

The Performance of the Asset Management Companies in the US

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Abstract

This paper seeks to identify the factors that may affect the financial performance and stock return of Asset Management Companies (AMCs) in the United States. The study focuses on a sample of fifty listed AMCs and uses data for the four years 2019-2022. Financial performance is computed as Return on Assets, Return on Equity, and Return on Capital Employed. Stock return is calculated with monthly and annual stock price data. Liquidity, solvency, and efficiency factors are used as explanatory variables, along with the size of the companies. The results show that the financial performance is negatively related to the debts-to-assets ratio. The opposite relation is found for stock return. The impact of the debt-to-equity ratio on performance is positive. This is also the case for assets turnover, net cash flow-to-assets ratio, and size.

Keywords: Asset Management Companies, Performance, Liquidity, Solvency, Efficiency

JEL Classification Codes: G15, G23, M41

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1. Introduction

This study focuses on the performance of the Asset Management Companies (AMCs) that are publicly traded on the United States stock market. An AMC (or a money manager) is a firm that invests pooled funds received from clients in various investing tools including stocks, bonds, real estate, commodities, and more. AMCs manage a wide spectrum of funds including

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mutual funds, index funds, Exchange Traded Funds (ETFs), hedge funds, private equity funds, and pension plans. In addition, these companies serve a range of clients including retail investors, institutional investors, government organizations and other public sector entities, and high-net-worth clients, that is, an individual with a minimum net worth of one million dollars in highly liquid assets, such as cash and cash equivalents.

For doing so, AMC's receive fees from their clients, which are usually calculated as a percentage of a client's assets under management. The percentages of fees vary depending on the scale of assets under management, as well as the type of the management AMC's are required to apply. In this respect, AMC's usually charge lower fees for the passive index funds and ETF products they offer compared to the actively managed mutual funds and other options they put on the table for their clients. As an additional cost for the clients, some specialized AMC's, such as hedge funds, can charge fees for generating returns above a specified level or when beating a benchmark.

Along with the professional management, specialized expertise and advised investing based on thorough research and data analysis, the main benefits offered by AMC's are the variety of investing options and the potential for enhanced diversification, along with the possibility of buying professional services at lower prices due to the economies of scale that can be achieved by these companies. Individual investors acting on their own cannot usually achieve such diversification and economies of scale, while, at the same time, can be burdened by minimum investment requirements. The latter can be avoided when investing via an AMC.

Entrusting money in an AMC does not entail only benefits for those choosing to do so. One drawback of such a choice concerns the management fees mentioned above, which are collected annually no matter what the performance of an AMC has been during a year. Occasionally, these fees can become too high for investors. Another major issue relating to dealing with an AMC is inflexibility, which results from asset managers becoming too large, because managing large amounts of capital can create serious operational problems at times. Finally, there is the risk of underperforming a benchmark that is usually used for assessing the performance of an AMC. Underperformance combined with the flat fees can form a very unpleasant situation for clients.

The quality of services and other benefits provided by AMC's, as well as the costs and risks of investing through an AMC described above, are of interest to the clients of these companies. However, the prime interest of AMC's' owners and investors regards their financial performance and the return of their publicly traded stock shares (for those AMC's which are listed in a stock exchange). Usually, the higher the financial performance, the greater the expectation for a mighty dividend. On the other hand, the higher the stock price and return, the greater the capital gains that are to be realized.

In this study, we deal with the financial performance and stock return of the US-listed AMCs trying to identify the financial factors that can affect their performance. To the best of our knowledge, this is the first study to examine the financial performance of AMCs. The literature on AMCs (or money managers) mainly focuses on the returns they achieve to the benefit of their clients and the characteristics of managers which may contribute to greater and more persistent stock returns.

Lakonishok et al. (1992) concentrate on the delegated portfolio management of tax-exempt pension funds that invest heavily in equities and choose between outside managers to actively manage their portfolios. The results indicate that, on average, the managers of these funds achieve poor performance relative to a passive investment strategy. Clare et al. (2022) assess the impact of personal characteristics on manager skill and style, as well as performance persistence. They find that the experienced fund managers run portfolios with lower exposure to the market, size and momentum risk factors, especially when the managers have a stake in the funds they manage. They also show that the accumulated experience of managers can explain much of performance persistence. Cuthbertson et al. (2016) suggest that cross-sectional differences in manager characteristics concerning age, experience, education and gender can be relevant to performance. Aggarwal and Boyson (2016) focus on the performance of managers dealing with hedge funds trying to identify whether the gender of managers matters to performance. The empirical results show that, even though there are no inherent differences in skills between female and male managers, only the best performing female managers survive. In addition female managers are entrusted lower amounts of money compared to male managers.

