

Article

# Do CEOs Identified as Value Investors Outperform Those Who Are Not?

George Athanassakos 

Ivey Business School, Western University, London, ON N6G 0N1, Canada; gathanassakos@ivey.ca

**Abstract:** The aim of this study is to examine whether good asset allocation by a CEO leads to superior stock returns and, if so, how one might be able to identify CEOs that are good asset allocators. Employing US data from May 2001 to April 2019, we find that CEOs that invest the company's cash flows according to a value-investing style seem to outperform companies that do not. We find that high goodwill to assets and high operating margin (good asset allocator) companies outperform companies with high or low goodwill to assets and low operating margin (poor asset allocator) companies. The findings are corroborated with out-of-sample (May 2019–April 2023) robustness tests. When buying other businesses, value investor CEOs ensure that their consolidated operating margins remain high, as opposed to other firms managed by poor asset allocator CEOs who buy businesses that bring down operating margins, either because they overpay or due to an inability to materialize expected synergies. Using both summary statistics and regression analysis, the findings of this study help us identify companies that allocate assets like value investors and enable us to anticipate future stock performance. For example, if a company, on average, has a goodwill/assets ratio of 41.03%, and an operating margin of 21.38%, it is likely this firm would be at the top quartile in terms of stock return performance over at least the next three years. At the same time, if a firm has a low average goodwill/assets ratio (i.e., 1.95%), its operating margins, on average, should be 24.46%, if it wants to achieve a similar performance as that of firms with high goodwill/assets. Moreover, the future stock return predictability of high (low) goodwill/assets and high (low) operating margin firms, found in this study, can help an investor develop trading strategies that can lead to superior stock price performance by effectively taking long positions in (shorting) firms that are (not) managed by value investor CEOs. Finally, the paper's findings can also help investors in another way. For example, investors tend to be skeptical about companies with high goodwill/assets. The rule of thumb is to beware of companies carrying goodwill on their balance sheets that is more than 25% of assets. Based on our findings, this should not be a problem as long as the company's operating margin has remained high and is rising.

**Keywords:** asset allocation; value investor; goodwill/assets; operating margin; CEO role



**Citation:** Athanassakos, George. 2024. Do CEOs Identified as Value Investors Outperform Those Who Are Not? *Journal of Risk and Financial Management* 17: 227. <https://doi.org/10.3390/jrfm17060227>

Academic Editor: Ștefan Cristian Gherghina

Received: 1 March 2024

Revised: 22 May 2024

Accepted: 25 May 2024

Published: 29 May 2024



**Copyright:** © 2024 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

CEOs perform two roles: one is that of an operator and the other is that of a capital allocator. Most CEOs focus on managing operations and tend to be good at that. They acquired the skill of managing operations through years of working in various functions within their organization, and they have risen through the ranks of their organization because they excelled in this role. Capital allocation, however, is a skill that most CEOs do not learn on their way up and so they become CEOs without mastering capital allocation (see Berkshire Hathaway annual reports (Berkshire Hathaway 1987–1989), Griffin (2015, p. 140)). This, according to Mr. Buffett, “can create big problems for a business because the CEO will often not know how to make critical decisions that will maximize shareholder value” and “... it would be a terrible mistake if capital allocation were not the main talent of his successor” (see Stempel (2017)). In his book entitled “outsiders”, Thorndike (2012, p. xvi), refers to capital allocation as “a CEO's most important job”. Moreover, as Wurgler (2000) has shown, rapid asset growth is

associated with poor future stock returns, which is evidence that the average CEO is not a good asset allocator.

What exactly does it mean to be a good capital allocator? It means for the CEO to have the skills necessary to take the cash that the company generates and deploy it to the best value-maximizing opportunity for the company, be it buying another company, buying back shares, paying higher dividends, reinvesting within the company, etc. These are all investment decisions. In other words, the best CEOs are those who are good value creators, as well as good value seekers. To be a good value seeker, the CEO must be a good investor, and, more importantly, be a value investor. They must also share personality traits that value investors have, such as independent thinking, patience, discipline, and contrarianism. There is limited research on CEO personality and stock price performance. [Liu \(2019\)](#) finds that CEO conscientiousness (i.e., self-disciplined, systematic, organized) tends to be negatively associated with stock price crash risk. [Kim et al. \(2016\)](#) find that CEO overconfidence is positively related to stock price crash risk. Value investor CEOs are independent thinkers, contrarian, disciplined, and humble, traits that should lead to better long-term stock performance according to these studies.

To the best of our knowledge, there has been no finance academic study trying to examine the long-term performance of value investor CEOs (i.e., capital allocators) and compare it to the performance of those CEOs who are not good capital allocators. As a result, the aim of this study is to examine whether good asset allocation by a CEO leads to superior stock returns and, if so, how one might be able to identify CEOs that are good asset allocators.

The challenge is to be able to devise a metric to identify good capital allocators and separate them from those who are not. One can think of several ways of doing so. [Thorndike \(2012\)](#) suggested that one looks at the multiples, such as P/E or P/B, at which a company buys back its own shares or the multiples at which a company acquires the shares of another company in a merger transaction. In a similar vein, another approach would be to look at the P/E or P/B at which a CEO (an insider) buys shares on his own account in an insider trade. A combination of all the above would be even better. This is because we know that value investors prefer to invest in stocks that have low P/E or P/B (see [Athanasakos \(2011\)](#)). Moreover, value investing tends to outperform other styles of investing in the long run (see [Athanasakos \(2011\)](#); [Chan and Lakonishok \(2004\)](#); [Chan et al. \(1991\)](#); [Davis et al. \(2000\)](#); [Fama and French \(1992, 1993\)](#)). [Chowdhury et al. \(2016\)](#) find that CEOs earn abnormal returns from opportunistic trading that is motivated by their contrarian beliefs. [Piotroski and Roulstone \(2005\)](#) also find that insiders are contrarian, while [Gregory et al. \(2013\)](#) associate insiders' contrarian style (buying value stocks and selling glamour stocks) with earning abnormal returns. Nevertheless, there is plenty of evidence to indicate that stock buybacks peak (bottom) at the highest (lowest) point of the bull (bear) market and business cycle. [Lountzis \(2019, p. 11\)](#), in one of his newsletters, states “... during the most attractive period in 2008–2009, when prices were at the lowest, companies spent the least amount on buybacks, yet as stock prices continued to rise, buybacks rose, raising the question as to whether most buybacks were a prudent allocation of capital”.

In this paper, we will examine the ratio of goodwill to assets in conjunction with operating margins as a composite metric to separate good asset allocators from those who are not. Mergers and acquisitions (M&A) represent by far the largest use of capital over time by a CEO; that is why, in this paper, we focus on capital allocation CEO skills in relation to M&As (see [Mauboussin and Callahan \(2014\)](#)).

Merger-related goodwill was amortized until 2000. Starting in 2001, merger goodwill was no longer amortized. Instead, goodwill is now tested for impairment and, if found to be impaired, it is written down. What this means is that the goodwill we observe on the company balance sheet, since 2001, is of much better quality and information. High goodwill/assets implies that goodwill had been tested and found to have value. Low goodwill/assets, on the other hand, implies one of two things: either that companies had not been involved in mergers (i.e., only organic growth) or that they had overpaid for a

target and consequently goodwill was written off. That is why in our study we covered the period starting in 2001 and we used U.S. data, which enabled us to have a larger sample. We examined individual company goodwill/assets to further justify our thesis that high goodwill/assets reflects a value CEO. If goodwill to assets is comparatively high, these companies will remain in our value CEO sample. They will be removed from the value CEO sample if goodwill to assets is comparatively low. At the same time, CEOs who did not overpay for an acquisition are frugal, as value investors are, and mindful of controlling costs and avoiding keeping excess labor or assets on the balance sheet. This will ensure that operating margins will remain high. We recognize that others may also have an input in a merger transaction, such as board members, CFOs, and even shareholders. However, it is the CEO who is the main driver of the deal and responsible for making the merger work.

