDS	.1275354***	.14302538***	.191031***	-.2698447***	-.2763449***	-.276631***
CR	.0059461***	.0053836***	.0048119***	-.009099***	-.0085512***	-.0075602***
DUAL	-.1491044***	-.1451083**	-.143656**	-.2412015***	-.2721323***	-.3121316***
MSR	1.307653	.6061444	4.102146	-.1622959**	-.1514305*	-.2708769***
OE	.0080844	.0168051	-.0759944**	.0023907	.0016508	-.0231407
SIZE	-.0375218	-.0614264**	.0108225	.0391429**	.0270644	.0362341*
STO	.4696256***	.485459***	.5224956***	-.0079829***	-.0069665***	-.0053261*
TAXFAVOR	.0330759	.0258611	.0644594	.0608056	.0627097	.0940988**
_CONS	.3210264	.6925253*	.772517*	-.8556424***	-.5371411	-.3466064
R^2	0.0181	0.0179	0.0216	0.0115	0.0112	0.0118
Number of obs.	5276	4430	3802	5276	4430	3802

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

***significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table 3d. Beta risk and FAH (with SH dummy)

Panel 1: all firms included

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.4272521***	-.3658455***	-.3909135***	1.65e-09	-4.50e-10	-4.04e-09
STO	.497605***	.5180557***	.5558667***	-.008657***	-.0075497***	-.005619**
CDS	.1220276***	.1472679***	.1835273***	-.2694208***	-.2790629***	-.2792008***
DUAL	-.1630468***	-.1700363***	-.1699304***	-.2420616***	-.2788258***	-.3128271***
MSR	-4.972647	-5.233358	-1.220714	-.1423799*	-.1321892	-.2316171**
OE	.0068302	.0121982	-.0799187***	.0061833	.0040283	-.0208131
CR	.0056194***	.0049552***	.0042604***	-.0100385***	-.0096371***	-.0084754***
SIZE	-.0338062	-.0571224**	.0133538	.04064**	.0282024	.0385892*
TAXFAVOR	.0154564	.0067095	.0429501	.0434069	.0459086	.0719184*
SH	-.0281534	-.0202496	.0241055	.0470209	.0657271*	.0956199**
_CONS	.3190187	.7413445*	.8258995*	-.9557123***	-.6048139*	-.4343475
R^2	0.0184	0.0187	0.0222	0.0123	0.0123	0.0131
Number of obs.	5512	4625	3978	5512	4625	3978

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

***significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: with SH dummy, real estate firms excluded

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.4110824***	-.3385123***	-.3824101***	1.45e-09	4.19e-10	-3.30e-09
CDS	.1315666***	.1463356***	.1875366***	-.2710541***	-.2776266***	-.2772813***

CR	.0060309***	.0054497***	.0047316***	-.0091596***	-.0086507***	-.0076854***
DUAL	-.150807***	-.1465206**	-.1422351**	-.240593***	-.2711938***	-.3104642***
MSR	.6749607	.2062007	4.529991	-.1395892*	-.1193177	-.2236576**
OE	.0080902	.0168499	-.0761954**	.0031505	.0026323	-.0224917
SIZE	-.0370731	-.0611474**	.010766	.0393729**	.0275866	.0383286*
STO	.467602***	.4839534	.5244457***	-.0078939***	-.0068495***	-.0051283*
TAXFAVOR	.0321868	.025415	.065089	.0631068*	.0650915	.0978767**
SH	-.0260086	-.0195903	.0218558	.0485734	.0651505	.0916184**
_CONS	.3231565	.6942074*	.7679661*	-.8896284***	-.5837635*	-.4255886
R^2	0.0182	0.0179	0.0216	0.0117	0.0116	0.0126
Number of obs.	5276	4430	3802	5512	4430	3802

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

***significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table 4a. Determinants of FAH

Panel 1: all firms included

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
FAH	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.363007***	2.37265***	2.480684***	2.386947***	2.387394***	2.471456***
DEBT	2.779517***	2.824479***	3.332848***	-.0771508***	-.1034453***	-.1235553***
ROA	.0015126	.0016081	-1.898716*	.0323866	.0428799*	.0771072**
MSR	-11.40781	38.62567	44.88193*	-.062224	.11021	.0352122
CDS	.097039*	.0900744	.2251664***	-.0714108	.0093584	.0554001
CR	.0000812	.0001766	.0002307	-.0046531	-.0039951	-.0044184
TAXFAVOR	.2856874***	.2713558***	.2750976***	.2952355***	.2905104***	.3006526***
STO	.589395***	.6358339***	.5885134***	-.0065187	-.005776	-.0047251
_CONS	-1.894962***	-1.916912***	-2.036388***	-3.27983***	-3.78276***	-4.279727***
R^2	0.5174	0.5162	0.5505	0.4951	0.4936	0.5218
Number of obs.	3907	2763	2132	3907	2763	2132

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample Adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
FAH	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.330851***	2.350985***	2.455815***	2.367411***	2.379352***	2.460707***
DEBT	3.023006***	3.14***	3.751931***	-.0847693***	-.1063811***	-.1363553***
ROA	.0015055	.0016028	-1.957124*	.0326731	.0383172	.0783111**
MSR	-10.59714	59.04129*	68.48328*	-.0935603	.0795601	.0103174
CDS	.1003085*	.0942738	.2346243***	-.0833835	-.0000364	.0469722
CR	.0003385	.0010399	.0013119	-.0043883	-.0034992	-.0045209
TAXFAVOR	.2255552***	.2030342***	.1758356**	.2453466***	.2330004***	.2277695***
STO	.5517822***	.5439574***	.5078744***	-.0058243	-.0047665	-.004753
_CONS	-1.836778***	-1.875158***	-1.990147***	-3.360705***	-3.752363***	-4.477984***
R^2	0.5113	0.5142	0.5488	0.4869	0.4888	0.5162
Number of obs.	3744	2652	2039	3744	2652	2039