The sample of our study includes fifty companies while the period under study spans from 2019 to 2022. Three types of financial performance are considered, namely, Return on Assets (ROA), Return on Equity (ROE), and Return on Capital Employed. On the other hand, stock return is computed in monthly and annual frequencies. The explanatory variables used are the current ratio, which reflects the liquidity of a company; four solvency measures, including interest coverage, debt-to-assets ratio, equity ratio, and debt-to-equity ratio; and two metrics of efficiency, that is, assets turnover and the net cash flow-to-assets ratio. The size of companies is also taken into account.

The results reveal that the financial performance of the US-listed AMCs is negatively related to the debts-to-assets ratio. However, the stock return of the examined firms is positively associated with this ratio. Furthermore, the impact of the debt-to-equity ratio on financial performance is positive. This is also the case for assets turnover, net cash flow-to-assets ratio, and size, which affect both financial performance and stock return positively.

2. Literature Review

A plethora of studies have investigated firm performance, accentuating several factors that can affect it. Several studies focus on the relationship between financial performance and liquidity. Eljeljy (2004) employs a sample of joint stock companies in Saudi Arabia to examine the relationship between profitability and liquidity. The current ratio and the measure of the cash conversion cycle express the latter. The results show that the current ratio is negatively related to firm performance. This finding is more evident in firms with high current ratios and longer cash conversion cycles.

Lazaridis and Tryfonidis (2006) investigated the relationship between corporate profitability and working capital management with a sample of 131 companies listed on the Athens Stock Exchange in Greece from 2001-2004. The results indicate a statistically significant relation between gross operating profit and the cash conversion cycle. Based on these findings, the authors conclude that managers can create profits for their companies by handling the cash conversion cycle correctly and keeping accounts receivables, accounts payables, and inventory at an optimum level.

Deloof studies the relationship between working capital management and corporate profitability for a sample of 1,009 large Belgian non-financial firms from 1992-1996. The cash conversion cycle is used to measure working capital management by considering the number of days accounts receivable, accounts payable, and inventories. The author finds that reducing the days of accounts receivable and inventories can increase corporate profitability.

Several newer studies assess the relationship between the cash conversion cycle and financial performance. Using data from 1,233 manufacturing firms in the United States, Kroes and Manikas (2014) show that changes in the cash conversion cycle do not affect financial performance. However, financial performance is affected by changes in the operating cash cycle. Gill et al. (2010) also investigate the relationship between working capital management and profitability using U.S. data. The sample of the study includes 88 firms that are listed on the New York Stock Exchange, and the period covered spans from 2005 to 2007. The findings reveal a statistically significant relationship between the cash conversion cycle and gross operating profit.

Outside the United States, Abuzayed (2012) investigates the impact of working capital management on firms' performance for a sample of firms listed in the Amman Stock Exchange in Jordan from 2000-2008. Based on the results, the cash conversion cycle positively affects profitability. Tahir and Anuar (2016) focus on 127 textile companies listed in the Karachi Stock Exchange during the period 2001-2012 and reveal that the average collection days, inventory days, net working capital, current assets to operating income, current assets to sales ratio, current liabilities to total assets harm return on assets. On the other hand, the accounts payable days, cash conversion cycle, net trade cycle, cash turnover ratio, current assets to total assets ratio, and current ratio are positively associated to profitability. Laghari et al. (2023) investigate

the impact of changes in cash flow measures on Tobin's Q using data from listed Chinese non-financial companies over the period 2018-2020. The results indicate that declines in cash flow measures and metrics bring significant positive improvements in the financial performance of firms, especially for companies with low leverage.

Finally, Drissi et al. (2023) examine the financial impact of the cash flow bullwhip during the COVID-19 crisis on the Moroccan companies from the Fast-Moving Consumer Goods (FMCG) Industry. The authors find that the impact by the cash flow bullwhip was greater for the small and medium-sized companies, as the instability in their cash flow conversion cycle increased their needs for working capital and limited their capacity to self-finance their operations.

In addition to the relationship between liquidity and firm performance, the impact of cash flow management on corporate profitability has been thoroughly examined too. Nwanyanwu (2015) focuses on Nigeria and examines the relationship between cash flow and corporate performance of 45 small and medium enterprises from the hospitality and media sectors of the country. By applying correlation analysis, the author accentuates a significantly strong positive relation between the cash flow position and net profits.

Ni et al. (2019) focus on the performance of the Taiwanese companies during the period 2005-2014. The findings show that inflows from financing activities and outflows to investing activities can enhance firm value. On the contrary, operating cash inflows are not related to the value of a firm. With data from Iran, Gheshlaghi et al. (2014) report that there is a significantly negative relationship of performance with investing cash flow but there is no relation between performance and cash flow from operational and financing activities.