A good example is General Electric. As [Katsenelson \(2018\)](#) states in one of his newsletters “if you examine why GE has been a poor investment over the last two decades, you’ll find that it’s because of poor asset allocation. They lost a lot of value in destroying acquisitions—they bought business at high prices, relied on false or unfulfilled synergies, and sold (divested) at reasonable (or low) prices”.

That is why we examined companies with high goodwill/assets in conjunction with high operating margins, with the combination of both reflecting a value CEO. Companies with high goodwill to assets and high operating margins must be those that are managed by good asset allocators, whereas companies with high (or low) goodwill to assets and low operating margins must be those that are not managed by good asset allocators. It is possible that companies with high goodwill/assets and a high operating margin may have other valuable investment opportunities that are driving the results. We will try to address this issue with industry and time fixed effects in the regression analysis carried out in the empirical part of the paper. Regression analysis will also allow us to examine whether we can anticipate a company’s future stock performance by identifying companies whose CEOs allocate assets like value investors.

We find that companies managed by good capital allocator (i.e., value investor) CEOs outperform companies that are not managed by value investor CEOs. For example, between May 2001 and April 2019, on average, the portfolio of good asset allocator companies outperforms the portfolio of bad asset allocator companies by 36 per cent in terms of cumulative three-year returns. When buying other businesses, value investor CEOs ensure that their consolidated operating margins remain high, as opposed to other firms managed by poor asset allocator CEOs who buy businesses that bring down operating margins, either because they overpay or due to an inability to realize expected synergies. Buying businesses cheaply allows value investor CEOs to create value for their shareholders. This is a very interesting result considering evidence that value-investing portfolios have performed poorly between 2012 and 2019 as opposed to earlier years (see [Fama and French \(2020\)](#)).

We also find that if a company had goodwill-to-assets of between 30 and 52 per cent (+/– one standard deviation from the mean), and operating margin of between 15 and 28 per cent (+/– one standard deviation from the mean), then the firm would most likely be at the top quartile in terms of stock return performance over at least the next three years. These are the companies an investor should buy and hold for the long run, as these are indeed stocks Warren Buffett would like. The regression analysis carried out in the paper added to the evidence that we can anticipate a company’s future stock performance by identifying companies whose CEOs allocate assets like value investors.

Finally, the paper’s main findings are corroborated by out-of-sample tests (May 2019–April 2023) and results obtained by [Cunningham \(2020a, 2020b\)](#), who examined a similar question but from a different angle.

The rest of the paper is structured as follows. Section 2 reviews the literature and forms expectations; Section 3 discusses the data and the methodology; Sections 4 and 5 report the summary statistics and regression results, respectively; Section 6 examines out-of-sample evidence; while the last section concludes the paper and discusses the findings.

## 2. Literature Review and Formation of Expectations

To the best of our knowledge, there are no academic studies examining the performance of good asset allocator CEOs and comparing it to the performance of CEOs who are not good asset allocators. Moreover, there have not been any previous studies that examined how asset allocation by CEOs, proxied by the combination of goodwill/assets and operating margins, can predict stock performance.

There is little reference in finance academic papers regarding the benefits of good asset allocation. Wurgler (2000), for example, has shown rapid asset growth is associated with poor future stock returns, which is *indirect* evidence that the average CEO is not a good asset allocator. Bandiera et al. (2020) examine what CEOs do and how differences in CEO behavior relate to differences in company performance. While they show that CEOs differ in their behavior along several dimensions, capital allocation was not one of them. Fahlenbrach (2009) examines founder and non-founder CEO firms and finds that founder CEO firms have higher stock market performance. Could it be because of better capital allocation? He does not come right out and say this, but what he finds is that founder-led CEO firms tend to undertake more acquisitions and invest more in R&D and capital expenditures, i.e., *indirect* evidence of better capital allocation.

Nevertheless, most of the discussion regarding asset (or capital) allocation has come primarily from practicing investors. Thorndike (2012, p. xvi), for example, refers to capital allocation as “a CEO’s most important job”. Katsenelson (2018) attributes the dismal performance of GE stock between 2000 and 2021 to poor asset allocation. Additionally, stock buybacks, which are supposed to be done at low PE ratios by companies, in fact, happen when PEs are at their highest level for the business cycle, again indicating that the average CEO is not a good asset allocator (see Lountzis (2019, p. 11), Mauboussin and Callahan (2024)).

On the other hand, several studies have examined the effect of the magnitude of a firm’s goodwill on a company’s stock performance. For example, Liu et al. (2019) found that high goodwill/sales have a negative effect of future stock performance, while Satt and Youssef (2017) found that high levels of goodwill lead to positive stock returns for large firms. Does firm size affect the effect of goodwill/assets on future stock performance and a CEO’s ability to be a good asset allocator? What if high goodwill/assets has to be combined with high operating margin to produce unambiguous results?

There is also little research on CEO personality and stock price performance. Liu (2019) finds that CEO conscientiousness (i.e., self-disciplined, systematic, organized) tends to be negatively associated with stock price crash risk. Kim et al. (2016) find that CEO overconfidence is positively related to stock price crash risk. Value investor CEOs (i.e., good asset allocators) are independent thinkers, contrarian, disciplined, and humble, traits that should lead to better long-term stock performance according to these studies (see Montier (2009)).

Given that investing is itself an act of asset allocation, parallels between value investing and CEOs’ asset allocation decisions are drawn to test the hypothesis that CEOs that allocate their companies’ assets in a value-investing style tend to outperform in the stock market those that do not. If a CEO is acting like a value investor, he/she will be buying companies cheaply in an M&A transaction, sustain high operating margins, and thus be able to create value for their shareholders. Such firms should outperform, on a stock return basis, those firms that have poor asset allocation exemplified by a high (or low) goodwill to assets ratio but low operating margins. The assumption here is that companies that are heavily involved in mergers and acquisitions will have high goodwill relative to their assets, as they are undertaking multiple acquisitions. However, these acquisitions would not come at the expense of the operating margins of the combined firms.

As such, we expect good asset allocator companies (companies with a high ratio of goodwill to assets and high operating margins) to outperform those companies that do not have good asset allocation (companies with a high (or low) ratio of goodwill to assets, but low operating margins).

### 3. Data and Methodology

The key question the paper is trying to answer is: does good asset allocation by a CEO lead to superior stock returns and, if so, how might one be able to identify CEOs that are good asset allocators? To answer the question, we calculate one-, two- and three-year cumulative total stock returns for good and bad asset allocator companies, as well as relate summary statistics of company stock market performance to the key metrics examined in the paper, which combine goodwill/assets and operating margins. We also carry out regression analysis, which allows us to examine whether we can anticipate a company's future stock performance by identifying companies whose CEOs allocate assets like value investors.

As indicated earlier, good asset allocator CEOs will be buying companies cheaply in an M&A transaction, sustain high operating margins, and thus be able to create value for their shareholders. Bad asset allocator CEOs are exemplified by companies that have a high (or low) goodwill to assets ratio, but low operating margins.

We employed US stock market data from the COMPUSTAT database for the period May 2001 to April 2019. Balance sheet and income statement data are for the period December 2000–December 2015. We excluded the years of the pandemic as the pandemic was a once-in-100-year event that impacted company performance in unexpected ways, and many times in ways unrelated to fundamentals and CEO abilities. The COVID-19-related economic crisis may also alter company asset allocation plans, making targets unachievable, thus losing their power and negatively affecting performance.