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

***significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table 4b. Determinants of FAH (with SH dummy)

Panel 1: all firms included

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample Adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
FAH	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.362996***	2.373966***	2.480867***	2.385968***	2.385745***	2.469126***
DEBT	2.771115***	2.801004***	3.313612***	-.0762286***	-.1005534***	-.1197418***
ROA	.0015281	.0016307	-1.908072*	.0321631	.0422623*	.0772325**
MSR	-12.06474	34.86288	42.32436*	-.0780455	.0685427	-.0092932
CDS	.1024781*	.0990783	.2303194***	-.0694109	.0137034	.0594438
CR	.000293	.000498	.000489	-.0042839	-.0032443	-.0038169
TAXFAVOR	.2859203***	.2759208***	.2772713***	.2948632***	.2929034***	.3016173***
STO	.5897464***	.6375354***	.5906845***	-.0062767	-.0053736	-.0044991
SH	-.0642459	-.0983966	-.0754582	-.0368346	-.0868573	-.0861413
_CONS	-1.869784***	-1.88344***	-2.007854***	-3.24637***	-3.698829***	-4.18108***
R^2	0.5176	0.5167	0.5508	0.4952	0.4936	0.5221
Number of obs.	3907	2763	2132	3907	2763	2132

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample Adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 Adjusted (firms with positive efficiency)
FAH	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.330851***	2.350985***	2.455815***	2.367411***	2.379352***	2.460707***
DEBT	3.023006***	3.14***	3.751931***	-.0847693***	-.1063811***	-.1363553***
ROA	.0015055	.0016028	-1.957124*	.0326731	.0383172	.0783111**
MSR	-10.59714	59.04129*	68.48328*	-.0935603	.0795601	.0103174
CDS	.1003085*	.0942738	.2346243***	-.0833835	-.0000364	.0469722
CR	.0003385	.0010399	.0013119	-.0043883	-.0034992	-.0045209
TAXFAVOR	.2255552***	.2030342***	.1758356**	.2453466***	.2330004***	.2277695***
STO	.5517822***	.5439574***	.5078744***	-.0058243	-.0047665	-.004753
_CONS	-1.836778***	-1.875158***	-1.990147***	-3.360705***	-3.752363***	-4.477984***
R^2	0.5113	0.5142	0.5488	0.4869	0.4888	0.5162
Number of obs.	3744	2652	2039	3744	2652	2039

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression. "Sample" means the original data. "Sample adjusted" means that both the firm-fixed effect and time-specific effect are removed through a data-transformation.

***significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

APPENDIX III: Supplementary Results

This appendix will present the full set of results. They will include the correlation table of variables based on the original data, as well as the adjusted data (the data transformation procedure is provided in appendix I). The following tables show the correlations of some variables employed in table 3. Notice that the correlations are typically small in magnitude easing the concern of multi-collinearity.

Table A1-a: Correlation Table for original data

	SIZE	EPS	EFFICIENCY	STO	TAXFAVOR
SIZE	1.0000				
EPS	0.0609	1.0000			
EFFICIENCY	0.1086	0.0095	1.0000		
STO	0.1942	-0.0086	0.0146	1.0000	
TAXFAVOR	0.0253	-0.0004	-0.0088	0.1262	1.0000

Table A1-b: Correlation Table for adjusted data

	ADJ_ SIZE	ADJ_ EPS	ADJ_ EFFICIENCY	ADJ_ STO	TAXFAV OR
ADJ_SIZE	1.0000				
ADJ_EPS	0.0415	1.0000			
ADJ_EFFICI ENCY	0.0908	0.0080	1.0000		
ADJ_STO	-0.1038	-0.0085	-0.0261	1.0000	
TAXFAVOR	-0.0053	-0.0114	-0.0084	-0.1295	1.0000

The following tables show the correlations of some variables employed in table 4.

Table A2-a Correlation Table for original data

	DEBT	ROA	MSR	CDS	CR	TAXFAVOR	STO
DEBT	1.0000						
ROA	-0.0176	1.0000					
MSR	0.0131	0.0017	1.0000				
CDS	0.0606	-0.0042	-0.0224	1.0000			
CR	0.0594	-0.0137	-0.0492	0.1821	1.0000		
TAXFAVOR	0.0338	0.0115	-0.0117	0.0222	0.1083	1.0000	
STO	0.0749	-0.0201	-0.0361	0.1469	0.3937	0.1269	1.0000

Table A2-b Correlation Table for adjusted data

	ADJ_DEBT	ADJ_ROA	ADJ_MSR	ADJ_CDS	ADJ_CR	TAXFAVOR	ADJ_STO
ADJ_DEBT	1.0000						
ADJ_ROA	0.0131	1.0000					
ADJ_MSR	0.3544	-0.0249	1.0000				
ADJ_CDS	-0.2036	-0.0447	-0.5298	1.0000			
ADJ_CR	-0.1021	0.0682	-0.1789	0.1599	1.0000		
TAXFAVOR	-0.0230	0.0329	-0.0284	0.0339	0.1045	1.0000	
ADJ_STO	0.1718	-0.0041	0.2373	-0.1409	**-0.7416**	-0.1306	1.0000

Since the correlation between CR and STO is strong, we carry a supplementary regression without CR and find *very similar results.* The results are detailed in the following table.