Frank and James (2014) examine the relation between cash flow and performance in the food and beverages sector of Nigeria using a sample of six listed firms. The empirical results show that cash flow from operating and financing activities are positively related to performance. The opposite is the case about cash flow from investing activities. By focusing on the banking sector of Nigeria, Amah et al. (2016) reveal that operating cash flow has a strong positive impact on performance, while investing and financing cash flows have a negative but weak relationship with banks' performance.

Alslehat and Al-Nimer (2017) investigate the impact of cash flow from operating, investing and financing activities on the financial performance of 23 insurance companies in Jordan during the period 2009-2013 and find a significant relation of cash flow from operating and investing activities with firm performance. Finally, Rahman and Sharma (2020) examine whether proper cash flow management can increase financial performance. In particular, the effect of cash flow from operations on the financial performance of the insurance and manufacturing companies in Saudi Arabia is examined. The results show a positive and

significant association of return on assets and return on equity with cash flow from operating activities.

When it comes to the relationship between solvency and financial performance, Khidmat and Rehman (2014) examine 36 chemical companies from Pakistan over the period 2001-2009 and find that the solvency ratio, measured as the debt-to-equity ratio, has a negative and highly significant impact on return on assets and return on equity suggesting that when the debt to equity ratio increases, firm performance decreases. Similar result are provided by Supardi et al. (2016), Darmawan and Nurochman (2016) and Siska (2023). Nyabwanga (2013) examines the financial position of the listed small and medium companies in Kenya by focusing on their liquidity, solvency and profitability positions and using ratio analysis. The study uses data for the period 2009-2011. The findings show that the liquidity position of the examined is on average low, while their solvency is not good either. Furthermore, the results show that there is a significant impact of current ratio, quick ratio and debt to total assets ratio on return on assets. Meliani et al. (2021) examine whether solvency ratios are significantly related to the performance of the Indonesian listed food and beverage companies. The results do not establish such a significant relationship.

Going further, by examining the relationship of firm performance with audit quality and other explanatory variables, Khan et al (2021) show that assets turnover, that is the ratio of sales to total assets, affect corporate profitability in a positive way. Satrio (2022) also reports a positive relationship between financial performance and assets turnover. Such a relationship is also verified by Prakoso and Chabachib (2016). A positive relationship between corporate performance and firm size is also the case as evidenced by several studies such as those by Eljelly (2004), and Rompotis and Balios (2023).

3. Research Method

3.1 Data

Our study sample includes fifty listed AMCs having published financial statements over the four years 2019-2022. We note that companies with different accounting years have been excluded from the sample. Table 1 reports key accounting figures for the examined companies. The accounting figures presented concern current assets, total assets, current liabilities, total liabilities, equity, total revenue, Earnings Before Interest and Tax (EBIT), interest expense, Earnings Before Tax (EBT), and Net Cash Flow. The average terms of accounting figures over 2019-2022 are presented. In addition, data are presented in five clusters, each of which includes ten companies. Total assets have been used for the construction of clusters. The ten biggest companies in terms of assets are included in Cluster 1. The second ten biggest companies are included in Cluster 2 and so on.

Average current assets amount to \$12.5 billion. This amount captures 33% of average total assets. Average current liabilities amount to \$16.8 billion, or 51% of total liabilities. On the other hand, total liabilities (of \$32.7 billion) are about seven times the equity (of \$4.6 billion), indicating that the examined companies are heavily leveraged. Total revenue approximates \$2.7 billion. Average EBIT is positive at \$1 billion. Average interest expense amounts to \$130 million. Average EBT is equal to \$930 million. Finally, the average net cash flow is positive at \$122 million. With respect to clusters, all average terms follow a descending path when moving from Cluster 1 to Cluster 5 showing that all the reported accounting figures behave similar to total assets.

3.2 Definition of Variables

Three types of accounting/financial performance are used along with two types of stock return. Financial performance metrics include Return on Assets (ROA), Return on Equity (ROE), and Return on Capital Employed (ROCE). ROA is calculated as the fraction of PBT to total assets at the end of each year over the study period. ROE is computed as the ratio of PBT to total equity at year end. ROCE is calculated as the ratio of PBT to total assets minus current liabilities. Stock returns are computed in monthly and annual frequencies with data of the examined firms' share prices, which have been found on www.nasdaq.com.

Other variables used is current ratio (liquidity) and four solvency measures concerning interest coverage, debt-to-assets ratio, equity ratio and debt-to-equity ratio. Two measures of efficiency are used too. These measures are assets turnover and the net cash flow-to-assets ratio. Finally, the size of firms is considered. Current ratio is the fraction of current assets to current liabilities. Interest coverage is the fraction of EBIT to interest expense. Debt-to-assets is the ratio of total liabilities to total assets. Equity ratio is the fraction of equity to total assets. Debt-to-equity is the ratio of total liabilities to equity. Assets turnover is computed as the fraction of total revenue to total assets. Net cash flow-to-assets ratio is calculated by dividing net cash flow by total assets. Finally, the size of firms is measured as the logarithm of total assets.

