JLG RESEARCH
Working Paper #100

Does the Wealth Profile of a Company Matter in DCF Analysis?

Valuation implications for investors and managers

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April 30, 2009

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Does the Wealth Profile of a Company Matter in DCF Analysis?

The stock market is commonly regarded as a forward discounting mechanism of future earnings and cash flows.[1] But does the market really reflect economic realities, and to what extent does the *profile* of a company regarding its fundamental ability to create wealth matter in the discounting process? The answers to these questions are important for investors and managers: In practice, investors and analysts assume that stock prices will eventually return to company fundamentals as measured by free cash flow and economic earnings. Likewise, corporate managers presume that their value-creating (positive NPV) investment decisions will be rewarded by higher stock price in their quest to create shareholder value. But suppose that the stock market does not adequately reflect economic earnings or that stock prices reflect economic realities for some company profiles but not for others; for example, companies with a high market value added (MVA) profile versus companies with relatively low (to possibly negative) value added profile.

In this study, we assess the prospective valuation relationship between MVA, a measure of the market's assessment of a company's value added, and EVA[2], a well-known measure of a company's economic earnings. We classify companies in the Stern Stewart Performance 1000 Universe in terms of whether they are in a Tier 1 wealth profile (Top 100 MVA-ranked companies), a Tier 5 wealth profile (Middle 100 MVA-ranked companies), or a Tier 10 wealth profile (Bottom 100 MVA-ranked companies). The idea of profiling companies by their fundamental ability to create shareholder value

is well established in the corporate finance and investment literature, as reflected in books written by Stewart (1991), Grant (1997, 2003), Fabozzi and Grant (2000), Abate and Grant (2001), and in investment management articles by Grant (1996), Yook and McCabe (2001), Abate, Grant, and Stewart (2004), and more recently, Zaima (2008). In our empirical valuation analysis, we assess the extent to which investors discount economic earnings for the market as a whole, and whether or not the wealth profile of a company matters in particular.

We find evidence that investors do in fact discount economic earnings for the market as measured by the universe of companies in the Stern Stewart Performance 1000. However, a closer inspection of the Performance Universe reveals that investors discount economic earnings only for the Tier 1 wealth profile consisting of Top 100 MVA-ranked companies. That is, we find no meaningful evidence that investors discount the economic earnings prospects for the Tier 5 wealth profile consisting of the Middle 100 MVA-ranked companies, or, the Tier 10 wealth profile consisting of the Bottom 100 MVA-ranked companies.[3] If correct, this suggests that the wealth profile of a company matters in discounted cash flow analysis, as the reliability of DCF analysis ranges from relatively high to low when companies are ranked by their fundamental ability to create shareholder value.

Moreover, our empirical analysis reveals that the MVA and discounted EVA relationship is robust for the Tier 1 wealth creators in a *one-step ahead* economic profit valuation, as compared with EVA valuation and growth models of longer duration. This latter finding has implications for the competitive nature of companies as it points to how long investors believe that wealth creating firms can actually rationalize capital. It also

points to the valuation importance of correctly assessing economic realities, even over the near-term, when modeling stock price.

In the next section, we provide an overview of the concepts of market value added (MVA), net present value (NPV), and economic value added (EVA), with an eye toward understanding how to measure these variables and how they relate in discounted cash flow (DCF) analysis. Investors and analysts with knowledge of MVA and EVA concepts may prefer to skip to the empirical analysis section that follows**.** In the empirical section, we begin with a look at the financial characteristics of companies operating in the Tier 1, Tier 5, and Tier 10 wealth profiles in the context of the contemporaneous relationship between MVA and EVA. We then examine the *prospective* relationship between MVA and EVA in the context of several EVA-based DCF models. Finally, we discuss the practical relevance of our prospective valuation analysis for investors and managers, and we suggest potential avenues of future research.

Market Value Added (MVA), Net Present Value (NPV), and Economic Earnings (EVA)

We use a measure called MVA in our assessment of a company's net present value (NPV). In turn, we use a metric called EVA in our assessment of prospective economic earnings. We begin with EVA, as it naturally leads to MVA, the market's efficient market assessment of NPV. In practice, there are two ways of defining EVA–an accounting way and a finance way.[4] From an accounting perspective, EVA is the difference between a firm's net operating profit after tax (NOPAT) and its weighted-average dollar cost of capital. As a result, EVA differs from traditional accounting measures of profit such as EBIT (earnings before interest and taxes), EBITDA (EBIT

plus depreciation and amortization), and net income because it *fully* accounts for the firm's overall capital costs.

The analytical difference between EVA and traditional accounting measures of profit (EBIT, EBITDA, and net income) is important to investors and managers because EVA is *net* of the direct cost of debt capital and the *indirect* cost of equity capital--as reflected in the shareholders' required return on common stock. In this context, EVA can be expressed as:

$$\text{EVA} = \text{NOPAT} - \$ \text{ Cost of Capital}$$

In this expression, the firm's dollar cost of capital is calculated by multiplying the cost of capital by the amount of invested capital according to:

$$\$ \text{ Cost of Capital} = \text{Cost of Capital } x \text{ Capital}$$

The cost of capital (commonly denoted as WACC) is obtained by taking a weighted average of the firm's after-tax cost of debt and equity capital as shown by:

$$\begin{aligned}\text{Cost of Capital} = {} & \text{Debt Weight } x \text{ After-Tax Debt Cost} \\ & + \text{Equity Weight } x \text{ Cost of Equity}\end{aligned}$$

EVA can also be expressed in spread form. In this context, EVA can be expressed as:

$$\begin{aligned}\text{EVA} &= \text{EVA spread } x \text{ Capital} \\ &= [\text{ROC} - \text{WACC}] \; x \text{ Capital}\end{aligned}$$

The EVA spread reveals that economic earnings are positive if the return on capital (ROC) is higher than the cost of capital. EVA equals zero when ROC equals the cost of capital, while EVA is negative when the return on capital falls short of the opportunity cost of capital. These EVA concepts are important as wealth creators generally have positive economic earnings, while wealth neutrals and wealth destroyers have zero-to-negative EVA, respectively.