We included all NYSE, AMEX, and NASDAQ stocks that had a fiscal year end of December and reported their year-end financials by the end of the following April. We excluded closed-end funds, REITs, financials, and companies that reported no goodwill or companies that did not have a complete data set in terms of desired data, such as revenues, operating income, assets, and goodwill. We also excluded companies for which there was not enough data to calculate 1-, 2-, and 3-year cumulative total stock returns and penny stocks, that is, stocks priced at USD 1 or less.

We started with 21,666 firm–year observations belonging to 4031 unique companies. After all screens, we ended up with 17,331 firm–year observations belonging to 3266 unique companies. The 4-digit SIC classification code (obtained from Wharton Research Data Services, WRDS) of industries to which companies in this study belong and the number of observations per industry are shown in Table 1.

**Table 1.** The table reports the 4-digit SIC classification code (obtained from Wharton Research Data Services, WRDS) of industries to which companies in this study belong and the number of observations per industry.

Industry Classification	Number of Observations
Agriculture, Forestry and Fishing	80
Construction	308
Manufacturing	8720
Mining	343
Other	20
Retail Trade	1322
Services	4225
Transportation, Communications, Electric Gas and Sanitary Services	1499
Wholesale Trade	814
Total	17,331



We calculated operating margin as operating profit/revenues and divided goodwill over assets for each stock to obtain the desired metrics for separating good asset allocators from those who are not. We also calculated one-, two-, and three-year cumulative total stock returns for good and bad asset allocator companies.

All companies in our sample had a December fiscal year end. We excluded firms with non-December year ends to ensure appropriate inter-temporal comparisons over our cross-section (see Givoly (1985)). At the end of April of each year ( $t$ ) between 2001 and 2016, companies were sorted by goodwill/assets into quartiles based on previous ( $t - 1$ ) fiscal year-end data. All companies in our sample had fiscal year ( $t - 1$ ) results reported by April of year ( $t$ ). Membership in a quartile changes from year to year. Quartile one (Q1) includes stocks in the bottom 25% of goodwill/assets, whereas quartile four (Q4) includes stocks in the top 25% of goodwill/assets. Next, for every year, the top and bottom goodwill/assets quartiles were subdivided into quartiles based on operating margins (also sorted as at the end of April of year ( $t$ )). The first quartile (Q1) includes the stocks in the bottom 25% of operating margins, whereas the fourth quartile (Q4) includes stocks in the top 25% of operating margins. In other words, we double sort our sample per year by goodwill/assets and operating margins. One-, two-, and three-year cumulative annual total returns were then calculated from May of year ( $t$ ) to April of year ( $t + 1$ ), ( $t + 2$ ) and ( $t + 3$ ), respectively.

For each year, the returns of companies in the fourth quartile of goodwill to assets (Q4GWA) and fourth quartile of operating margins (Q4OM) were compared with the returns of companies in the fourth quartile of goodwill to assets (Q4GWA) and first quartile of operating margins (Q1OM). Similarly, the returns of companies in the first quartile of goodwill to assets (Q1GWA) and first quartile of operating margins (Q1OM) were compared with the returns of companies in the first quartile of goodwill to assets (Q1GWA) and fourth quartile of operating margins (Q4OM).

To examine whether OM is more important than GWA in driving the relationship between stock returns, whether the results are driven by other characteristics that are different between groups, and whether companies with high GWA and high OM have other valuable investment opportunities (which are industry specific), and to guard against endogeneity bias in our tests, we use lagged values of the independent variables, and so we regressed one-year stock returns at time ( $t$ ) against several variables of interest (at time ( $t - 1$ )), as independent variables, and control for time and industry fixed effects. This is a pooled cross-sectional, time series OLS regression. In other words, the regression is:

$$R_{j(t)} = a + b \times GWA_{(t-1)} + c \times OM_{(t-1)} + d \times GWA_{(t-1)} \times OM_{(t-1)} + e_{j(t)} \quad (1)$$

where  $R_{j(t)}$  represents annual returns,  $GWA_{(t-1)}$  is goodwill/assets lagged by one year,  $OM_{(t-1)}$  is operating margin lagged by one year, and  $GWA_{(t-1)} \times OM_{(t-1)}$  is an interaction variable of the two key independent variables, which enables us to examine whether the relationship between  $R_{j(t)}$  and  $GWA_{(t-1)}$  changes depending on the value of  $OM_{(t-1)}$ .

#### 4. Summary Statistics

Table 2, Panel A, reports summary statistics for GWA, and OM for Q4GWA & Q4OM, Q4GWA & Q1OM, Q1GWA & Q4OM, and Q1GWA & Q1OM for May 2001 to April 2019. More interesting results, however, appear in Table 2, Panel B, which reports the one-, two-, and three-year cumulative returns for various combinations of GWA and OM. The three-year cumulative stock returns remained at high levels for Q4GWA & Q4OM and Q1GWA & Q4OM, and low levels for Q4GWA & Q1OM and Q1GWA & Q1OM.

**Table 2.** Summary statistics of various combinations of goodwill/assets (GWA) and operating margin (OM). The table also reports one-year, two-year, and three-year cumulative returns for various combinations of GWA and OM. Annual return data are for the period May 2001–April 2019. Balance sheet and income statement data are for the period December 2000–December 2015.

<b>Panel A: Summary Statistics for Various Combinations of Goodwill/Assets (GWA) and Operating Margin (OM).</b>									
	GW/Assets			Operating Margin					
	Mean	Median	STD	Mean	Median	STD			
Q4GWA & Q4OM	0.4103	0.3845	0.1101	0.2138	0.1923	0.065			
Q4GWA & Q1OM	0.4193	0.3887	0.1296	−0.0744	−0.0664	0.170			
Q1GWA & Q4OM	0.0195	0.0165	0.0151	0.2446	0.2166	0.095			
Q1GWA & Q1OM	0.0213	0.0197	0.0145	−0.0516	−0.0404	0.185			

  

<b>Panel B: Summary Statistics for One Year, Two Year and Three-Year Cumulative Returns for Various Combinations of GWA and OM</b>									
	One-Year Return			Two-Year Cumulative Return			Three-Year Cumulative Return		
	Mean	Median	STD	Mean	Median	STD	Mean	Median	STD
Q4GWA & Q4OM	0.0978	0.0781	0.336	0.2089	0.1662	0.452	0.3669	0.2736	0.613
Q4GWA & Q1OM	0.0229	−0.1135	0.582	−0.0410	−0.1940	0.602	0.0322	−0.1774	0.788
Q1GWA & Q4OM	0.0958	0.0734	0.355	0.2119	0.1468	0.503	0.3634	0.2475	0.638
Q1GWA & Q1OM	0.0809	−0.0459	0.591	0.01022	−0.1287	0.584	0.0285	−0.1588	0.705

Note: Fourth quartile of goodwill to assets (Q4GWA), fourth quartile operating margins (Q4OM), fourth quartile of goodwill to assets (Q4GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), fourth quartile of operating margins (Q4OM).

We also observe in Table 2, Panel B that while the high GWA and high OM stocks (Q4GWA & Q4OM) had the highest three-year cumulative returns among all combinations of GWA and OM, namely, mean/median 0.3669/0.2736, the low GWA and high OM stocks (Q1GWA & Q4OM) had three-year cumulative returns that were not far behind, namely, mean/median 0.3634/0.2475. That is, both the high GWA and low GWA stocks, on average, performed equally well, even though, as we had discussed earlier, we expected the first group of stocks to have better asset allocation. It is possible that the low GWA companies, having been involved in few acquisitions, operated quite efficiently and thus sustained high OM as they saved M&A related costs, such as costs of integration and costs of conflicts arising from culture differences.