Table 2 presents the average, median, minimum and maximum terms of the variables used in our empirical analysis. The average terms of ROA, ROE and ROCE are equal to 7.4%, 26.02% and 10.39%, respectively, indicating that the average financial performance of AMCs in the US over the period under study has been positive. This is also the case for monthly and annual stock returns, whose average terms are equal to 0.94% and 8.32%, respectively.

Regarding liquidity, the average current ratio is relatively high at 582%. The ability of AMCs to cover their liabilities from interests is very high at 30 times. The average debt-to-assets, equity, and debt-to-equity ratios are equal to 58%, 41%, and 319%. Liquidity and the first three solvency ratios are quite satisfactory, as liquidity ratios above 100%, high-interest coverage times, debt-to-assets ratio, and equity ratio above 20% to 30% are considered financially

healthy. Assets turnover approximates 21%, while the net cash flow efficiency ratio is low at 0.16%.

3.3 Empirical Analysis

In order to have a first hint about the relation of performance with liquidity, solvency, efficiency and size, we apply simple correlation analysis. This analysis aims at finding out whether a relationship exists between variables and defining the sign of that relationship. However, correlation does not entail causation, as a positive (or a negative) correlation between two variables does not automatically mean that one variable affects the other.

Whether a statistically significant relationship exists between the dependent variables, i.e., financial performance and stock return, and the explanatory factors of liquidity, solvency, efficiency, and size is gauged via the following regression model:

$$Pnce = \lambda_0 + \lambda_1 C.R. + \lambda_2 In.Cov. + \lambda_3 D.A. + \lambda_4 E.R. + \lambda_5 D.E. + \lambda_6 A.T. + \lambda_7 NCFA + \lambda_8 Size + u$$

where Pnce is the performance of AMCs expressed as ROA, ROE, ROCE, monthly stock return and annual stock return. C.R. is the current ratio. In.Cov. refers to interest coverage. D.A. is the debt-to-assets ratio. E.R. is the equity ratio. D.E. is the debt-to-equity ratio. A.T. is assets turnover. NCFA is the net cash flow-to-assets ratio. Size is the logarithm of total assets. The model is applied with panel data for the period 2019-2022.

Liquidity shows the ability of a firm to meet its short-term obligations (Utami and Pardawati, 2016) without jeopardizing its operation as a going concern. According to Zygmunt (2013) and Wiyono and Se (2012), the importance of liquidity to the performance of a company may determine its level of profitability. Based on this analysis, the coefficient of the liquidity ratio in model (1) should be positive. However, if the current ratio is too high, entailing that there are idle funds that might cause the profitability of a company to decrease, the coefficient of the current ratio could be negative. Given that the average current ratio of the examined AMCs is too high at 582% (as discussed above), a negative estimate of the current ratio will not be a surprise.

A high interest coverage indicates that a company makes enough earnings before interest and taxes to meet the financial cost of its debt. Such an ability entails that a company can have easy, and possibly cheap, access to external funding to finance projects and investments that can boost its financial performance and stock return. According to this analysis, the coefficient of the interest coverage factor in model (1) is expected to be positive.

Debt-to-asset is a solvency ratio that shows the portion of a company's assets provided by third parties. A low debt-to-assets ratio indicates high solvency for a company, while the higher this ratio, the higher the financial risk faced by the company. Potentially, a high debt-to-assets ratio can affect the financial performance of a company in a negative way. In fact, Darmawan and

Nurochman (2016) and Yameen et al. (2019) report a negative relationship between debt-to-assets (leverage) and financial performance. Consequently, the estimate of the debt-to-assets ratio in model (1) is expected to be negative.

Equity ratio shows the portion of a company's assets that is funded by equity as opposed to debt. The higher the ratio, the healthier the company from a financial perspective. In other words, the equity ratio is a measure of a company's capital adequacy and indicates its strength and stability. Empirical studies, such as that by Olalekan and Adeyinka (2013), reveal a positive and statistically significant relation between capital adequacy and the profitability of a company. Thus, the sign of the equity ratio coefficient in model (1) should be positive.

The debt-to-equity ratio indicates how much a company is funded by debt. The higher the ratio, the more debt a company has on its books. Due to the higher debt, the probability of default increases. Such an increased likelihood of default bears a negative influence on performance. From an empirical perspective, Lombardi et al. (2022) report a negative relationship between profitability and debt to capitalization for companies operating in the healthcare sector of the United States. Based on this analysis, the coefficient of the debt-to-equity ratio in model (1) should be negative.