Table A3: Determinants of FAH (with STO, without CR)

Panel 1: all firms included

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 adjusted (firms with positive efficiency)
FAH	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.362994***	2.372606***	2.480505***	2.385426***	2.386387***	2.470922***
DEBT	2.779786***	2.824907***	3.334496***	-.0783309***	-.1047421***	-.1260472***
ROA	.0015132	.0016093	-1.88527*	.0295541	.0402565	.072619*
MSR	-11.41648	38.57942	44.80806*	-.0585514	.1142093	.0386106
CDS	.0973418*	.0908581	.226055***	-.0693603	.0100978	.0548329
TAXFAVOR	.285801***	.2716491***	.2755831***	.2955087***	.2904808***	.3002736***
STO	.5914657***	.640362***	.5940754***	-.0019399	-.0018289	-.0003311
_CONS	-1.891251***	-1.908922***	-2.026369***	-3.250218***	-3.761129***	-4.276516***
R^2	0.5174	0.5162	0.5504	0.4948	0.4934	0.5215
Number of obs.	3907	2763	2132	3907	2763	2132

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

	Full sample	Sub-sample1 (firms with positive profit)	Sub-sample2 (firms with positive efficiency)	Full sample adjusted	Sub-sample1 Adjusted (firms with positive profit)	Sub-sample2 adjusted (firms with positive efficiency)
FAH	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.330755***	2.350512***	2.454391***	2.366045***	2.378564***	2.460159***
DEBT	3.02371***	3.141186***	3.759745***	-.0858407***	-.1074575***	-.1386384***
ROA	.001508	.0016099	-1.880481*	.0301591	.0360304	.0737645
MSR	-10.62652	58.80291*	68.09205*	-.0893521	.0837306	.0151253
CDS	.1015522*	.0987972	.2395042***	-.0810383	.0010686	.0471202
TAXFAVOR	.2261418***	.2051381***	.1792026**	.2448612***	.2322364***	.2264011***
STO	.5605328***	.5707704***	.5398175***	-.0015179	-.0013299	-.0002881
_CONS	-1.8214***	-1.828301***	-1.93347***	-3.331745***	-3.732612***	-4.469621***
R^2	0.5113	0.5141	0.5487	0.4866	0.4887	0.5160
Number of obs.	3744	2652	2039	3744	2652	2039

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Appendix IV: Results by year and by industry

Table B1: Jensen's alpha and FAH

Panel 1: all firms included

Full sample	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.8119369***	-.1753384	-.4124859**	-.6202331***	-.2139691
STO	.0311299	.1953288	.2961472*	.0290562	-.623057***
CDS	.2502712**	.2792425***	.4951068***	.2791841***	.4315331*
DUAL	.1226008	-.1954264	-.07882	.1645674	-.0742982
MSR	100.1648	-70.18654	121.4997	32.98808	25.26051
OE	-.1823976***	-.1025048	-.0423368	.0130365	-.0104722
CR	-.0027722	.0041058	.0154034***	.003829	.017964***
SIZE	.7405424***	.0152326	-.006866	.1615505***	-.0983676
TAXFAVOR	.1562824*	-.3450564***	-.1018381	-.1610924**	.1138081
_CONS	-11.77444***	2.207723*	-.0280494	-3.887345***	.5282354
R^2	0.1361	0.0286	0.0559	0.0432	0.0423
Number of obs.	1156	875	1165	1155	1161
sub sample 1 (firms with positive profit)	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.6711857**	-.3135369	-.3057447	-.6275377***	-.1861942
STO	.0796513	-.0522279	.2374493	-.016621	-.6068332**
CDS	.2684457**	.3410954***	.4338071***	.3370702***	.2406944
DUAL	.1753302	-.2512532	.0185407	.1883653	-.0852801
MSR	73.3565	12.74993	55.69149	26.91751	25.95201
OE	-.2306665***	-.139919**	-.0925179*	.0379191	-.0124805
CR	-.0043975	.0059051	.0150384***	.0042095	.0161046***
SIZE	.7984314***	.0157157	.0352526	.1456142***	-.1120676*
TAXFAVOR	.116819	-.3452401***	-.1886218**	-.1815849**	.0598325
_CONS	-11.97596***	2.87289**	.0493981	-4.025217***	.9849299
R^2	0.1453	0.0368	0.0499	0.0482	0.0381
Number of obs.	978	724	983	974	966

Subsample 2 (firms with positive efficiency)	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.6439525**	-.2454035	-.1158801	-.6435839***	-.2777963
STO	.2445396	-.1734288	.2368696	-.0643535	-.7517645***
CDS	.1736304	.1067992	.2292655**	.2235972**	.2314706
DUAL	.1878915	-.2595919	.0707534	.2444407*	-.1520461
MSR	58.00973	-77.72741	16.45076	30.15301	25.02832
OE	-.0925315	.0301357	.0951342	.1271694**	.0383201
CR	-.0067689	.0064255	.01465***	.0046313	.0182953***
SIZE	.6565551***	-.143858	-.1038956	.0876941	-.140292**
TAXFAVOR	.0530175	-.389248***	-.3673176***	-.1554992	.1335478
_CONS	-11.16336***	3.483079**	-.0364648	-4.332235***	.57312
R^2	0.1184	0.0265	0.0409	0.0420	0.0457
Number of obs.	864	628	766	838	883

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

Full sample	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.7931185***	-.1734007	-.2464039	-.4520533**	-.2048437
STO	-.0756957	.1875166	.3147985**	.0240428	-.5213513**
CDS	.2324495**	.3116412	.5253868***	.2690134***	.4591947*
DUAL	.1103001	-.2432923***	-.0588603	.1472347	-.085995
MSR	11.70853	-148.4825	74.88486	7.396686	29.86682
OE	-.1897722***	-.0909587	-.0087714	.046923	-.0233632
CR	-.0023298	.0043723	.0152011***	.0033411	.0188617***
SIZE	.783056***	-.0136325	-.0544175	.1231554**	-.1257123**
TAXFAVOR	.1252372	-.3416221***	-.0540475	-.0978536	.1239275
_CONS	-12.47158***	2.58818**	.2612259	-3.768959***	1.259306