On the other hand, stocks with low GWA and low OM (Q1GWA & Q1OM) and stocks with high GWA and low OM (Q4GWA & Q1OM) had inferior stock market performance to both previous groups of stocks, namely, mean/median 0.0285/−0.1588 and 0.0322/−0.1774, respectively. These could be companies with either poor asset allocation or both inferior asset allocation and poor operational management. These could also be companies with bad business or bad business models.

Could the higher stock returns of the Q4GWA & Q4OM (in Table 2, Panel B) be due to the small firm effect? Table 3 answers this question. It shows that the combination of Q4GWA & Q4OM has the largest revenues and assets compared to all other quartile combinations and, as a result, provides enough evidence to indicate that this finding cannot be driven by the well-known small firm effect (see Keim (1983)).

**Table 3.** The table reports mean firm asset and revenue values in USD (millions) of various combinations of portfolio quartiles based on GWA and OM sortings.

US\$ (Millions)	Assets	Revenues
Q4GWA & Q4OM	7953.5	4353.1
Q4GWA & Q1OM	450.1	368.5
Q1GWA & Q4OM	7228.4	4166.57
Q1GWA & Q1OM	1633.5	1658.6

Note: Fourth quartile of goodwill to assets (Q4GWA), fourth quartile operating margins (Q4OM), fourth quartile of goodwill to assets (Q4GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), fourth quartile of operating margins (Q4OM).

## 5. Regression Results

As we saw earlier in Table 2, Panel B, companies with high operating margins, irrespective of the size of goodwill/assets, produced higher one-, two-, and three-year cumulative stock returns than companies with low operating margins across all periods. Moreover, as shown in Table 4, the three-year cumulative stock returns between Q4GWA & Q4OM vs. Q1GWA & Q4OM (t-stat = 0.26) and Q4GWA & Q1OM vs. Q1GWA & Q1OM (t-stat = 0.24) are not statistically different from each other. The biggest (absolute) statistically significant return differences are for Q4GWA & Q4OM vs. Q4GWA & Q1OM (t-stat = 8.06), Q4GWA & Q4OM vs. Q1GWA & Q1OM (t-stat = 7.67), Q4GWA & Q1OM vs. Q1GWA & Q4OM (t-stat = −10.65), and Q1GWA & Q4OM vs. Q1GWA & Q1OM (t-stat = 11.69), that is, for companies that attain high or low GWA in combination with high OM.

**Table 4.** T-statistic testing the significance of the mean three-year cumulative return differences between various goodwill/assets (GWA) and operating margin (OM) combinations. Annual return data are for the period May 2001–April 2019. Balance sheet and income statement data are for the period December 2000–December 2015.

May 2001–April 2019	t-Statistic
Q4GWA & Q4OM vs. Q4GWA & Q1OM	(8.06) *
Q4GWA & Q4OM vs. Q1GWA & Q4OM	(0.16)
Q4GWA & Q4OM vs. Q1WA & Q1OM	(7.67) *
Q4GWA & Q1OM vs. Q1GWA & Q4OM	(−10.65) *
Q4GWA & Q1OM vs. Q1GWA & Q1OM	(0.24)
Q1GWA & Q4OM vs. Q1GWA & Q1OM	(11.69) *

Note: Fourth quartile of goodwill to assets (Q4GWA), fourth quartile operating margins (Q4OM), fourth quartile of goodwill to assets (Q4GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), fourth quartile of operating margins (Q4OM). \* Signifies 1% level of significance.

These findings raise the question: could OM rather than GWA be driving the relationship between stock returns and various combinations of GWA and OM documented in Table 2, Panel B? Moreover, could the results be driven by other characteristics that are different between groups? Or is it possible that companies with high GWA and high OM have other valuable investment opportunities (which are industry specific)<sup>1</sup> that are driving the results? To address these questions, we ran regression (1), which regressed one-year stock returns against several variables of interest, as independent variables, and control for time and industry fixed effects. Possible endogeneity bias in our test is addressed by using lagged values of the independent variables (see Equation (1)). This is a pooled cross-sectional, time series OLS regression. Results are reported in Table 5. In this table, Newey–West heteroskedastic and autocorrelation robust t-statistics are reported in brackets under the coefficient estimates.



**Table 5.** Regression results (coefficients) from regressing one year stock returns  $R_j(t)$  at time (t) for the period May 2001–April 2019 against goodwill/assets lagged by one year ( $GWA_{(t-1)}$ ), operating margin lagged by one year ( $OM_{(t-1)}$ ), and an interaction variable  $GWA_{(t-1)} \times OM_{(t-1)}$  as shown in regression (1) below. Regressions control for time and industry fixed effects.

Dependent Variable	Intercept	Goodwill/Assets ( $GWA_{(t-1)}$ )	Operating Margin ( $OM_{(t-1)}$ )	GWA × OM ( $GWA_{(t-1)} \times OM_{(t-1)}$ )	R-Squared
<b>Panel A</b>					
One-year stock returns at time (t)	0.1060	−0.0235	−0.0024	0.0060	0.04
(t-stat)	(2.05) **	(−1.24)	(−4.27) *	(3.61) *	

Note: Newey–West heteroskedastic and autocorrelation robust t-statistics are shown in brackets under the coefficient estimates. \*, \*\* Signify 1% and 5% levels of significance, respectively.

Table 5 reports regression results from regressing the one-year stock returns at time (t) against  $GWA_{(t-1)}$ ,  $OM_{(t-1)}$ , and an interaction term of  $GWA_{(t-1)} \times OM_{(t-1)}$ . We observe that the interaction variable is positive and statistically significant (t-stat = 3.61), while the only other variable that is statistically significant is OM but with a negative coefficient (t-stat = −4.27). The higher the product between GWA and OM, the better the returns (i.e., as per the interaction coefficient of +0.006). This explains why Q4GWA & Q4OM gives the best results, while Q1GWA & Q1OM gives the worst results. However, it cannot explain why Q4GWA & Q1OM gives poor results, whereas Q1GWA & Q4OM gives very good results. This can be explained by the negative coefficient of OM in the equation. The implication of this is that while companies with high/low GWA and high OM achieve highly positive future stock returns, the benefit is coming more from high GWA than high OM. Notice that the total benefit from high GWA is 0.0060 (GWA non-significant), whereas the total benefit from high GWA and high OM is 0.0036 (i.e., 0.0060−0.0024). In other words, it is GWA that is the driving force behind the high returns of Q4GWA & Q4OM, not high OM.

It is true that the model  $R^2$  is only 4% and this may be a cause for concern. However, just because  $R^2$  is small does not mean that our model is bad, or its interpretation is worthless. In studies of stock return data predictability, such as this study, it is not possible to include all the relevant predictors to explain stock returns, which may lead to a lower than desired  $R^2$  value.

The findings in this study can be used to develop trading strategies given the predictability of the combination of Q4GWA or Q1GWA and Q4OM. For example, zero investment portfolios can be formed by buying the Q4GWA and Q4OM stocks and shorting the Q1GWA and Q1OM stocks. The cumulative total stock returns for such a strategy would have amounted to over 30% over the three-year period. A more careful and thorough analysis of such trading strategies, however, is left for future research.

## 6. Out-of-Sample Robustness Tests

### 6.1. Quality Investors and Quality Companies

Could we find corroborating out-of-sample evidence by examining a related study using data that is different but highly correlated with the data employed in this paper?