The assets turnover ratio measures the value of a firm's revenue relative to the value of its assets and can be used as an indicator of the firm's ability to use its assets to generate revenue. Empirical literature has shown that assets turnover is positively related to firm performance (e.g., Khan et al., 2021). Thus, the coefficient of assets turnover in model (1) is anticipated to be positive and statistically significant.

Net cash flow is a profitability metric that represents the amount of money produced or lost by an entity over a period, while the net cash flow-to-assets ratio shows the cash a company can generate about its size. The higher this ratio, the more efficiently a firm manages its assets. A company's asset management techniques' increased efficiency can boost its performance. In fact, Rompotis (2024) finds a positive and statistically significant relationship between the net cash flow-to-assets ratio and financial performance. This analysis entails that the coefficient of the net cash flow-to-assets ratio in the model (1) will be positive.

Finally, the company's size reflects its ability to produce goods and services more cheaply compared to smaller firms due to its greater cumulative experience and knowledge, as well as the ability of the company to achieve economies of scale by spreading its fixed costs over a greater amount of production. The existing empirical literature provides mixed evidence on the relation between size and firm performance. Several studies, such as those by Gleason et al. (2000), Zeitun and Tian (2007), Asimakopoulos et al. (2009), Doğan (2013), and Vu et al. (2019), reveal a positive impact on firm performance by size. Other studies, including those by Becker-Blease et al. (2010) and Banchuenvijit (2012), report an opposite impact. Based on these mixed results, we have no clear expectation about the sign of size in model (1).

4. Results and Discussion

The Pearson correlation coefficients are reported in Table 3. In the case of ROA, the correlation estimates with current ratio and debt-to-assets ratio are negative at -0.11 and -0.24, respectively. The correlation with the rest explanatory variables are positive. In the case of ROE, except for the debt-to-assets ratio, all other correlations are positive. Going further, ROCE is negatively correlated to current, debt-to-assets, and equity ratios and positively related to interest coverage, debt-to-equity ratio, assets turnover, net cash flow-to-assets ratio and size. Finally, both monthly and annual stock returns are negatively related to equity ratio and positively correlated to the rest variables.

The results of model (1) on the financial performance and stock return of the examined AMCs are presented in Table 4. The table reports the estimates of explanatory variables, t-statistics on the significance of estimates, along with R-squared values and F-statistics, which evaluate the overall significance of the applied regression models.

With respect to liquidity, four out of five estimates are slightly negative and just one is slightly positive. However, only the coefficient of ROE is statistically significant. This negative significantly negative coefficient may be the result of the very high average current ratio detected in Table 2, which might reflect idle money that could be used more efficiently by the examined AMCs.

When it comes to the solvency ratios, interest coverage does not seem to affect performance at all. The coefficient of the debt-to-assets ratio is significantly negative in the case of ROE and significantly positive in the case of monthly and annual stock returns. The latter finding is not new in the literature. A similar positive relation between stock returns and debt-to-assets ratio is reported by Nurhikmawaty et al. (2020) among other studies.

The equity ratio has no statistically significant relationship with firm performance and stock return. On the other hand, the debt-to-equity ratio is positively related to financial performance. The relevant estimates of ROA, ROE and ROCE are positive and statistically significant. The respective estimates of stock returns are positive too but insignificant. This finding contradicts our expectations about a negative impact on performance by the debt-to-equity ratio.

The impact of assets turnover on the performance of the examined US-listed AMCs is found to be positive, confirming our expectations. For all performance measures, the coefficients of the assets turnover factor are positive and statistically significant. Similar results are obtained on the net cash flow-to-assets ratio. All the relevant estimates are positive. In addition, with the exception of ROCE, these estimates are statistically significant at 10% or better. Finally, the estimates of size are all positive and significant, indicating that the size of AMCs can help them achieve better financial performance and higher stock returns.

With respect to the validity of the applied models, the corresponding R-squared values and F-statistics indicate that our model is quite capable of explaining the financial performance and the stock return of the publicly traded AMCs in the United States. R-squared values range from 0.60 to 0.74, in the case of ROA, ROE and ROCE, and from 0.19 to 0.21 in the case of stock returns. F-statistics behave in the same way.

5. Conclusion

The financial performance and stock return of the US-listed Asset Management Companies during the period 2019-2022 are examined in this study with a sample of fifty companies. Various measures of performance are employed, including ROA, ROE, ROCE, and monthly and annual stock returns. In addition, several financial factors are assessed as the determinative forces of performance concerning the liquidity, solvency, efficiency and the size of the examined corporations. From a methodological perspective, simple correlation analysis is performed along with panel data regression analysis.