From a finance perspective, EVA is defined in terms of how it relates to the firm's "market value added." In theory (market efficiency), MVA is equal to the *net present value* (NPV) of the firm's expected future EVA. Additionally, since MVA is equal to the market value of the firm less the "book capital" employed in the business, it can be shown that EVA is related to the *intrinsic value* of the firm and its outstanding debt and equity securities.[5] Stating the concept in formal terms yields the value-based relationship between market value added (MVA), net present value (NPV), and economic earnings (EVA) according to:

$$\text{MVA} = \text{Enterprise Value} - \text{Total Capital}$$

$$\text{MVA} = \text{NPV}$$
(*Assuming market efficiency*)

$$\text{MVA} = \text{PV of Expected Future EVA}$$

The prospective relationship between MVA and EVA has important implications for investors and managers: Companies with positive EVA momentum should see their stock (and bond) prices go up as the increasing profits net of the overall capital costs leads to a rise in the firm's market value added. In contrast, companies with return on capital that fall short of the cost of capital should see share price declines as the adverse

EVA outlook lowers the firm's net present value (NPV). Hence, by incorporating EVA analysis into the company valuation process, investors and analysts alike can enhance the pricing accuracy of their investment recommendations. Also, with MVA and EVA, corporate managers have an innovative financial tool for assessing whether their *planned* investment in real assets will in fact lead to wealth creation (via positive NPV) for the shareholders.

Financial Characteristics of Wealth Creators and Wealth Destroyers

The idea that investors might assess the wealth profile of companies somewhat differently is reflected in the empirical relationship between MVA and EVA observed in Grant (1996). Using recent data to illustrate this contention, Exhibit 1 shows the *contemporaneous* relationship between MVA and EVA at year-end 2006 for the 1000 companies reported in the Stern Stewart Performance Universe.[6] With an R-squared of 46%, the exhibit reveals that there exists a clear and present (statistically speaking) relationship between the firm's market value added and its currently announced economic value added. If this statistical relationship were consistent across all companies, then the MVA-EVA relationship would convey important information to investors and managers about the importance of economic profit improvement (or deterioration) on stock prices.

In this context, Exhibit 1 suggests that actions taken by corporate managers to improve the economic profit outlook should in fact be rewarded by higher stock price, due to the presumed higher market value added. In turn, the exhibit suggests that a reduction in the economic profit outlook would result in lower stock prices, due to the presumed decline in MVA. For investors, the exhibit suggests that buying the stocks of

companies with improving economic fundamentals and shorting the stocks of companies with economic profit (EVA) deterioration should on average generate positive alpha on their investment portfolios.

However, upon closer inspection, it appears that the positive relationship between MVA and EVA reported in Exhibit 1 is *not* reliably consistent when companies are ranked by their wealth creator profile. For example, Exhibits 1A, 1B, and 1C show the MVA and EVA relationship at year-end 2006 for the Tier 1 wealth profile (Top 100 MVA-ranked companies), the Tier 5 wealth profile (Middle 100 MVA-ranked companies), and the Tier 10 wealth profile (Bottom 100 MVA ranked companies). The exhibits reveal that the positive relationship between MVA and EVA observed in the overall Performance 1000 Universe is only evident in the Tier 1 wealth profile; as no such relationship between MVA and EVA is observed in the Tier 5 and Tier 10 wealth profiles.[7]

The contemporaneous MVA-EVA relationships for Tier 1, Tier 5, and Tier 10 wealth profiles are interesting in several respects. For the Tier 1 wealth profile, Exhibit 1A suggests that anything a wealth creator can do to improve the economic profit outlook via its planned investment decisions should lead to higher stock prices, as reflected in a higher MVA.[8] Moreover, Exhibit 1A shows that wealth creators can actually have negative EVA and still be considered value creators. With market efficiency, this implies that investors are optimistic about the ability of the wealth creators to generate economic value added for the future.

In contrast, the lack of any statistical relationship between MVA and EVA for the Tier 5 and Tier 10 wealth profiles suggests that a clear and present danger exists for

companies that cannot rationalize their capital–meaning firms that cannot consistently earn a return on capital that exceeds the opportunity cost of capital (WACC). This finding is problematic for corporate managers and investors. That is, Exhibit 1C provides no meaningful valuation support for managers who are working earnestly to restructure a company by turning a low-positive-to-negative EVA situation around. Specifically, there is no meaningful evidence in the cross section of companies in the Tier 10 wealth profile that management's positive restructuring efforts will be rewarded with a higher stock price (MVA).