Cunningham (2020a, 2020b) has written extensively about quality (Buffett-type) shareholders, “those who see themselves as part and permanent owners of business, who load up, stick around and engage like owners”. His findings dovetail well with the findings of this study. Cunningham ranks 2070 companies based on their relative density of shareholders having long average holding periods and high concentration levels. Out of this study’s 167 good asset allocator US companies drawn out of sample in December 2019 (see Appendix A), 140 of them were also in Cunningham’s database of quality sharehold-

ers. This out-of-sample evidence provides further validation of our methodology and in-sample findings. Moreover, as one would expect, based on Cunningham's data and our findings, good asset allocator CEOs seem to attract high-quality shareholders. Future research will examine in more depth questions such as, do companies led by good asset allocator CEOs attract high quality shareholders, and is it true that high quality shareholders gravitate to those companies? Moreover, future research can also examine whether good asset allocator CEOs tend to prefer to work for companies that have high concentration of high-quality shareholders?

#### 6.2. Asset Allocators during the Pandemic Years (May 2019–April 2023)

The in-sample tests focused on years outside the pandemic, i.e., May 2019–April 2023. As indicated earlier, we excluded the years of the pandemic as the pandemic was a once-in-100-year event that impacted company performance in unexpected ways, and many times in ways unrelated to fundamentals and CEO abilities. The COVID-19-related economic crisis may also alter company asset allocation plans, making targets unachievable, thus losing their power and negatively affecting performance. However, could it be that challenging times, such as those of the pandemic years, provide the opportunity for excellent CEOs to shine, especially those who are good capital allocators and may be able to find many more undervalued investments to invest in? In this case we would expect to find stronger results in the out-of-sample period (May 2019–April 2023) compared with those from the in-sample period (May 2001–April 2019).

For these tests, we had 1872 firm-year observations with firms allocated in different industries in a similar fashion as was the case in the original sample. Moreover, as in the original sample, the combination of Q4GWA & Q4OM has the largest revenues and assets compared to all other GWA and OM quartile combinations.

Tables A1 and A2 in Appendix B replicate Tables 2 and 4, but with out of sample data. The results are qualitatively the same as in the original sample period. In Table A1, the combination Q4GWA & Q4OM had a mean/median three-year cumulative return of 0.382/0.388, while combination Q1GWA & Q4OM had a mean/median three-year cumulative return of 0.409/0.112. Unlike the original period where the former combination had the highest mean and median three-year cumulative return, in the pandemic-extended period, only the median of the former combination is the highest, while it is the later combination's mean that is the highest. Given, however, the small number of observations in the out-of-sample tests via a vis the in-sample number of observations (particularly for the three-year cumulative stock returns), the median findings may be more reliable. The other two combinations had negative mean and median three-year cumulative returns, reinforcing the findings of the original period.

Findings are consistent in Table A2. Given the smaller number of observations, this table reports both mean and median tests, putting more emphasis on the median tests. While Q4GWA & Q4OM and Q1GWA & Q4OM had about similar performance (t-stat = -0.24, chi-squared = 2.21), Q4GWA & Q4OM statistically outperformed Q4GWA & Q1OM (t-stat = 3.99, chi-squared = 23.7), and only in terms of the median in Q1GWA & Q1OM (t-stat = 0.85, chi-squared = 6.57). On the other hand, Q1GWA & Q4OM statistically outperformed Q4GWA & Q1OM (t-stat = -3.90, chi-squared = 18.78) and only in terms of the median in Q1GWA & Q1OM (t-stat = 0.93, chi-squared = 5.89). Finally, Q1GWA & Q1OM statistically outperformed Q4GWA & Q1OM (t-stat = -2.07, chi-squared = 5.15).

In summary, excluding the pandemic years from the original sample did not materially change the conclusions of the paper. The pandemic was a non-event as far as good vs. bad capital allocators are concerned. As result, the hypothesis that we would expect to find stronger results in the May 2019–April 2023 period is not supported by the evidence.

## 7. Conclusions and Discussion of Findings

The aim of this study was to examine whether good asset allocation by a CEO leads to superior stock returns and, if so, how one might be able to identify CEOs that are good

asset allocators. Employing US data from May 2001 to April 2019, we find that companies managed by CEOs who allocate company cash flows according to a value-investing-style seem to outperform in the stock market companies that are not managed by value investor CEOs. Findings are corroborated by out-of-sample tests (May 2019–April 2023) and results obtained by [Cunningham \(2020a, 2020b\)](#), who examined a similar question but from a different angle. When buying other businesses, value investor CEOs ensure that their consolidated operating margins remain high, as opposed to other firms managed by poor asset allocator CEOs who buy businesses that bring down operating margins, either because they overpay or due to an inability to materialize expected synergies. Buying businesses cheaply allows value investor CEOs to create value for their shareholders. As [Mauboussin and Callahan \(2014\)](#) explain, 70% of mergers fail to deliver the expected synergies. They produce survey results that show that the most common challenges companies cite for the inability to realize the expected synergies are underestimation of costs and complexities and flat-out overestimation of synergies. Nevertheless, this does not preclude companies that do not make significant acquisitions and hence keep goodwill/assets low to maintain a high operating margin and create value for their shareholders. The CEOs of those companies can also be good asset allocators in the sense that the reason goodwill to assets is low is simply because they have been unable to find cheap enough companies to buy. This finding also highlights the importance not only of goodwill/assets, as an asset allocation metric, but also of operating margins, even in situations where companies have relatively low goodwill/assets.

To the best of our knowledge, this is the first academic study to proxy asset allocation by combining high goodwill to assets in conjunction with high operating margin, and compare the stock market performance of good asset allocator companies/CEOs with those companies/CEOs that are not good capital allocators. Our results align closer with the thoughts and conclusions reached by practicing investors than those of academics who have not directly tested, and so were unable to reach a conclusion that good asset allocation is what contributes to good stock market performance by a company/CEO.

The paper's findings can help CEOs understand the importance of focusing their attention on asset allocation and mastering the skill. This is because asset allocation matters, despite having received little attention from finance academics. CEOs must hone their skill in asset allocation and learn to buy back shares when their companies' PEs are depressed. They must apply the same logic when acquiring other companies. This will ensure their investments will not fail, and the company's operating margin will remain at a high level followed by a strong stock market performance for the company's stock. As a result, future research should focus more directly on CEO asset allocation skills asset by examining share buyback and merger and acquisition company strategies.

The paper's findings can also help investors anticipate a company's future stock performance by identifying companies whose CEOs allocate assets like value investors. For example, as [Table 2, Panel B](#) shows, if a company, on average, has GWA of 41.03%, and OM of 21.38%, it is likely this firm would be at the top quartile in terms of stock return performance over at least the next three years. At the same time, if a firm has a low average GWA (i.e., 1.95%), its operating margins, on average, should be 24.46%, if it wants to achieve a similar performance as firms with high GWA. These are the companies an investor should buy and hold for the long run, as these are stocks Warren Buffett would like. Regression analysis added to the evidence that we can anticipate a company's future stock performance by identifying companies whose CEOs allocate assets like value investors.

The paper's findings can also help investors in another way. For example, investors tend to be skeptical about companies with high goodwill/assets. The rule of thumb is to beware of companies carrying goodwill on their balance sheets that is more than 25% of assets. Based on our findings, this should not be a problem as long as the company's operating margin has remained high (i.e., around 20%) and is rising.

Finally, the future stock return predictability of high (low) GWA and high (low) OM firms, found in this study, can help an investor develop trading strategies that can lead to superior stock price performance by effectively taking long positions in (shorting) firms that are (not) managed by value investor CEOs. A thorough analysis of such trading strategies, however, is left for future research.