R^2	0.1446	0.0298	0.0571	0.0342	0.0480
Number of obs.	1104	840	1116	1107	1109
sub sample 1 (firms with positive profit)	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.6990721**	-.2759916	-.1095014	-.5020436**	-.1476656
STO	.0135662	-.0192008	.2404578	-.022815	-.4919803*
CDS	.2383232**	.3622856***	.4685517***	.3391698***	.235552
DUAL	.163835	-.3009329*	.0338385	.1702022	-.0926012
MSR	-14.62546	-19.85798	-6.309849	-6.118488	31.5178*
OE	-.2354797***	-.1255762*	-.0609073	.0613635	-.0230655
CR	-.0040892	.0060317	.0146339***	.0036306	.017094***
SIZE	.8330937***	-.013623	-.0120592	.1176276**	-.1521156**
TAXFAVOR	.0951117	-.3357143***	-.139398	-.1342266	.0886067
_CONS	-12.58059***	3.187449**	.3732968	-3.907845***	1.91102**
R^2	0.1523	0.0364	0.0496	0.0416	0.0464
Number of obs.	933	694	941	940	922
Subsample 2 (firms with positive efficiency)	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.7138354**	-.1197232	.105529	-.4994875**	-.2132759
STO	.1681075	-.1460979	.2290967	-.0535069	-.6128861**
CDS	.1525608	.1229327	.2637848***	.216654**	.2218832
DUAL	.1458262	-.3117589	.1097375	.2290926	-.1442059
MSR	-26.38241	-126.6061	-41.21278	-2.873866	30.43969
OE	-.1096944	.0513051	.1438811*	.1618251**	.0298092
CR	-.0060678	.0070323	.0143***	.0041054	.0192504***
SIZE	.7123896***	-.1802806*	-.1744993**	.0488973	-.1869773**
TAXFAVOR	.049726	-.36065**	-.3026917***	-.1017829	.1602513
_CONS	-12.04545***	3.752834***	.453901	-4.200466***	1.593685*
R^2	0.1295	0.0271	0.0413	0.0371	0.0532

Number of obs.	823	601	728	808	842

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table B2: Jensen's alpha and FAH (with SH dummy)

Panel 1: all firms included

Full sample	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.8040665***	-.1585738	-.4184712*	-.6323596***	-.2126324
STO	.0265992	.1902987	.2915186*	.0132359	-.628696***
CDS	.2770064**	.2650572**	.5063923***	.2948476***	.4462044*
DUAL	.1169917	-.1926461	-.088801	.1518522	-.0789641
MSR	77.78351	-16.13151	81.91855	14.26622	24.3804
OE	-.1804032***	-.1037689	-.0428628	.0148371	-.0108012
CR	-.0026133	.0035072	.0157349***	.0042315	.0182031***
SIZE	.7390013***	.0186355	-.0045923	.1643037***	-.0961229
TAXFAVOR	.155454*	-.3378221***	-.1057801	-.1642572**	.1122748
SH	-.0608071	.1016695	-.092924	-.1672345**	-.0850308
_CONS	-11.75127***	2.130498*	-.0243427	-3.891563***	.5273055
R^2	0.1364	0.0297	0.0567	0.0459	0.0431
Number of obs.	1156	875	1165	1155	1161
sub sample 1 (firms with positive profit)	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.6701419**	-.2975167	-.3138483	-.6428366***	-.187599
STO	.0789586	-.0572222	.2302868	-.0313698	-.6100334**
CDS	.2719588**	.3271681***	.4472539***	.353501***	.2552829
DUAL	.1745259	-.2460972	.0073777	.1774621	-.0893309
MSR	70.8485	62.00872	17.6643	10.81051	25.3309
OE	-.2303934***	-.1420881**	-.0942718*	.040992	-.0123358
CR	-.004377	.0052471	.0154034***	.0046531	.0162506***
SIZE	.7981345***	.0191035	.0380161	.147091***	-.1107147*
TAXFAVOR	.1167232	-.3396619***	-.1905253**	-.184107**	.0601751
SH	-.0077319	.0962841	-.0977379	-.1626203*	-.0626373
_CONS	-11.97135***	2.821266**	.064176	-4.032852***	.9839103
R^2	0.1453	0.0377	0.0508	0.0508	0.0386
Number of obs.	978	724	983	974	966

Subsample 2 (firms with positive efficiency)	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.6297272*	-.2246794	-.1338286	-.6721429***	-.28063
STO	.2363362	-.1847829	.2166221	-.0845952	-.7565508***
CDS	.253213*	.0905567	.2423236**	.2481792***	.25413
DUAL	.1736241	-.2545542	.057461	.2289945*	-.1586497
MSR	5.328081	-23.14066	-35.22	10.10972	24.13992
OE	-.0877393	.0291166	.094935	.1321494**	.0394339
CR	-.0064966	.0056582	.015247***	.0052934	.0185703***
SIZE	.6549978***	-.1395481	-.1033324	.0862689	-.1391326**
TAXFAVOR	.0534264	-.3838783***	-.3700829***	-.1626155*	.1344371
SH	-.1788626	.1163353	-.1434683	-.2135126**	-.0949986
_CONS	-11.13291***	3.387842**	.0231951	-4.287506***	.5710161
R^2	0.1209	0.0279	0.0428	0.0465	0.0467
Number of obs.	863	628	766	838	883

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

Full sample	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.7832791***	-.1600543	-.2543897	-.4637363**	-.20536
STO	-.0809109	.1826065	.3086797*	.000795	-.52714**1
CDS	.2642191**	.2997102***	.5390017***	.2852864***	.4783355*
DUAL	.1032254	-.239869	-.0704317	.1315627	-.0912331
MSR	-12.73335	-100.1769	30.90044	-27.97977	28.87232
OE	-.1879227***	-.0923689	-.0096004	.0487345	-.0241262
CR	-.0021392	.0038924	.0155362***	.0037744	.0190875***
SIZE	.7818807***	-.010202	-.0518797	.1267299**	-.1226614*
TAXFAVOR	.1240956	-.3351386***	-.0592664	-.1021579	.1211552