Likewise, for investors, there is no statistical indication in Exhibit 1C (or 1B for that matter) that economic profit improvement for low MVA-ranked companies will result in higher stock valuations. Indeed, for low MVA-ranked companies (Tier 10 wealth profile) with currently positive EVA, the empirical evidence suggests that investors are pessimistic about the consistency of economic profit improvement for the future. As explained by Grant (1996), when a firm gets down in "wealth destroyer land", it becomes exceedingly difficult to turn the adverse MVA situation around as investors do not hear, or believe in, the positive steps that management may be taking to turn a negative EVA situation around.[9]

In numerical terms, Exhibit 1C reveals that some 58% of companies in the Tier 10 wealth profile at year-end 2006 actually had currently positive EVA. With linearity in the MVA-EVA relationship for Tier 1 wealth creators, but *no* such cross-sectional evidence for Tier 5 and Tier 10 companies, our finding suggests that EVA *is* a reliable valuation metric for wealth creators, but, unfortunately not so for middle-to-low MVA-ranked companies. For companies in Tier 10 with currently positive EVA, it seems fair to say

that their managerial steps toward improving the economic profit outlook have fallen on investors' deaf ears.[10] In other words, it appears that economic earnings are too unreliable for valuing companies in this wealth profile. Moreover, our regression analyses over the seven years covering 2000-2006 reveals the same pattern of linearity in the MVA and EVA relationship for companies in the Tier 1 wealth profile, but no such evidence for the middle-and-bottom MVA-ranked companies that populate the Tier 5 and Tier 10 wealth profiles.[11]

Discounted Cash Flow Analysis (Prospective Valuation)

In the above empirical analysis, we looked at the contemporaneous relationship between a company's market value added and its economic value added; MVA and EVA, respectively. However, we have not yet looked at MVA as a *prospective* valuation measure of *future* economic earnings.[12] We said that in principle, MVA is equal to its present value equivalent, namely, NPV. We further said that NPV, as a measure of intrinsic or fundamental value, is equal to the present value of expected future EVA. Hence, in order to have a better understanding of MVA as a measure of prospective valuation, we need to assess the empirical relationship between MVA and the present value of EVA.

The notion that MVA is the markets' discount assessment of future EVA raises some basic questions and some complex ones. In terms of basic questions, what is the "market", and what is the meaning of "discount"? The answer to the first question relates to the markets' consensus opinion of future economic prospects, while the answer to the second question refers to present value. But how are economic earnings measured and

how do they differ from traditional accounting measures of profit? We provided some insight before by noting that EVA measures profit over-and-above a company's capital costs, including the dollar cost of equity.

In terms of more complex questions, what is the nature of the present value relationship between corporate value and economic earnings? What is the length or duration of the economic profit period, and related to our study, does discounted cash flow valuation differ by a company's wealth profile? We will address these more fundamental questions in the context of several DCF models of economic profit valuation, and we will evaluate whether MVA as a prospective measure of economic earnings varies by the wealth profile of the underlying companies. In our discounted cash flow analysis, we will look at the empirical results obtained from alternative economic profit valuation models, including a *one-step-ahead* EVA model, a *three-step-ahead* EVA model, a *constant growth* EVA model, and a *variable-growth* (two stage) EVA valuation model.

In a *generalized* EVA valuation model, the firm's MVA (assuming market efficiency) can be expressed as:

$$MVA = NPV = \sum EVA(t)/(1+WACC)^t$$

$$(t = 1 \text{ to } \infty)$$

One of the benefits of using EVA valuation is that the model requires transparency about how long a company can rationalize capital–meaning how long a company can expect to earn a return on capital that exceeds the opportunity cost of

capital (WACC). Just how long a company can generate economic earnings relates to the competitive nature of companies, industries, sectors, and the economy as a whole. The most restrictive assumption on the general EVA valuation model (shown above) is that companies can only expected to rationalize capital for one year, including say the current year (as we examined before[13]) and the valuation of EVA in a *one-step ahead* forecast. With this assumption, the valuation of all other EVA values are irrelevant because future EVA is either zero (return on capital equals the cost of capital) or that the market does not value negative economic earnings. With a *one-step-ahead* EVA valuation, the generalized EVA valuation model simplifies to:

$$MVA(0) = EVA(1)/(1+ WACC)$$

Exhibit 2 presents the MVA valuation results at year-end 2003 obtained in a one-step-ahead EVA valuation analysis of all 1000 companies in the Performance Universe.[14] In our valuation analysis, we use the *actual* EVA instead of expected EVA. With an R-squared at 32%, the one-step-ahead EVA valuation reveals that the market does in fact discount future economic earnings.[15] On the other hand, some 68% of MVA variation is presumably due to (a) the difference between expected and actual EVA, (b) the valuation of economic earnings prospects for future years, (c) cost of capital variations, and (d) other company specific, industry, or market factors. Moreover, we realize that alternative valuation approaches such as multiples of assets or book value might yield improved results.

In contrast, Exhibits 2A, 2B, and 2C show the one-step-ahead EVA valuation results by the underlying wealth profiles, including the Top 100 MVA-ranked companies

(Tier 1), Middle 100 MVA-ranked companies (Tier 5), and Bottom 100 MVA-ranked companies (Tier 10). As with the contemporaneous results reported in Exhibit 1, the relationship between MVA and the *present value* of EVA is fundamentally related to the wealth profile of the firm. With an R-squared at 25%, Exhibit 2A suggests that market only discounts the economic prospects of companies operating in the Tier 1 wealth profile, as the R-squared values are nearly zero in the DCF relationships shown in Exhibits 2B and 2C for companies in the Tier 5 and Tier 10 wealth profiles, respectively. Moreover, our DCF results in the one-step-ahead EVA valuation (as well as other EVA valuation models that we explore) are consistent in the Performance 1000 Universe across other years, including 2000-2005.[16]

The above DCF findings are interesting in several respects: First, they show that the market only discounts the economic earnings prospects for companies that have a demonstrated record of creating shareholder value, namely the Tier 1 wealth creators. Second, the market places little-to-no value on the economic earnings prospects of companies that cannot consistently rationalize capital–presumably companies in the Tier 5 and Tier 10 wealth profiles. Moreover, consistent with Grant (1996), and more robust in a present value context, the market apparently does not hear, or believe in, the consistency of positive economic earnings for companies that lack a fundamental ability to create shareholder value. That being said, we realize that when valuing the stocks of asset laden and low (to negative) MVA companies, multiples of assets or book value may yield better results.