The empirical results reveal a weak negative relationship between performance and liquidity. This finding contradicts the common belief that companies with high liquidity can comfortably meet their obligations to vendors, lenders and other third parties, having at the same time the necessary cash to finance profitable investments and projects that can boost their financial performance. However, an extremely high cash availability might entail that a company does not use its money in the most possible efficient way and, as a corollary, its performance might be decelerated. Given that the AMCs in our sample present too high an average current ratio, the respective negative coefficient of liquidity might result from inefficiencies in the cash management policies adopted by the examined firms.

In regard to the solvency ratios, only the debt-to-assets and the debt-to-equity ratios bear a statistically significant impact of performance. In particular, the debt-to-assets ratio affects ROE in a negative way, while the impact of this ratio on monthly and annual stock returns is positive. Moreover, the debt-to-equity ratio is positively related to performance.

When it comes to the measures of operating efficiency, the results accentuate a strong positive relation of performance with assets turnover and the net cash flow-to-assets ratio. This is also the case for the size factor.

Overall, our study is a first attempt to identify some of the factors that can affect the financial performance and the stock return of the Asset Management Companies by considering the perspective of their owners and investors. An obvious expansion of our research would include AMCs from Europe and other continents. Additional variables could be considered too, indicatively including governance characteristics, demographical features of the board members, and the policies applied by AMCs towards conducting sustainable business.

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Table 1: Accounting Figures

Clusters	Current Assets	Assets	Current Liabilities	Total Liabilities	Equity	Revenue	EBIT	Interest Expense	EBT	Net Cash Flow
<i>Cluster 1</i>										
Average	58,048,538,550	174,961,118,625	83,115,846,125	156,532,458,000	18,138,330,575	10,639,178,475	4,169,149,175	468,765,325	3,567,043,850	554,590,300
Median	18,966,012,500	162,230,975,000	11,597,777,875	152,712,725,500	14,522,712,500	11,823,089,375	3,381,125,000	213,287,875	2,954,937,500	349,812,500
Min	520,250,000	18,585,500,000	102,950,000	10,319,000,000	5,287,500,000	1,380,000,000	1,249,500,000	0	890,750,000	-80,475,000
Max	216,308,000,000	425,340,500,000	364,403,000,000	382,430,250,000	42,763,000,000	16,791,500,000	7,066,911,000	2,333,250,000	6,693,500,000	2,685,964,500
<i>Cluster 2</i>										
Average	3,728,164,350	8,793,009,275	760,977,675	5,351,775,600	3,187,068,025	2,011,922,275	914,782,825	125,161,125	789,621,700	43,375,100
Median	926,862,500	7,569,062,500	346,186,500	2,370,970,875	2,335,311,125	1,476,600,000	552,812,500	87,464,625	429,137,500	50,850,000
Min	110,964,750	3,253,578,250	0	1,616,124,750	758,034,000	196,986,000	175,300,250	0	114,292,250	-70,562,000
Max	15,423,988,000	18,026,750,000	4,556,625,000	15,777,991,250	8,167,825,000	6,496,225,000	3,028,075,000	346,541,250	3,028,075,000	180,800,000
<i>Cluster 3</i>										
Average	299,783,825	2,253,114,075	189,502,975	1,154,210,250	1,084,551,475	501,511,875	221,024,225	35,527,900	185,496,300	17,935,875
Median	153,800,500	2,129,904,500	56,174,000	1,176,529,375	1,003,357,750	178,376,875	156,240,125	38,925,500	100,244,250	18,371,750
Min	49,989,250	1,751,908,750	13,890,250	440,902,250	779,379,000	91,337,500	70,348,750	0	37,343,750	-14,170,000
Max	1,365,839,750	2,982,484,750	942,720,750	1,630,469,750	1,823,318,000	1,810,822,250	626,409,750	58,325,500	625,772,000	55,279,250
<i>Cluster 4</i>										
Average	136,780,650	855,086,400	107,476,875	478,126,375	340,279,675	206,722,200	94,981,925	15,120,650	79,861,250	-6,119,975
Median	85,846,750	851,023,000	28,036,750	428,704,375	285,441,500	61,943,500	43,272,625	17,067,250	27,035,375	2,858,875
Min	31,207,000	544,593,250	8,792,000	55,986,750	81,900,000	19,104,500	18,498,250	230,500	6,025,750	-56,075,000
Max	362,925,000	1,132,059,000	548,775,000	905,225,000	905,667,000	969,116,750	386,130,500	26,500,000	375,487,250	13,579,250
<i>Cluster 5</i>										
Average	93,231,600	312,620,425	57,062,975	148,983,775	155,286,950	98,495,050	36,346,200	5,295,175	31,051,025	1,471,300
Median	61,876,875	290,352,500	12,551,750	153,386,500	152,162,750	43,028,125	22,511,125	419,375	15,826,375	-2,206,375
Min	12,280,000	63,721,000	2,846,750	9,171,000	54,550,000	3,539,250	-6,738,750	0	-19,102,000	-8,125,500
Max	376,938,500	527,941,500	267,877,250	350,504,000	256,052,250	497,276,000	189,944,250	17,294,250	189,944,250	39,676,500
<i>Sample</i>										
Average	12,461,299,795	37,434,989,760	16,846,173,325	32,733,110,800	4,581,103,340	2,691,565,975	1,087,256,870	129,974,035	930,614,825	122,250,520
Median	213,997,000	2,129,904,500	84,183,000	1,176,529,375	918,341,125	243,769,375	193,101,125	18,586,875	145,448,750	8,007,875
Min	12,280,000	63,721,000	0	9,171,000	54,550,000	3,539,250	-6,738,750	0	-19,102,000	-80,475,000
Max	216,308,000,000	425,340,500,000	364,403,000,000	382,430,250,000	42,763,000,000	16,791,500,000	7,066,911,000	2,333,250,000	6,693,500,000	2,685,964,500