Our methodology focused on indirect tests of asset allocation, as it has been challenging to be able to devise the best metric to identify good capital allocators and separate them from those who are not. In the future, we would like to focus more directly on asset allocation. We can do this in several ways. We can examine, for example, the multiples, such as P/E or P/B, at which a company buys back its own shares or the multiples at which a company acquires the shares of another company in a merger transaction. In a similar vein, another approach would be to look at the P/E or P/B at which a CEO (an insider) buys shares on his own account in an insider trade. A combination of all the above would be even better. This is because we know that value investors prefer to invest in stocks that have low P/E or P/B (see Athanassakos (2011)).

**Funding:** Financial support from the Ben Graham Centre for Value Investing at the Ivey Business School is gratefully acknowledged. I would like to thank Tharaneetharan Dhanayarajan, Elliott Choi, Reyer Barel and Greg Lee for their capable research assistance. The paper has benefited from discussions with Felipe Restrepo.

**Data Availability Statement:** Data is contained within the article.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A

US companies in Q4 Goodwill/Assets and Q4 Operating Margin as at the end of 2019.

	Ticker	Company Name	Goodwill Over Assets	Operating Margin
1	VMC	VULCAN MATERIALS CO	29.74%	17.96%
2	MLM	MARTIN MARIETTA MATERIALS	23.66%	18.49%
3	FTDR	FRONTDOOR INC	40.08%	19.19%
4	KHC	KRAFT HEINZ CO	35.04%	20.38%
5	MDLZ	MONDELEZ INTERNATIONAL INC	32.30%	17.05%
6	HSY	HERSHEY CO	24.40%	21.49%
7	SMPL	SIMPLY GOOD FOODS COMPANY	41.29%	16.04%
8	MNST	MONSTER BEVERAGE CORP	25.86%	33.77%
9	MKC	MCCORMICK & CO INC	43.48%	18.30%
10	KDP	KEURIG DR PEPPER INC	40.74%	23.97%
11	MMM	3M CO	30.10%	21.99%
12	REYN	REYNOLDS CONSUMER PRODUCTS	45.17%	18.63%
13	LEE	LEE ENTERPRISES INC	45.08%	16.03%
14	DLX	DELUXE CORP	41.40%	15.80%
15	BCPC	BALCHEM CORP -CL B	45.34%	16.20%
16	MRK	MERCK & CO	23.02%	31.01%
17	PFE	PFIZER INC	35.02%	27.53%

	<b>Ticker</b>	<b>Company Name</b>	<b>Goodwill Over Assets</b>	<b>Operating Margin</b>
18	ZTS	ZOETIS INC	22.45%	33.67%
19	QDEL	QUIDEL CORP	37.00%	19.79%
20	VIVO	MERIDIAN BIOSCIENCE INC	27.42%	19.37%
21	AMGN	AMGEN INC	24.63%	41.61%
22	RGEN	REPLIGEN CORP	33.46%	18.53%
23	TECH	BIO-TECHNE CORP	38.88%	20.92%
24	ALXN	ALEXION PHARMACEUTICALS INC	28.71%	42.88%
25	CHD	CHURCH & DWIGHT INC	31.24%	19.52%
26	PG	PROCTER & GAMBLE CO	34.99%	21.52%
27	CLX	CLOROX CO/DE	31.10%	17.81%
28	CL	COLGATE-PALMOLIVE CO	23.33%	23.95%
29	WDFC	WD-40 CO	31.50%	19.46%
30	CCMP	CABOT MICROELECTRONICS CORP	31.39%	22.35%
31	CCF	CHASE CORP	26.62%	17.22%
32	SEE	SEALED AIR CORP	38.45%	15.51%
33	B	BARNES GROUP INC	34.07%	16.37%
34	HLIO	HELIOS TECHNOLOGIES INC	36.95%	17.05%
35	ENTG	ENTEGRIS INC	27.62%	18.57%
36	ITW	ILLINOIS TOOL WORKS	29.81%	24.11%
37	IEX	IDEX CORP	46.66%	24.26%
38	NDSN	NORDSON CORP	45.92%	22.16%
39	SGMS	SCIENTIFIC GAMES CORP	42.00%	17.15%
40	CSCO	CISCO SYSTEMS INC	34.29%	27.30%
41	ZBRA	ZEBRA TECHNOLOGIES CP -CL A	55.66%	16.28%
42	EVRI	EVERI HOLDINGS INC	41.84%	18.93%
43	MIDD	MIDDLEBY CORP	36.98%	17.66%
44	GNRC	GENERAC HOLDINGS INC	30.21%	16.88%
45	SWKS	SKYWORKS SOLUTIONS INC	24.58%	30.86%
46	ADI	ANALOG DEVICES	57.29%	30.15%
47	TXN	TEXAS INSTRUMENTS INC	24.21%	39.54%
48	LSCC	LATTICE SEMICONDUCTOR CORP	43.71%	15.68%
49	AVGO	BROADCOM INC	54.40%	20.06%
50	APH	AMPHENOL CORP	45.00%	19.80%
51	ALSN	ALLISON TRANSMISSION HLDGS	45.87%	32.88%
52	HEI	HEICO CORP	42.73%	22.36%
53	CW	CURTISS-WRIGHT CORP	30.99%	16.24%
54	TDG	TRANSDIGM GROUP INC	48.11%	40.12%
55	LHX	L3HARRIS TECHNOLOGIES INC	52.78%	17.01%



	<b>Ticker</b>	<b>Company Name</b>	<b>Goodwill Over Assets</b>	<b>Operating Margin</b>
56	RTN	RAYTHEON CO	43.05%	16.47%
57	FLIR	FLIR SYSTEMS INC	43.49%	16.88%
58	TDY	TELEDYNE TECHNOLOGIES INC	44.77%	15.62%
59	AME	AMETEK INC	41.11%	22.82%
60	EMR	EMERSON ELECTRIC CO	31.89%	16.98%
61	ROP	ROPER TECHNOLOGIES INC	59.72%	28.03%
62	DHR	DANAHER CORP	36.58%	18.77%
63	TMO	THERMO FISHER SCIENTIFIC INC	44.05%	16.68%
64	A	AGILENT TECHNOLOGIES INC	38.01%	20.05%
65	KLAC	KLA CORP	24.55%	31.29%
66	FTV	FORTIVE CORP	48.16%	16.48%
67	BDX	BECTON DICKINSON & CO	45.16%	16.74%
68	TFX	TELEFLEX INC	35.58%	19.84%
69	MSA	MSA SAFETY INC	25.10%	16.00%
70	SYK	STRYKER CORP	30.06%	23.14%
71	IART	INTEGRA LIFESCIENCES HOLDNGS	28.89%	17.19%
72	ZBH	ZIMMER BIOMET HOLDINGS INC	38.96%	18.90%
73	HOLX	HOLOGIC INC	39.80%	17.83%
74	ABT	ABBOTT LABORATORIES	34.17%	15.80%
75	BSX	BOSTON SCIENTIFIC CORP	33.29%	19.28%
76	RMD	RESMED INC	45.19%	24.39%
77	COO	COOPER COS INC (THE)	38.71%	22.10%
78	MPLX	MPLX LP	23.59%	37.69%
79	T	AT&T INC	26.51%	17.14%
80	CTL	CENTURYLINK INC	33.26%	16.87%
81	NUVR	NUVERA COMMUNICATIONS INC	30.76%	23.30%
82	Q1	QWEST CORP	44.57%	35.36%
83	OTEL	OTELCO INC	37.25%	23.65%
84	IHRT	IHEARTMEDIA INC	30.18%	17.17%
85	SIRI	SIRIUS XM HOLDINGS INC	34.47%	22.53%
86	TGNA	TEGNA INC	42.43%	25.96%
87	HMTV	HEMISPHERE MEDIA GROUP INC	33.95%	32.89%
88	5952B	UNIVISION COMMUNICATIONS INC	49.26%	28.88%
89	VIAB	VIACOM INC	50.09%	21.16%
90	CMCSA	COMCAST CORP	26.09%	19.56%
91	ATUS	ALTICE USA INC	23.87%	19.43%
92	DISCA	DISCOVERY INC	38.68%	28.60%