Three-step-ahead EVA Valuation

The one-step-ahead EVA valuation is helpful, but of course quite restrictive. We will now look at the MVA valuation results obtained from a *three-step-ahead* EVA valuation analysis. With three periods of economic profit, the firm's MVA (or NPV) can be expressed as:

$$MVA(0) = EVA(1)/(1+ WACC) + EVA(2)/(1+ WACC)^2 + EVA(3)/(1+ WACC)^3$$

Exhibit 3 presents the valuation results at year-end 2003 obtained from a three-step-ahead EVA valuation of all 1000 companies in the Performance Universe. With R-squared at 31%, the three-step-ahead EVA valuation reveals about the same present value relationship as that observed in the *one-step-ahead* EVA valuation analysis. To the extent that EVA makes a present value contribution to MVA, this implies that the firm's market value added is largely driven by next year's economic profit outlook, as opposed to the valuation of economic profits over the near term (meaning three-years in the three-step-ahead EVA valuation).

Exhibits 3A, 3B, and 3C show the three-step-ahead EVA valuation results by the underlying wealth profiles, including Top-100 MVA-ranked companies (Tier 1), Middle-100 MVA-ranked companies (Tier 5), and Bottom-100 MVA-ranked companies (Tier 10) in the Performance 1000 Universe. As with the one-step-ahead EVA valuation results reported in Exhibits 2A-2C, the present value relationship between MVA and EVA is related to the wealth profile (NPV status) of the firm. With R-squared at 24%, Exhibit 3A shows that the market only discounts the near-term economic prospects of the top wealth

creators (Tier 1), as the R-squared values are close to zero in the DCF relationships shown in Exhibits 3B and 3C for companies operating in the Tier 5 and Tier 10 wealth profiles, respectively. That being said, the MVA results for the reported wealth profiles are apparently driven by the markets' assessment of next year's economic profit outlook as opposed to economic forecasts over the near term. As with earlier exhibits, Exhibits 3B and 3C show a wide scatter of paired MVA- and present-value-of-EVA points, notably for Middle- and Bottom-100 MVA-ranked companies (Tiers 5 and 10). This is presumably due to the difficulty that investors and managers have in estimating economic earnings for marginal-to-perhaps-troubled firms over the near term, let alone the limitations inherent in estimating EVA reliably for risky challenged companies over the long term.

Constant growth EVA Valuation

In practice, investors and analysts use growth models in their valuation analysis. From an economic profit perspective, a growth model requires some assumption about the competitiveness of industries in the context of how long a company can (1) rationalize its existing asset base, and (2) how long it can grow capital in the presence of a positive EVA spread (or "franchise") for the future. If there are no real barriers to entry such that a company could not only earn positive economic earnings, but it could also grow those earnings forever, then one could apply the constant growth EVA valuation model. With *constant growth* in economic earnings, the firm's market value added can be expressed as:

$$MVA(0) = EVA(1)/(WACC - g_{EVA})$$

As with other DCF models, the constant growth EVA model only makes sense as long as the growth rate is *less than* the cost of capital. We examined the valuation results obtained from the constant growth model under three assumptions about economic profit growth; namely, zero EVA growth (perpetuity results not shown), EVA growth at the long run growth rate of the economy (results shown), and EVA growth at a rate less than WACC for individual companies (not shown).[17]

Exhibit 4 shows the MVA valuation results obtained for the Performance 1000 Universe at 2003, assuming long run EVA growth at the economy-wide rate (we used 3%). Again, it is interesting to see that the market discounts economic earnings; but with an R-square value of 26%, the constant growth model does *not* improve upon the 32% of MVA variation explained that we reported before in the one-step-ahead EVA valuation. In turn, Exhibits 4A, 4B, and 4C summarize the MVA valuation results obtained in the constant growth model by the wealth profiles. We again see that to the extent the market discounts economic profit, it does so only for companies operating in the Tier 1 wealth profile–as the market apparently hears, and believes in, the investment decisions (positive NPV) of companies with a consistent record of creating shareholder value. The widely divergent pricing results for the Tier 1 *versus* the Tier 5 and Tier 10 wealth profiles is supported by an R-square value of 19% for the Top-100 MVA ranked companies, versus R-square values of nearly zero in the constant growth model for Middle- and Bottom-100 MVA-ranked companies.