Note 1: The accounting figures presented in this table are the mean terms of the annual figures over the period 2019–2022 found in the relevant published financial statements.

Note 2: Total assets have been used for the construction of clusters. Each cluster includes 10 companies. Cluster 1 contains the first 10 biggest companies in terms of assets, Cluster 2 contains the second 10 biggest companies in terms of assets and so on.

Note 3: EBIT = Earnings Before Interest and Tax; EBT = Earnings Before Tax

Table 2: Regression Variables

Clusters	ROA	ROE	ROCE	Monthly Stock Return	Annual Stock Return	Current Ratio	Int. Cover. (times)	Debt-to-Assets	Equity Ratio	Debt-to-Equity	Assets Turnover	NetCF-to-Assets
<i>Cluster 1</i>												
Average	3.91	26.32	7.32	1.44	16.77	1,245.96	10.76	82.11	18.05	1,025.08	9.68	0.38
Median	2.53	17.26	7.40	1.32	13.05	93.75	7.11	90.55	11.04	922.83	6.39	0.16
Min	0.99	9.82	0.99	0.26	1.62	43.66	0.00	55.52	3.24	123.69	3.76	-0.23
Max	16.45	76.31	20.52	2.78	40.12	10,724.89	33.47	96.76	44.90	3,106.14	30.62	1.58
<i>Cluster 2</i>												
Average	8.08	23.23	8.56	1.23	13.87	456.14	7.45	56.26	40.98	306.33	20.30	0.36
Median	5.71	19.14	5.91	0.82	9.70	267.33	3.59	56.05	42.03	138.97	15.79	0.35
Min	2.98	6.69	1.73	-0.55	-15.86	0.00	0.00	16.19	7.48	21.42	6.05	-1.97
Max	27.44	47.56	29.01	3.32	47.38	1,911.66	38.02	89.15	74.12	1,216.16	58.87	2.30
<i>Cluster 3</i>												
Average	8.34	15.69	9.57	0.74	4.88	447.32	102.55	51.17	48.17	115.95	23.04	0.85
Median	3.89	8.55	5.22	0.77	3.29	249.41	2.82	55.09	44.99	122.66	7.66	0.83
Min	1.77	4.15	1.87	-0.23	-6.73	6.60	0.00	19.47	37.38	24.21	4.68	-0.69
Max	27.64	34.44	32.53	2.58	36.05	1,476.09	996.42	62.34	80.52	171.62	79.98	2.62
<i>Cluster 4</i>												
Average	7.97	49.97	14.45	0.93	5.75	279.71	16.76	56.44	40.10	33.25	20.77	-0.49
Median	3.43	8.03	3.59	0.76	3.24	242.51	2.97	57.97	40.74	136.78	7.77	0.32
Min	1.11	2.74	0.47	0.05	-6.53	66.13	1.57	5.19	4.96	-1,083.11	1.77	-5.56
Max	33.17	268.89	75.48	2.31	24.38	708.50	104.35	89.80	84.76	418.13	85.61	1.49
<i>Cluster 5</i>												
Average	8.72	14.89	12.03	0.36	0.33	482.60	11.74	42.28	56.09	112.04	30.45	-0.29
Median	4.43	7.05	5.59	0.65	3.17	330.73	0.96	43.52	50.00	86.91	11.84	-1.07
Min	-6.30	-19.90	-5.97	-2.44	-31.05	16.15	-0.72	7.78	25.70	8.56	4.25	-4.66
Max	39.63	77.47	59.93	1.90	23.89	1,602.23	65.74	75.14	92.19	307.07	103.76	8.28
<i>Sample</i>												
Average	7.40	26.02	10.39	0.94	8.32	582.35	29.85	57.65	40.68	318.53	20.85	0.16
Median	3.75	10.60	5.42	0.82	5.69	250.33	3.13	56.95	41.56	138.07	7.78	0.18
Min	-6.30	-19.90	-5.97	-2.44	-31.05	0.00	-0.72	5.19	3.24	-1,083.11	1.77	-5.56
Max	39.63	268.89	75.48	3.32	47.38	10,724.89	996.42	96.76	92.19	3,106.14	103.76	8.28