	<b>Ticker</b>	<b>Company Name</b>	<b>Goodwill Over Assets</b>	<b>Operating Margin</b>
93	MSGN	MSG NETWORKS INC	48.97%	42.99%
94	DIS	DISNEY (WALT) CO	41.39%	17.26%
95	VIAC	VIACOMCBS INC	34.29%	18.37%
96	CMCSA2	NBCUNIVERSAL MEDIA LLC	29.19%	19.48%
97	FE3	TOLEDO EDISON CO	37.58%	32.29%
98	SO7	SOUTHERN CO GAS	23.12%	23.34%
99	WM	WASTE MANAGEMENT INC	23.54%	18.14%
100	RSG	REPUBLIC SERVICES INC	51.29%	17.16%
101	PINC	PREMIER INC	34.27%	31.34%
102	IAA	IAA INC	25.16%	22.38%
103	WING	WINGSTOP INC	30.21%	21.49%
104	DNKN	DUNKIN' BRANDS GROUP INC	22.66%	31.59%
105	HLT	HILTON WORLDWIDE HOLDINGS	34.49%	16.71%
106	WH	WYNDHAM HOTELS & RESRTS	33.95%	23.59%
107	CSV	CARRIAGE SERVICES INC	35.25%	20.67%
108	LAMR1	LAMAR MEDIA CORP	32.11%	29.14%
109	SPGI	S&P GLOBAL INC	31.50%	48.34%
110	TRU	TRANSUNION	47.49%	23.04%
111	MCO	MOODY'S CORP	36.26%	43.30%
112	ROL	ROLLINS INC	32.84%	15.88%
113	URI	UNITED RENTALS INC	27.17%	24.02%
114	MINI	MOBILE MINI INC	33.70%	26.29%
115	ADBE	ADOBE INC	51.49%	29.25%
116	HQY	HEALTH EQUITY INC	52.01%	20.51%
117	CDK	CDK GLOBAL INC	45.23%	31.59%
118	MTCH	MATCH GROUP INC	51.14%	31.62%
119	TW	TRADEWEB MARKETS INC	52.89%	24.47%
120	FDS	FACTSET RESEARCH SYSTEMS INC	43.95%	30.52%
121	CTSH	COGNIZANT TECH SOLUTIONS	24.56%	16.76%
122	CSGP	COSTAR GROUP INC	48.83%	25.97%
123	EBAY	EBAY INC	28.35%	22.20%
124	STMP	STAMPS.COM INC	42.61%	16.36%
125	JCOM	J2 GLOBAL INC	46.58%	21.90%
126	AKAM	AKAMAI TECHNOLOGIES INC	22.84%	20.17%
127	MORN	MORNINGSTAR INC	43.83%	16.69%
128	TTGT	TECHTARGET INC	42.25%	16.97%
129	EBIX	EBIX INC	59.84%	26.05%
130	PRGS	PROGRESS SOFTWARE CORP	49.11%	17.46%
131	SNPS	SYNOPSYS INC	49.51%	16.34%

	<b>Ticker</b>	<b>Company Name</b>	<b>Goodwill Over Assets</b>	<b>Operating Margin</b>
132	INTU	INTUIT INC	26.34%	27.34%
133	SCPL	SCIPLAY CORP	31.38%	26.86%
134	CTXS	CITRIX SYSTEMS INC	40.98%	18.55%
135	SSNC	SS&C TECHNOLOGIES HLDGS INC	47.55%	19.74%
136	ANSS	ANSYS INC	49.87%	34.41%
137	SLP	SIMULATIONS PLUS INC	22.98%	31.35%
138	PCYG	PARK CITY GROUP INC	39.45%	18.85%
139	GSB	GLOBALSCAPE INC	36.78%	38.45%
140	ATVI	ACTIVISION BLIZZARD INC	49.20%	26.88%
141	JKHY	HENRY (JACK) & ASSOCIATES	30.53%	22.37%
142	FICO	FAIR ISAAC CORP	56.06%	21.86%
143	FFIV	F5 NETWORKS INC	31.42%	26.55%
144	FISV	FISERV INC	46.48%	16.40%
145	VRRM	VERRA MOBILITY CORP	41.50%	23.01%
146	GPN	GLOBAL PAYMENTS INC	53.42%	21.32%
147	WEX	WEX INC	29.42%	26.67%
148	FIS	FIDELITY NATIONAL INFO SVCS	62.34%	17.03%
149	BKI	BLACK KNIGHT INC	59.59%	25.06%
150	FLT	FLEETCOR TECHNOLOGIES INC	39.46%	46.74%
151	EVTC	EVERTEC INC	39.49%	29.65%
152	EEX	EMERALD HOLDING INC	66.61%	17.10%
153	NRC	NATIONAL RESEARCH CORP	52.34%	33.63%
154	MTN	VAIL RESORTS INC	36.33%	21.93%
155	SIX	SIX FLAGS ENTERTAINMENT CORP	22.88%	28.69%
156	DGX	QUEST DIAGNOSTICS INC	51.54%	15.79%
157	ATGE	ADTALEM GLOBAL EDUCATION INC	38.99%	17.40%
158	HON	HONEYWELL INTERNATIONAL INC	26.52%	20.15%
159	STZ	CONSTELLATION BRANDS	28.39%	32.35%
160	KMI	KINDER MORGAN INC	28.93%	29.74%
161	CX2	CLEVELAND ELECTRIC ILLUM	41.21%	27.10%
162	LSXMK	LIBERTY MEDIA SIRIUSXM GROUP	50.29%	21.21%
163	GWGH	GWG HOLDINGS INC	64.87%	38.20%
164	ZI	ZOOMINFO TECHNOLOGIES -REDH	61.90%	17.63%
165	NSCO	NESCO HOLDINGS INC	29.22%	16.78%
166	VNT	VONTIER CORP -REDH	40.65%	20.56%
167	VMW	VMWARE INC -CL A	35.48%	17.85%

**Appendix B**

**Table A1.** Summary statistics of various combinations of goodwill/assets (GWA) and operating margin (OM). The table also reports one-year, two-year, and three-year cumulative returns for various combinations of GWA and OM. Annual return data are for the period May 2019–April 2023. Balance sheet and income statement data are for the period December 2018–December 2019.

<b>Panel A: Summary Statistics for Various Combinations of Goodwill/Assets (GWA) and Operating Margin (OM).</b>									
	<b>GW/Assets</b>			<b>Operating Margin</b>					
	Mean	Median	STD	Mean	Median	STD			
Q4GWA & Q4OM	0.635	0.601	0.11	0.233	0.214	0.072			
Q4GWA & Q1OM	0.623	0.592	0.127	−0.195	−0.058	0.718			
Q1GWA & Q4OM	0.041	0.037	0.029	0.218	0.191	0.104			
Q1GWA & Q1OM	0.042	0.041	0.027	−0.438	−0.217	0.767			

  

<b>Panel B: Summary Statistics for One Year, Two Year and Three-Year Cumulative Returns for Various Combinations of GWA and OM</b>									
	<b>One Year Return</b>			<b>Two Year Cumulative Return</b>			<b>Three Year Cumulative Return</b>		
	Mean	Median	STD	Mean	Median	STD	Mean	Median	STD
Q4GWA & Q4OM	0.069	0.051	0.288	0.126	0.131	0.303	0.382	0.388	0.427
Q4GWA & Q1OM	−0.092	−0.214	0.612	−0.293	−0.531	0.753	−0.430	−0.803	0.871
Q1GWA & Q4OM	0.161	0.095	0.429	0.256	0.152	0.481	0.409	0.112	0.856
Q1GWA & Q1OM	−0.036	−0.212	0.635	−0.209	−0.372	0.614	−0.083	−0.263	0.733

Note: Fourth quartile of goodwill to assets (Q4GWA), fourth quartile operating margins (Q4OM), fourth quartile of goodwill to assets (Q4GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), fourth quartile of operating margins (Q4OM).