Two-stage EVA Growth Valuation

Given that most companies do not exhibit constant growth in earnings and cash flows, we looked at the regression results obtained from an analysis of MVA in a *two-stage* EVA valuation. With variable EVA growth, the firm's MVA can be expressed as the present value of economic earnings over a distinct forecast period (we use the three periods of *actual* EVA from before) *plus* the present value of the firm's terminal MVA value. In principle, the terminal value of MVA is equal to the present value of all future economic profit beyond the forecast period. In a two-stage EVA valuation model, where the forecast period is assumed to lasts three years, the firm's market value added can be expressed as:[18]

$$\begin{aligned} MVA(0) = {} & EVA(1)/(1+ WACC) + EVA(2)/(1+ WACC)^2 \\ & + EVA(3)/(1+ WACC)^3 \\ & + [EVA(4)/(WACC- g_{EVA})]*1/(1+ WACC)^3 \end{aligned}$$

Exhibit 5 shows the MVA valuation results obtained for the Performance 1000 Universe employing the *two-stage variable-growth* model, with terminal long-run growth in EVA at the economy rate (at 3%). We again see that the market discounts future economic earnings; but with an R-square now at 20%, the variable growth model does *not* improve upon the percentage of MVA variation explained that we reported before in simpler versions of economic profit valuation. In turn, Exhibits 5A, 5B, and 5C summarize the MVA valuation results obtained in the variable growth model by the firms' wealth profile. We again confirm that to the extent that the market discounts economic earnings, it does so only for the top wealth creators (Tier 1 wealth profile). This time, the divergent pricing relationship between Tier 1 and the Tier 5 and Tier 10

wealth profiles is supported by an R-square value of 15% for the Top-100 MVA ranked companies versus R-square values of nearly zero in the variable growth EVA model for Middle- and Bottom-100 MVA ranked companies.

Comparability with EVA "Style" Analysis

Before concluding, it is important to point out that we also looked at the prospective relationship between MVA and EVA according to the EVA "style" quadrants defined by Abate, Grant, and Stewart (2004). Without getting into all the details, Exhibit 6 summarizes the encouraging-yet-contrasting pricing results for positive EVA companies versus negative EVA companies. In this context, the exhibit reports the R-squared values for the *two* positive EVA-style quadrants, including the Q1 Under-investing companies and the Q2 Growth-creates-shareholder-value companies, as well as the corresponding R-squared values for the *two* negative EVA-style quadrants, namely, the Q3 Growth-destroys-shareholder-value companies and the Q4 Positive-restructuring companies.

With R-squared values of 0.80 and 0.48, respectively, Exhibit 6 shows a strong positive relationship between MVA and the present value of the *one-step-ahead* actual EVA for companies that populate the Q1 (Positive EVA, Under-investment) and Q2 (Positive EVA, Growth-creates-shareholder-value) quadrants. However, with R-squared values of nearly zero, *no* such present value relationship is observed for companies that populate the Q3 (Negative EVA, Growth-destroys-shareholder-value) and Q4 (Negative EVA, Restructuring) quadrants. Taken together, our valuation results suggest that the wealth profile as related to the EVA style of a company matters in discounted cash flow

analysis–particularly, for companies with a demonstrated record of creating shareholder value.[19]

Implications for investors and managers

Our finding that the wealth profile of a company matters in DCF analysis has important implications for investors and managers. Investors and analysts focusing their research efforts on wealth creators can be confident that their assessment of economic profit improvement will get noticed and "priced" in the capital market. Likewise, securities analysts can have a measure of confidence in their research recommendations for value creators due to the reliability of EVA. In contrast, our finding that a positive relationship between MVA and EVA does not apply to the middle and bottom wealth profiles suggests that investors and analysts have little reason to believe that an improving economic profit outlook for relatively low MVA-ranked companies will get noticed or priced in the marketplace. Moreover, our EVA valuation results–notably for wealth creators–show that the *one-step-ahead* economic profit outlook matters in DCF valuation, as the percentage of MVA variation explained by the present value of EVA was at least the same as that observed for other economic profit valuation models of longer duration.

For corporate managers, our results suggest that investment decisions that lead to higher economic earnings (positive NPV) will be get noticed and priced for value-creating companies–as the market apparently hears, and believes in the EVA growth opportunities pursed by wealth-creating firms. Unfortunately, for managers in middle- to low-MVA ranked firms, the market apparently does not hear, or believe in the organic growth or restructuring steps that the firm may be taking to improve or turn the EVA

situation around. For companies operating in the middle and bottom wealth profiles, our regression results suggest that the currently positive EVA momentum will not get priced in the marketplace. In such instances, management must make a concerted effort to improve the reliability of their economic profit pronouncements. Moreover, we recommend that managers in challenged companies with poor internal growth opportunities be cautious in employing last ditch efforts such as an acquisitions strategy to reverse a problematic EVA trend.[20]

Conclusion and future research

Our results confirm that the market discounts future economic earnings and that the wealth profile of a company matters in discounted cash flow analysis. Upon close inspection, we find that the market only discounts economic earnings for wealth creators, as opposed to the middle- to- low-MVA-ranked companies. Consistent with financial theory, this implies that only positive EVA–such as that reliably evident in the wealth creators–has intrinsic value, while relatively low (to negative) EVA–as present in low MVA-ranked companies–has little-to-no fundamental value. In a nutshell, wealth creators know how to rationalize capital, as they pursue positive NPV opportunities where the return on capital is *higher* than the cost of capital. On the other hand, low MVA ranked companies face pricing challenges because investors question the efficacy of their ability to create shareholder value.

We also found that DCF results were highest (R-squared) in a *one-step-ahead* economic profit valuation when compared to other EVA models of longer duration. Again though, the strength of the DCF relationship only applies to the top wealth creators (Tier 1 wealth profile), as we found no evidence in the Performance 1000 Universe[21] that

the market discounts the future economic prospects (even with positive EVA) of the companies operating in the Tier 5 and Tier 10 wealth profiles. While our valuation results are consistent over several recent years, we recommend that our DCF analysis be examined with other assumptions about the economic profit period (including a decay or "fade" period) and the cost of capital, and that the empirical analysis extend over a larger universe.