SH	-.0724544	.0849924	-.1049348	-.1766668**	-.0843979
_CONS	-12.44822***	2.516167**	.2738506	-3.782017***	-.20536
R^2	0.1450	0.0306	0.0581	0.0373	0.0487
Number of obs.	1104	840	1116	1107	1109
sub sample 1 (firms with positive profit)	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.6975455**	-.2646461	-.1214533	-.5168652**	-.1509677
STO	.012563	-.0237665	.2311624	-.0435816	-.4945765*
CDS	.2436336*	.3520747***	.4842667***	.3560649***	.2547475
DUAL	.1624676	-.2957313	.0213858	.1571464	-.0973241
MSR	-18.05697	18.18482	-48.23613	-36.80222	30.76619*
OE	-.2351839***	-.1275583*	-.063384	.0643208	-.0232587
CR	-.0040549	.0055622	.0150012***	.0040792	.0172183***
SIZE	.8327378***	-.010525	-.0085706	.1200187**	-.1500138**
TAXFAVOR	.0949731	-.3312837***	-.1424904	-.1380667	.0877155
SH	-.0116952	.0710337	-.1101179	-.1675205*	-.0624604
_CONS	-12.57372***	3.142518**	.3958454	-3.925728***	1.902764**
R^2	0.1523	0.0369	0.0507	0.0443	0.0468
Number of obs.	933	694	941	940	922
Subsample 2 (firms with positive efficiency)	2003	2004	2005	2006	2007
Jensen alpha	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	.7017671**	-.1067006	.0790411	-.5283487**	-.2201915
STO	.1579903	-.1550894	.202589	-.0831323	-.6177736**
CDS	.2384658*	.1101535	.2798211***	.2418022**	.2553971
DUAL	.1257594	-.3064647	.0938526	.2117231	-.1535143
MSR	-78.43647	-81.67981	-99.39441	-40.02461	29.23022
OE	-.1067732	.0498714	.1417818*	.1668152**	.0304984
CR	-.0056481	.0064377	.0149165***	.0047728	.0195408***
SIZE	.7126987***	-.1759342*	-.1720153**	.0489666	-.1844745**
TAXFAVOR	.0494809	-.3572527**	-.3085001***	-.110112	.1594756

SH	-.1944629	.0910396	-.167039	-.2155381**	-.1076627
_CONS	-12.02066***	3.670374**	.5281218	-4.181081***	1.580026
R^2	0.1324	0.0280	0.0439	0.0416	0.0545
Number of obs.	823	601	728	808	842

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table B3: Beta risk and FAH

Panel 1: all firms included

Full sample	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.2796455	-.4452973*	-.537239**	-.7802306***	-.6328825***
STO	.3264466**	.5361848**	.2364323	.2892868	.4766462**
CDS	.0747384	-.2003194**	-.3101572***	.2017724**	.3268458
DUAL	-.0330729	-.3680205**	-.153855	-.1224203	-.1599691
MSR	-128.7067	-68.63016	-175.0137	-32.12302	7.915254
OE	-.0171227	-.0653433	.0583731	.0388753	-.0613625
CR	-.0076669**	-.0030703	-.0044467	.0005656	-.0042445
SIZE	.0529877	.0101535	-.1133476**	.0674547	.2553621***
TAXFAVOR	-.1195878	-.1106168	.1717776**	.1908311**	.156533*

_CONS	.2573198	1.70428*	2.392304***	-2.668239***	-4.77479***
R^2	0.0100	0.0197	0.0305	0.0282	0.0411
Number of obs.	1156	875	1165	1155	1161
sub sample 1 (firms with positive profit)	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.2764505	-.451487*	-.5062063**	-.6060113***	-.5083939**
STO	.4304214**	.4460088	.2806362	.2756972	.4616673**
CDS	.1299784	-.1572868	-.2519337***	.2000839**	.2354654
DUAL	.0400225	-.3578063**	-.2038585	-.1524633	-.1698708
MSR	-190.7424	-84.58573	-219.3487	-23.57523	8.135847
OE	-.0081751	-.0689209	.1158993**	.0111368	-.0698821
CR	-.0104404***	-.0022059	-.0064331*	-.000029	-.0041407
SIZE	.0338438	-.0093345	-.1957017***	.0624996	.2438286***
TAXFAVOR	-.0829606	-.1841713*	.1598395*	.2021627**	.1244551
_CONS	.6149216	2.227773*	3.223879***	-2.067583**	-4.391223***
R^2	0.0147	0.0207	0.0369	0.0225	0.0345
Number of obs.	978	724	983	974	966
Subsample 2 (firms with positive efficiency)	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.3118453	-.4086975	-.6000647**	-.6235183**	-.4904585**
STO	.4011247**	.3671636	.5607556***	.1372987	.5245476**
CDS	.1598739	-.0678388	-.2255567**	.264936***	.194158
DUAL	.0548874	-.3765637**	-.2957067*	-.1752451	-.1291116
MSR	-202.9323	-56.44337	-149.165	-17.30354	8.659952
OE	-.0476016	-.1516936*	-.0002287	-.0086325	-.0924533
CR	-.0093364**	-.0019143	-.0068209*	.000795	-.0034296
SIZE	.0660835	.0417351	-.1088464	.0560054	.2376407***
TAXFAVOR	-.1050625	-.1363808	.2192153**	.2666796***	.1329485
_CONS	.5607241	2.519434**	3.310563***	-1.661457*	-3.886959***

R^2	0.0156	0.0207	0.0386	0.0235	0.0309
Number of obs.	863	628	766	838	883

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

Full sample	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.2173021	-.4254228	-.4428758*	-.8612801***	-.6683814***
STO	.2809235*	.4065738	.2580045	.2302768	.4843735**
CDS	.0818947	-.192398**	-.3101563***	.2166658**	.4734926*
DUAL	-.0286098	-.351488**	-.1132412	-.1298612	-.1492677
MSR	-162.139	-82.1258	-224.7493*	3.91162	11.49139
OE	-.0093717	-.0666516	.0728977	.0212156	-.0511246
CR	-.0065674*	-.0010512	-.0046165	-.0000299	-.0048945
SIZE	.0280288	-.0002703	-.1288995**	.0876285	.2571312***
TAXFAVOR	-.0998536	-.1044	.207807**	.1996899**	.1452503
_CONS	.5529279	1.865094*	2.392236***	-2.71715***	-4.951534****
R^2	0.0075	0.0175	0.0321	0.0300	0.0411
Number of obs.	1104	840	1116	1107	1109
sub sample 1 (firms with positive profit)	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.1822998	-.3807409	-.377498	-.6922088***	-.5931564**
STO	.4027787**	.3012193	.297884	.2118042	.4840228**
CDS	.129681	-.1589101	-.2524827***	.2013096**	.4087814
DUAL	.068201	-.3127278*	-.1855862	-.1471202	-.1475917
MSR	-215.288	-160.2325	-288.0294*	19.86509	11.56842
OE	.010707	-.0553373	.1354553**	-.0012015	-.0717581
CR	-.0098275**	-.0008014	-.0061187	-.0004507	-.0049886
SIZE	-.0044886	-.0270204	-.2157867***	.0818572	.2609036***
TAXFAVOR	-.0565529	-.1516695	.1964959**	.2033534**	.0954461
_CONS	1.000429	2.280633*	3.191237***	-2.190064**	-4.640467***
R^2	0.0125	0.0169	0.0390	0.0233	0.0381
Number of obs.	933	694	941	940	922
Subsample 2 (firms with positive efficiency)	2003	2004	2005	2006	2007

BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.2469019	-.341561	-.4774332*	-.7308101***	-.579531**
STO	.3697165**	.2202508	.5717015***	.0921177	.5482246**
CDS	.1662318	-.0740915	-.2199564**	.2722168***	.3679118
DUAL	.0977239	-.3312213*	-.2652145*	-.1695864	-.1172776
MSR	-225.728	-138.9295	-220.174	34.48149	11.9944
OE	-.0426686	-.134044	.0279152	-.0234977	-.0953404
CR	-.0085537**	-.0004426	-.0067167	.0002336	-.0041853
SIZE	.0393551	.0176791	-.1352446	.07758	.2563013***
TAXFAVOR	-.068498	-.1097025	.2710413**	.2712982***	.1054167
_CONS	.9386615	2.642963**	3.257301***	-1.785995*	-4.156902***
R^2	0.0132	0.0170	0.0402	0.0253	0.0348
Number of obs.	823	601	728	808	842

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table B4: Beta risk and FAH (with SH dummy)

Panel 1: all firms included

Full sample	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.2795596	-.4302618*	-.5391465**	-.7821079***	-.6328271***
STO	.3265378**	.5268301**	.232453	.2868747	.4763089**
CDS	.0742295	-.2214416**	-.3059187***	.2042469**	.3276126
DUAL	-.0329963	-.3680619**	-.1575299	-.1244496	-.1600447
MSR	-128.3835	17.81756	-193.9891	-35.12797	7.869056
OE	-.0171382	-.0682473	.0584293	.0390748	-.0613429
CR	-.0076717**	-.0039287	-.0042721	.0006282	-.0042283
SIZE	.0529909	.0154512	-.1125938**	.0679789	.2554766***
TAXFAVOR	-.1195598	-.1024818	.1698694**	.1903468**	.1562942*
SH	.0011634	.1582494*	-.0448866	-.0268582	-.0053555
_CONS	.2571613	1.602801	2.395544***	-2.669046***	-4.774923***
R^2	0.0100	0.0221	0.0307	0.0283	0.0411
Number of obs.	1156	875	1165	1155	1161
sub sample 1 (firms with positive profit)	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.2764367	-.431999	-.5102567**	-.6120405***	-.5071664**
STO	.4304389**	.4345626	.2744084	.2702991	.4650306**
CDS	.129878	-.1826644*	-.2457209***	.2066542**	.2221762
DUAL	.040037	-.3526243**	-.2095843	-.1567516	-.1691325
MSR	-190.6844	11.42194	-242.5037*	-30.01627	8.617748
OE	-.008178	-.0737275	.1153756**	.0120304	-.071104
CR	-.0104414***	-.00346	-.0061878*	.0001344	-.0043221
SIZE	.0338457	-.0025333	-.1945751***	.0634352	.2433502***
TAXFAVOR	-.0829536	-.1772017*	.1589067*	.2013318**	.1262957
SH	.000224	.1831505*	-.0567377	-.0661788	.0625441
_CONS	.6148717	2.141551*	3.23266***	-2.070992**	-4.389444***
R^2	0.0147	0.0239	0.0372	0.0230	0.0349
Number of obs.	978	724	983	974	966

Subsample 2 (firms with positive efficiency)	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.3089638	-.3822833	-.6066059**	-.6274348**	-.4901949**
STO	.4032086**	.3472782	.5505126***	.1342392	.5275112**
CDS	.1364358	-.0999182	-.2216756**	.2688319***	.1784305
DUAL	.0573081	-.3736765**	-.3004344**	-.1776937	-.1286059
MSR	-190.2524	69.64364	-171.5555	-20.33585	9.205858
OE	-.0478872	-.1589173**	.0005594	-.0082093	-.094201
CR	-.0095397**	-.0035935	-.0065533	.0008972	-.0036659
SIZE	.0661552	.0534121	-.1090367	.0559636	.2375878***
TAXFAVOR	-.1038379	-.1285279	.2182495**	.2655833***	.1354415
SH	.0518221	.2493521**	-.0598567	-.0344212	.0738396
_CONS	.5493362	2.361919*	3.328381***	-1.651515*	-3.888569***
R^2	0.0847	0.0266	0.0389	0.0236	0.0315
Number of obs.	863	628	766	838	883

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

Full sample	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.2143651	-.4128734	-.4444122*	-.863884***	-.6687597***
STO	.2839738*	.3957332	.255343	.2250022	.4805695**
CDS	.0660428	-.2152696**	-.3073488***	.2203996***	.4831127*
DUAL	-.0258374	-.3487043**	-.1156111	-.1335076	-.1500444
MSR	-152.0797	19.22589	-236.5268*	-4.104646	11.09261
OE	-.0096504	-.0714223	.0728761	.0215239	-.0510727
CR	-.0067205*	-.0019661	-.0045219	.000071	-.0047477
SIZE	.0278831	.0073185	-.1284185**	.0885098	.2583712***
TAXFAVOR	-.0988803	-.0964941	.2064885**	.1986239**	.1424597