Note 1: The financial ratios in this table are the mean terms of the annual figures over the period 2019–2022 and have been created by the author with data found in the relevant published financial statements.

Note 2: Stock returns have been calculated with share prices found on www.nasdaq.com.

Note 3: Total assets have been used for the construction of clusters. Each cluster includes 10 companies. Cluster 1 contains the first 10 biggest companies in terms of assets, Cluster 2 contains the second 10 biggest companies in terms of assets and so on.

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Table 3: Correlations

	ROA	ROE	ROCE	Monthly Stock Return	Annual Stock Return	Current Ratio	Interest Coverage	Debt-to- Assets	Equity Ratio	Debt-to- Equity	Assets Turnover	NetCF- to-Assets	Size
ROA	1.00	0.10	0.86	0.28	0.31	-0.11	0.31	-0.24	0.17	0.23	0.85	0.05	0.13
ROE		1.00	-0.32	0.14	0.15	0.03	0.04	-0.08	0.06	0.60	0.04	0.29	0.11
ROCE			1.00	0.22	0.24	-0.11	0.21	-0.03	-0.04	0.38	0.77	0.10	0.10
Monthly Return				1.00	0.95	0.01	0.02	0.15	-0.16	0.14	0.10	0.18	0.15
Annual Return					1.00	0.02	0.03	0.18	-0.19	0.16	0.12	0.15	0.19
Current Ratio						1.00	-0.03	0.13	-0.12	0.30	-0.10	0.09	0.13
Interest Coverage							1.00	-0.25	0.26	-0.07	0.34	0.04	-0.03
Debt-to-Assets								1.00	-0.99	0.45	-0.28	0.00	0.59
Equity Ratio									1.00	-0.45	0.19	-0.01	-0.59
Debt-to-Equity										1.00	-0.25	0.15	0.55
Assets Turnover											1.00	0.00	-0.23
NetCF-to-Assets												1.00	0.07
Size													1.00

Table 4: Performance Regression Results

	Dep. Var.: ROA	Dep. Var.: ROE	Dep. Var.: ROCE	Dep. Var.: Mon Stock Ret	Dep. Var.: An Stock Ret
Constant	-5.39	***284.95	-23.65	-3.23	-78.97
T-statistic	(-0.30)	(1.82)	(-0.76)	(-0.56)	(-1.08)
Current Ratio	0.00	**0.01	0.00	0.00	0.00
T-statistic	(-0.74)	(-2.45)	(1.50)	(-0.45)	(-0.95)
Interest Coverage	0.00	-0.03	0.00	0.00	0.00
T-statistic	(0.37)	(-1.38)	(-0.01)	(-0.22)	(-0.26)
Debt-to-Assets	-0.09	***-2.31	0.13	***0.14	***0.21
T-statistic	(-0.55)	(-1.68)	(0.46)	(1.68)	(1.73)
Equity Ratio	-0.07	-0.90	-0.08	0.01	0.36
T-statistic	(-0.40)	(-0.69)	(-0.27)	(0.26)	(0.58)
Debt-to-Equity	***0.00	*0.12	*0.01	0.00	0.00
T-statistic	(1.93)	(3.36)	(3.33)	(0.84)	(0.95)
Assets Turnover	*0.34	***0.12	*0.52	**0.02	**0.30
T-statistic	(11.20)	(1.69)	(9.36)	(1.99)	(2.52)
NetCF-to-Assets	***0.07	**2.46	0.14	**0.05	**0.63
T-statistic	(1.65)	(2.55)	(0.69)	(2.35)	(2.15)
Size	**0.62	*6.49	**0.98	***0.10	***2.01
T-statistic	(2.50)	(2.09)	(2.55)	(1.70)	(1.65)
R-squared	0.74	0.60	0.73	0.19	0.21
F-Statistic	*66.31	*36.09	*65.59	**2.22	*2.77
Prob (F-statistic)	(0.00)	(0.00)	(0.00)	(0.03)	(0.01)
* Statistically Significant at 1%; ** Statistically Significant at 5%; *** Statistically Significant at 10%.					