Along this line, we have noticed a positive relationship between MVA and EVA in recent years for bottom-ranked companies included in the Stern Stewart Performance Universe–that is, companies included in the list beyond the traditional Performance 1000–that actually have *negative* MVA as opposed to the low-positive MVA companies examined in the Tier 10 wealth profile. If consistent, this would lead to a valuation distinction between "challenged" companies with low positive MVA to truly troubled–yet easily identifiable potential turnaround companies–with negative MVA. Finally, it would be useful to see if other equity valuation approaches, such as multiples of assets or book value, could be employed to improve upon our DCF results–particularly for the stocks of asset laden companies with either low positive MVA or truly risky challenged companies with negative MVA.

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Exhibit 1

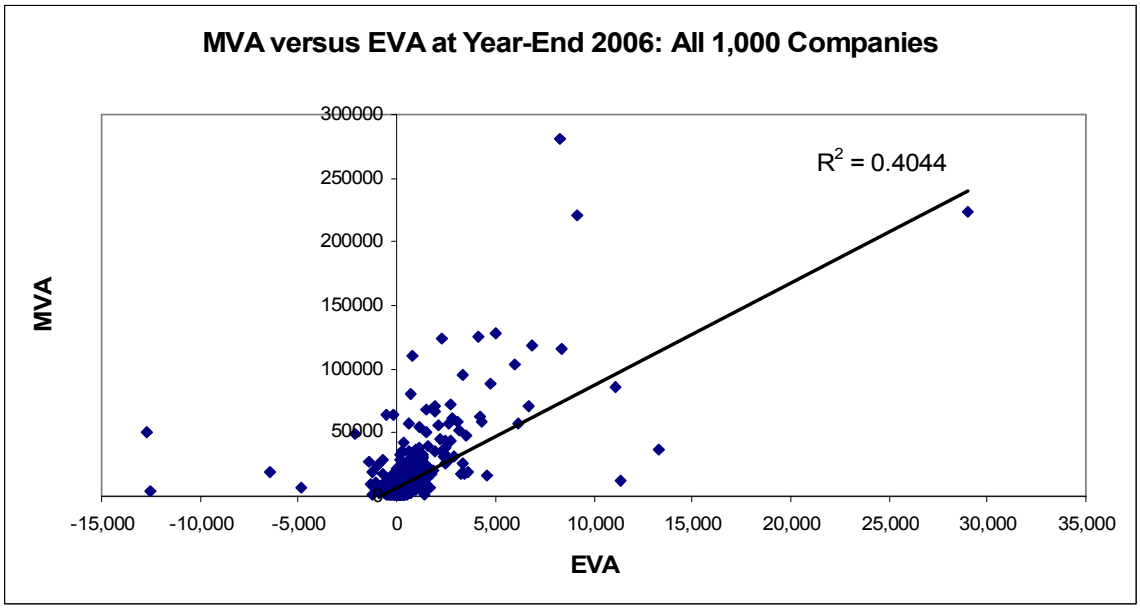
MVA versus EVA at Year-End 2006: All 1,000 Companies
MVA
EVA
R^2 = 0.4044
300000
250000
200000
150000
100000
50000
0
-15,000
-10,000
-5,000
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000

Exhibit 1A

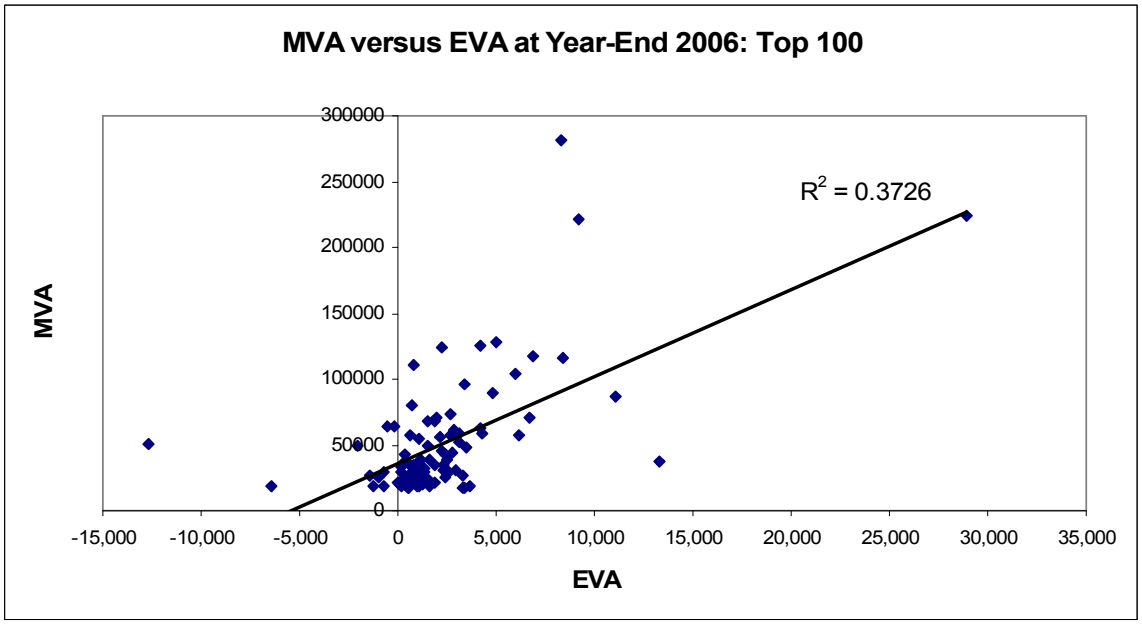
MVA versus EVA at Year-End 2006: Top 100
MVA
EVA
R^2 = 0.3726
300000
250000
200000
150000
100000
50000
0
-15,000
-10,000
-5,000
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000