**Table A2.** T-statistic and chi-squared testing, respectively, the significance of the mean and median three-year cumulative return differences between various goodwill/assets (GWA) and operating margin (OM) combinations for the period May 2019–April 2023. Balance sheet and income statement data are for the period December 2018–December 2019.

	<b>2019–2022</b>	<b>t-Statistic</b>	<b>Chi-Squared</b>
Q4GWA & Q4OM vs. Q4GWA & Q1OM		(3.99) *	(23.70) *
Q4GWA & Q4OM vs. Q1GWA & Q4OM		(−0.24)	(2.21)
Q4GWA & Q4OM vs. Q1WA & Q1OM		(0.85)	(6.57) *
Q4GWA & Q1OM vs. Q1GWA & Q4OM		(−3.90) *	(18.78) *
Q4GWA & Q1OM vs. Q1GWA & Q1OM		(−2.07) **	(5.15) **
Q1GWA & Q4OM vs. Q1GWA & Q1OM		(0.93)	(5.89) **

\* Signifies 1% level of significance. \*\* Signifies 5% level of significance. Note: Fourth quartile of goodwill to assets (Q4GWA), fourth quartile operating margins (Q4OM), fourth quartile of goodwill to assets (Q4GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), first quartile of operating margins (Q1OM), first quartile of goodwill to assets (Q1GWA), fourth quartile of operating margins (Q4OM).

**Note**

<sup>1</sup> Mauboussin and Callahan (2014) ask the following question: what factors should we consider judging whether capital allocation creates value? They indicate that industry is a good starting point as companies that invest in industries with high return on investing capital (an important component of which is operating margin) and good growth prospects are more likely to create value, which will eventually reflected in the company’s stock price.

## References

- Athanassakos, George. 2011. Do Value Investors Add Value? *Journal of Investing* 20: 86–100. [CrossRef]
- Bandiera, Oriana, Andrea Prat, Stephen Hansen, and Rafaella Sadun. 2020. *CEO Behavior and Firm Performance*. Working Paper. New York: Columbia University.
- Berkshire Hathaway. 1987–1989. *Annual Meetings & Letters to Shareholders*. Omaha: Berkshire Hathaway.
- Chan, Louis K. C., and Josef Lakonishok. 2004. Value and Growth Investing: Review and Update. *Financial Analysts Journal* 60: 71–86. [CrossRef]
- Chan, Louis K. C., Yasushi Hamao, and Josef Lakonishok. 1991. Fundamentals and Stock Returns in Japan. *Journal of Finance* 46: 1739–64. [CrossRef]
- Chowdhury, Abu, Sabur Mollah, and Mir Zaman. 2016. *What Motivates CEO and CFO Trading—Contrarian Beliefs or Superior Information?* Working Paper. Cedar Falls: University of North Iowa.
- Cunningham, Lawrence A. 2020a. *Quality Shareholders: How the Best Managers Attract and Keep Them*. New York: Columbia University Press.
- Cunningham, Lawrence A. 2020b. The Case for Empowering Quality Shareholders, Brigham Young. *University Law Review* 20: 1–60. Available online: [https://papers.ssrn.com/abstract\\_id=3547482](https://papers.ssrn.com/abstract_id=3547482) (accessed on 27 April 2020).
- Davis, James, Eugene F. Fama, and Kenneth R. French. 2000. Characteristics, Covariance and Average Returns. *Journal of Finance* 55: 389–406. [CrossRef]
- Fahlenbrach, Rudiger. 2009. Founder-CEOs, Investment Decision and Stock Market Performance. *The Journal of Financial and Quantitative Analysis* 44: 439–66. [CrossRef]
- Fama, Eugene F., and Kenneth R. French. 1992. The Cross-Section of Expected Stock Returns. *Journal of Finance* 47: 427–65.
- Fama, Eugene F., and Kenneth R. French. 1993. Common Risk Factors in the Returns on Stocks and Bonds. *Journal of Financial Economics* 33: 3–56. [CrossRef]
- Fama, Eugene F., and Kenneth R. French. 2020. *The Value Premium*. Working Paper. Chicago: Fama-Miller Center for Research in Finance, University of Chicago.
- Givoly, David. 1985. The Formation of Earnings Expectations. *Accounting Review* 60: 372–86.
- Gregory, Alan, Rajesh Tharyan, and Ian Tonks. 2013. More than Just Contrarians: Insider Trading in Glamour and Value Firms. *European Financial Management* 19: 747–74. [CrossRef]
- Griffin, Tren. 2015. *Charlie Munger: The Complete Investor*. New York: Columbia Business School.
- Katsenelson, Vitaliy. 2018. Antifragility, Path Dependency and Value Investing (Part 1). *Newsletter, Investment Management Associates*, February 28.
- Keim, Donald. 1983. Size-related anomalies and stock return seasonality: Further empirical evidence. *Journal of Financial, Economics* 12: 13–32. [CrossRef]
- Kim, Jeong-Bon, Zheng Wang, and Liandong Zhang. 2016. CEO Overconfidence and Stock Price Crash Risk. *Contemporary Accounting Research* 33: 1720–49. [CrossRef]
- Liu, Ming. 2019. *CEO Personality Big Five and Stock Price Crash Risk*. Working Paper. Montreal: McGill University.
- Liu, Xin, Chengxi Yin, and Weinan Zheng. 2019. The Invisible Burden: Goodwill and the Cross-Section of Stock Returns. Available online: <https://ssrn.com/abstract=3292675> (accessed on 27 April 2020).
- Lountzis, Paul. 2019. *2018 Year-End Review*. New York: Lountzis Asset Management.
- Mauboussin, Michael J., and Dan Callahan. 2014. Capital Allocation: Evidence, Analytical Methods and Assessment Guidance, Credit Suisse. *Global Financial Strategies*, August 5.
- Mauboussin, Michael J., and Dan Callahan. 2024. Cost of Capital and Capital Allocation, Morgan Stanley Investment Management. *Consilient Observed*, February 28, pp. 1–21.
- Montier, James. 2009. *Value Investing: Tools and Techniques for Intelligent Investing*, 1st ed. Hoboken: Wiley.
- Piotroski, Joseph, and Darren Roulstone. 2005. Do Insider Trades Reflect both Contrarian Beliefs and Superior Knowledge about Future cash Flow Realizations. *Journal of Accounting and Economics* 39: 55–81. [CrossRef]
- Satt, Harit, and Chetioui Youssef. 2017. Does Goodwill improve firm performance? Evidence from the Mena region. *Risk Governance and Control: Financial Markets & Institutions* 7: 108–15. [CrossRef]
- Stempel, Jonathan. 2017. Buffett Faults Wells Fargo Laxity in Sales Scandal. *Globe Investor, Globe & Mail*, May 8, p. B8.
- Thorndike, William N., Jr. 2012. *Boston: Outsiders*. Boston: Harvard Business Review Press.
- Wurgler, Jeffrey. 2000. Financial Markets and the Allocation of Capital. *Journal of Financial Economics* 58: 187–214. [CrossRef]

**Disclaimer/Publisher’s Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.