SH	.0362835	.1711129*	-.0268338	-.0409293	-.046994
_CONS	.5494205	1.746417*	2.395438***	-2.719405***	-4.954766***
R^2	0.0076	0.0204	0.0322	0.0302	0.0434
Number of obs.	1104	840	1116	1107	1109
sub sample 1 (firms with positive profit)	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.1804835	-.3660801	-.3818751	-.6984735***	-.5924218**
STO	.4053275**	.2840993	.2925148	.2034522	.4848328
CDS	.1164725	-.1862546*	-.2472757***	.208621**	.4045524
DUAL	.0707082	-.3018303*	-.1900767	-.1526986	-.1473868
MSR	-207.6982	-47.07185	-307.5536*	6.664941	11.67451
OE	.0105307	-.0635842	.1348631**	-.0002875	-.0719556
CR	-.0099698**	-.0021674	-.0059497	-.0002659	-.0050287
SIZE	-.004438	-.0164112	-.2147185***	.083177	.2606457***
TAXFAVOR	-.0556236	-.1458196	.1953939**	.2016872**	.0961345
SH	.0294829	.2023746*	-.0443726	-.0735367	.0141893
_CONS	.9947504	2.176667*	3.199699***	-2.196583**	-4.638714***
R^2	0.0126	0.0209	0.0392	0.0239	0.0381
Number of obs.	933	694	941	940	922
Subsample 2 (firms with positive efficiency)	2003	2004	2005	2006	2007
BETA	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
FAH	-.2432123	-.3271502	-.4837958*	-.7356776***	-.5785977**
STO	.3735652**	.1944323	.5633903***	.0863417	.5493657**
CDS	.1336458	-.1077373	-.2166783**	.2772031***	.360229
DUAL	.1031009	-.3213323*	-.269028*	-.1731897	-.1169059
MSR	-208.0655	1.771558	-237.9724	27.02147	12.18006
OE	-.0426887	-.1461184*	.0280613	-.0230044	-.0957949
CR	-.0088689**	-.002215	-.0065407	.0003683	-.0042682
SIZE	.039119	.0350099	-.1349499	.0778009	.2560219***
TAXFAVOR	-.0664619	-.1062184	.2696763**	.2695015***	.1067508

SH	.0724226	.2645903**	-.0450563	-.0438492	.025758
_CONS	.9243122	2.460233*	3.27224***	-1.777281*	-4.155292***
R^2	0.0136	0.0237	0.0404	0.0255	0.0349
Number of obs.	823	601	728	808	842

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table B5: Determinants of FAH

Panel 1: all firms included

Full sample	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.200959***	2.524716***	2.607922***	2.357021***
DEBT	2.834036***	3.049783***	1.949089***	3.352256***
ROA	.095485	-.5832873*	.0017659	-.0757511
MSR	-110.4211	-184.1614	29.89415	-7.028254
CDS	-.00306	-.0745399	-.0411724	.5574478*
CR	-.005624	-.002749	.0005457	-.0002576
TAXFAVOR	.2225384*	.2879745**	.3010066***	.3707092***

STO	.4367464	.1141929	.5669491**	.5680364**
_CONS	-1.223683***	-1.332445***	-1.92278***	-2.206242***
R^2	0.4661	0.5503	0.5743	0.5112
Number of obs.	841	835	1114	1113
Subsample 1 (firms with positive profit)	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.282353***	2.635542***	2.525547***	2.399775***
DEBT	2.765218***	2.774483***	2.162334***	3.575437***
ROA	.1457079	-.3240461	.0019013	-.8998162
MSR	-82.31578	-420.3093	41.54595	51.48334*
CDS	-.1203722	-.0174685	-.0467405	.5658462
CR	-.001292	-.0041267	-.0033247	.0007261
TAXFAVOR	.2314609	.2080218	.2828253**	.3865336***
STO	.3712296	.0721576	.5957659**	.5798315*
_CONS	-1.419024***	-1.213044***	-1.666649***	-2.299995***
R^2	0.4801	0.5733	0.5506	0.5115
Number of obs.	595	594	789	785
Subsample 2 (firms with positive efficiency)	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.248547***	2.926359***	2.668217***	2.53299***
DEBT	2.764347***	5.723442***	2.328462***	3.887353***
ROA	-3.327948*	-.0345926	-.0271446	.8632922
MSR	-127.1071	-223.7283	10.52727	55.77416**
CDS	-.0123765	.168091	.0419794	.6368089
CR	.0045096	-.0092701	-.0032876	-.0016261
TAXFAVOR	.2669368	.1932231	.1960308	.4072517***
STO	.2501015	-.322637	.5501376*	.9581939***
_CONS	-1.656647***	-1.224913**	-1.776327***	-2.534711***
R^2	0.4732	0.6470	0.5918	0.0411

Number of obs.	467	437	587	641

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

Full sample	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.16739***	2.472009***	2.57175***	2.337338***
DEBT	2.931238***	3.163813***	2.353936***	3.558521***
ROA	.0855604	-.5652297*	.0017415	-.0826313
MSR	-150.4244	-214.6766	37.21783	-6.456255
CDS	.0326861	-.0703307	-.0322696	.4157233
CR	-.0077357	-.0031837	.002133	.0000541
TAXFAVOR	.1653629	.231794*	.2351695**	.3092181***
STO	.5383708	.1029652	.4920323**	.4958228*
_CONS	-1.092293***	-1.232038***	-1.933719***	-2.137938***
R^2	0.4609	0.5386	0.5678	0.5069
Number of obs.	806	805	1068	1065
Subsample 1 (firms with positive profit)	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.241711***	2.585194***	2.493376***	2.394014***
DEBT	2.897757***	2.858465***	2.685225***	3.948812***
ROA	.1832763	-.3201591	.0018717	-.8578723
MSR	-71.01637	-418.0907	48.73501	76.72167
CDS	-.114581	.0058122	-.0376767	.305064
CR	-.0020279	-.0046496	-.0012184	.0009135
TAXFAVOR	.1350133	.1431567	.2115396	.3223634**
STO	.422906	.0686788	.4875135*	.4662114
_CONS	-1.299289***	-1.11049***	-1.702012***	-2.233899***