Exhibit 1B

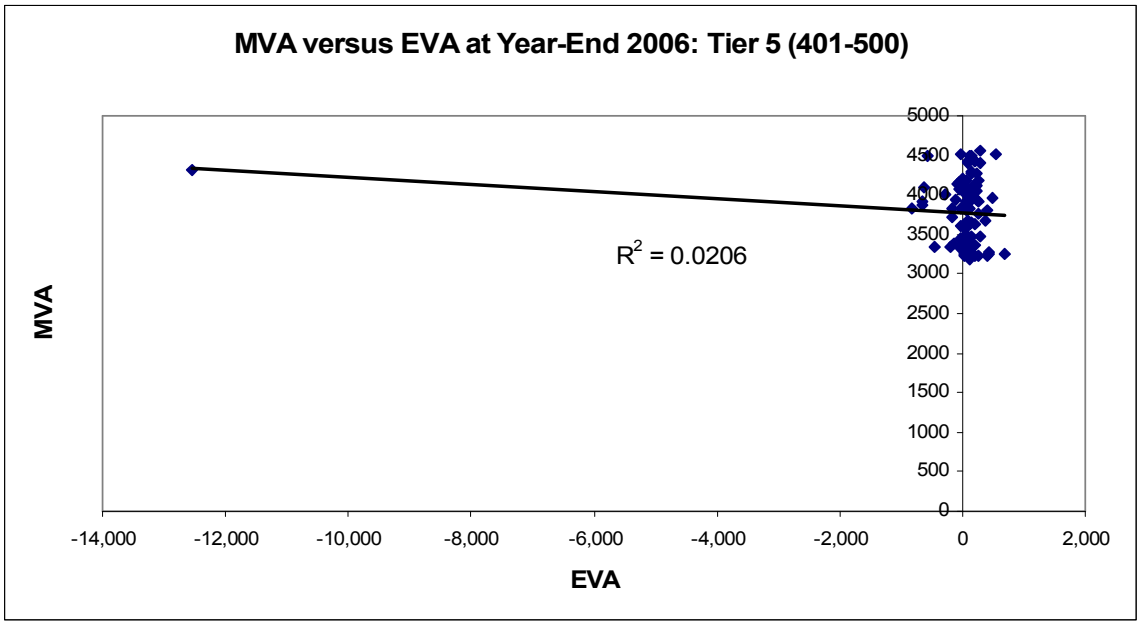
MVA versus EVA at Year-End 2006: Tier 5 (401-500)
MVA
EVA
R^2 = 0.0206
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000

Exhibit 1C

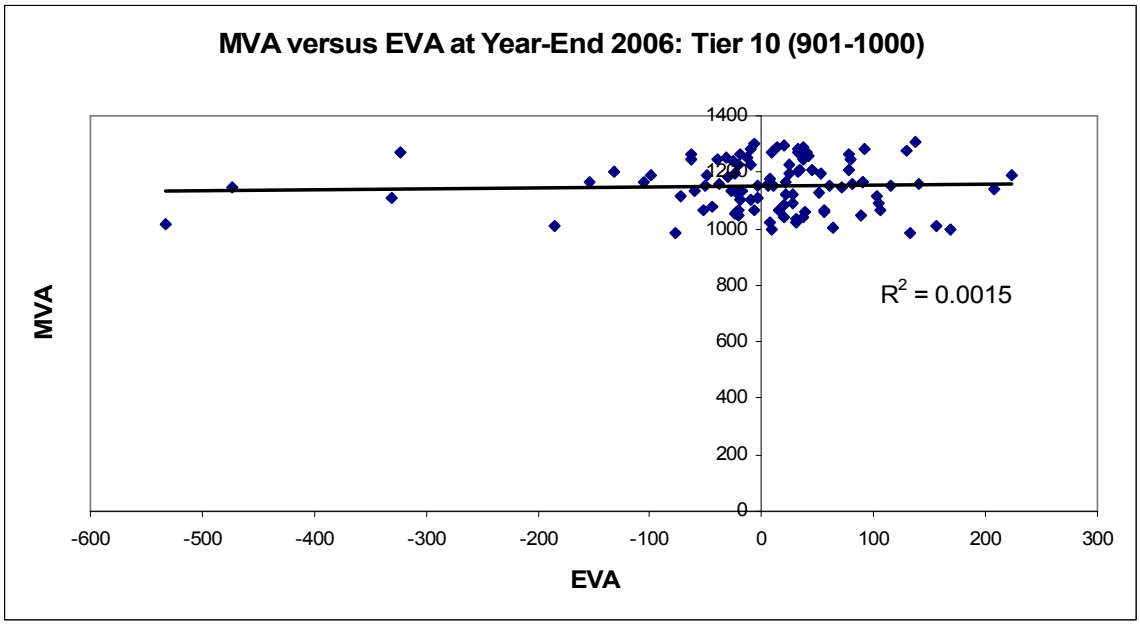
MVA versus EVA at Year-End 2006: Tier 10 (901-1000)
MVA
EVA
1400
1200
1000
800
600
400
200
0
-600
-500
-400
-300
-200
-100
0
100
200
300
R2 = 0.0015