R^2	0.4710	0.5616	0.5475	0.5134
Number of obs.	567	570	762	753
Subsample 2 (firms with positive efficiency)	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.211719***	2.871295***	2.630762***	2.527277***
DEBT	2.923351***	6.0087***	3.169387***	4.356674***
ROA	-3.52902	.2001375	-.3861588	1.309307
MSR	-111.8475	-201.5244	20.62094	84.22491
CDS	-.0089866	.1916204	.0545529	.2986509
CR	.00414	-.0106841	-.0010402	-.0017728
TAXFAVOR	.1536637	.0792943	.0918652	.3523907**
STO	.2985434	-.3543776	.4397858	.8620629**
_CONS	-1.535163***	-1.025985**	-1.795524***	-2.491806***
R^2	0.4639	0.6383	0.5894	0.5571
Number of obs.	443	416	565	615

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Table B6: Determinants of FAH (with SH dummy)

Panel 1: all firms included

Full sample	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.202435***	2.526737***	2.607751***	2.357149***
DEBT	2.832197***	3.002755***	1.94697***	3.347048***
ROA	.0928043	-.5806459**	.00177	-.0746004
MSR	-97.86129	-286.1992	25.93383	-7.130773
CDS	-.0058286	-.0537309	-.0397594	.5610173*
CR	-.0057123	-.002122	.0005772	-.0001782
TAXFAVOR	.2237005*	.2803093**	.3014121***	.3710571***
STO	.4343718	.1191988	.5666422**	.5690088**
SH	.0203996	-.1677495	-.013642	-.0256713
_CONS	-1.22978***	-1.270113***	-1.916367***	-2.195064***
R^2	0.4661	0.5517	0.5743	0.5113
Number of obs.	841	839	1114	1113
Subsample 1 (firms with positive profit)	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.281162***	2.644075***	2.524718***	2.399564***
DEBT	2.764368***	2.67193***	2.149665***	3.562513***
ROA	.1482389	-.3132312	.001916	-.9018549
MSR	-97.82491	-538.0384	28.78482	50.4973*
CDS	-.1158148	.0091353	-.0409182	.5705139
CR	-.0011539	-.0029081	-.0032251	.0008588
TAXFAVOR	.2303442	.2078546	.2869178**	.3883238***
STO	.3755037	.0938049	.5939262**	.5801753*
SH	-.0267711	-.238597	-.0505022	-.041979
_CONS	-1.414418***	-1.16249***	-1.644419***	-2.282287***
R^2	0.4802	0.5760	0.5507	0.5116
Number of obs.	595	594	789	785
Subsample 2 (firms with	2004	2005	2006	2007

positive efficiency)				
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.248459***	2.933297***	2.671217***	2.534802***
DEBT	2.763979***	5.607666***	2.353725***	3.867289***
ROA	-3.332009*	-.2023082	-.0134453	.8320564
MSR	-129.3809	-327.4102	19.20054	52.97767*
CDS	-.0115159	.1823731	.0365576	.6510676
CR	.0045369	-.0080686	-.0033457	-.0011515
TAXFAVOR	.2667888	.1993946	.1933073	.4095487***
STO	.2508265	-.299426	.5544067*	.9641342***
SH	-.0041393	-.2080156	.0450594	-.1204762
_CONS	-1.656308***	-1.179501**	-1.802613***	-2.488437***
R^2	0.4732	0.6487	0.5919	0.5531
Number of obs.	467	437	587	641

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**

Panel 2: real estate firms excluded

Full sample	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.167463***	2.474687***	2.571482***	2.337497***
DEBT	2.931119***	3.117128***	2.349279***	3.551943***
ROA	.0854166	-.5652194*	.0017535	-.0810765
MSR	-149.5881	-316.5976	25.60174	-6.579106
CDS	.0325198	-.0489233	-.0281928	.4243088
CR	-.0077405	-.0026582	.0022376	.0001647
TAXFAVOR	.1654341	.2257824*	.2358662**	.3091835***
STO	.5381978	.1086442	.4899568**	.4973325*
SH	.0012473	-.1596074	-.0402541	-.036449
_CONS	-1.092684***	-1.170509***	-1.914773***	-2.121582***
R^2	0.4609	0.5399	0.5679	0.5070

Number of obs.	806	805	1068	1065
Subsample 1 (firms with positive profit)	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.240933***	2.594841***	2.49252***	2.393654***
DEBT	2.896356***	2.764233***	2.670006***	3.933709***
ROA	.1856774	-.3141629	.001897	-.8609295
MSR	-91.86051	-533.7314	27.23353	75.00954
CDS	-.1095263	.0331092	-.0279572	.3190231
CR	-.0018613	-.0035978	-.0010254	.0010822
TAXFAVOR	.1335222	.1451156	.2172699	.3235189**
STO	.4291697	.0885848	.481436*	.4674485
SH	-.0328423	-.2277111	-.0859125	-.0534919
_CONS	-1.293669***	-1.058561***	-1.664001***	-2.210518***
R^2	0.4710	0.5642	0.5479	0.5136
Number of obs.	567	570	762	753
Subsample 2 (firms with positive efficiency)	2004	2005	2006	2007
FAH	Coeff.	Coeff.	Coeff.	Coeff.
L.FAH	2.211731***	2.880127***	2.631344***	2.529072***
DEBT	2.923102***	5.912951***	3.173355***	4.340279***
ROA	-3.531047*	.0183467	-.3833117	1.270131
MSR	-113.0104	-304.4739	22.4204	80.1902**
CDS	-.0086081	.2082333	.0535119	.341868
CR	.0041535	-.0096138	-.001055	-.001232
TAXFAVOR	.1536178	.0871836	.0914938	.3517461**
STO	.2989301	-.3341801	.4409965	.8722282**
SH	-.0019502	-.1951882	.0090985	-.1269964
_CONS	-1.535077***	-.9836364*	-1.800893***	-2.443573***
R^2	0.4639	0.6399	0.5894	0.5580
Number of obs.	443	416	565	615

Key: "Coeff." Stands for coefficient, "CONS" stands for the intercept term in the regression.

*****significant at the 1% level, **significant at the 5% level, *significant at the 10% level.**