Exhibit 2

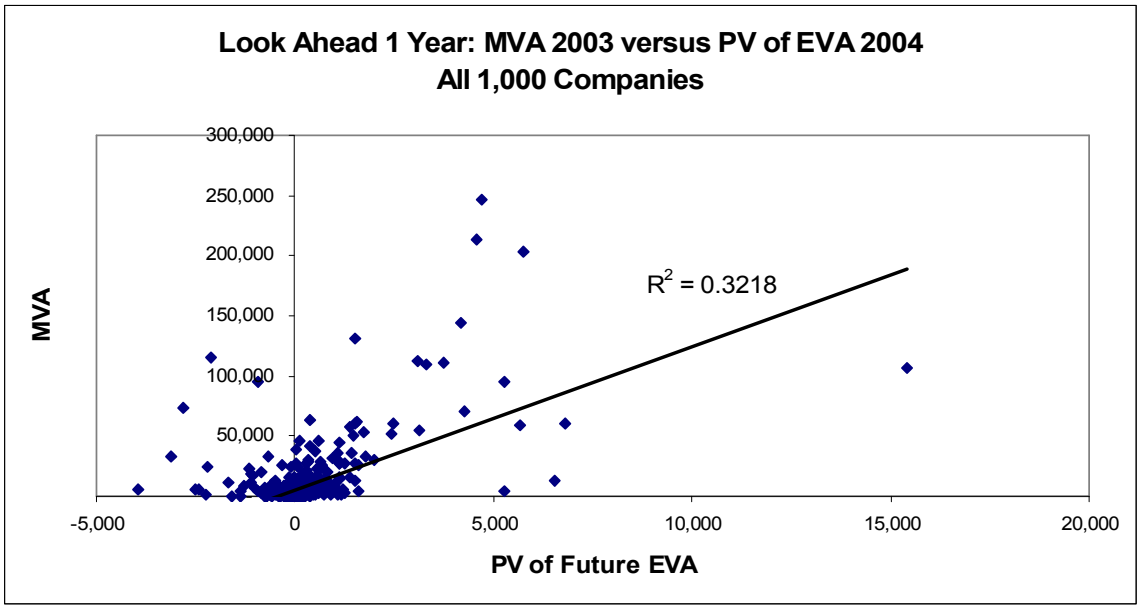
Look Ahead 1 Year: MVA 2003 versus PV of EVA 2004
All 1,000 Companies
MVA
300,000
250,000
200,000
150,000
100,000
50,000
R^2 = 0.3218
-5,000
0
5,000
10,000
15,000
20,000
PV of Future EVA

Exhibit 2A

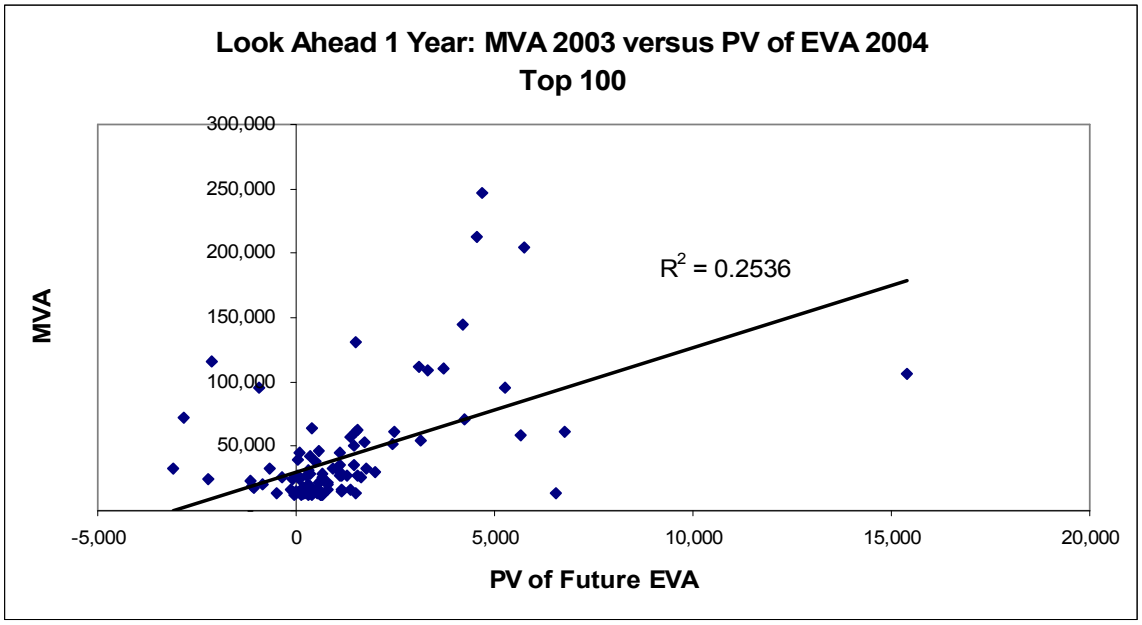
Look Ahead 1 Year: MVA 2003 versus PV of EVA 2004
Top 100
MVA
300,000
250,000
200,000
150,000
100,000
50,000
R2 = 0.2536
-5,000
0
5,000
10,000
15,000
20,000
PV of Future EVA

Exhibit 2B

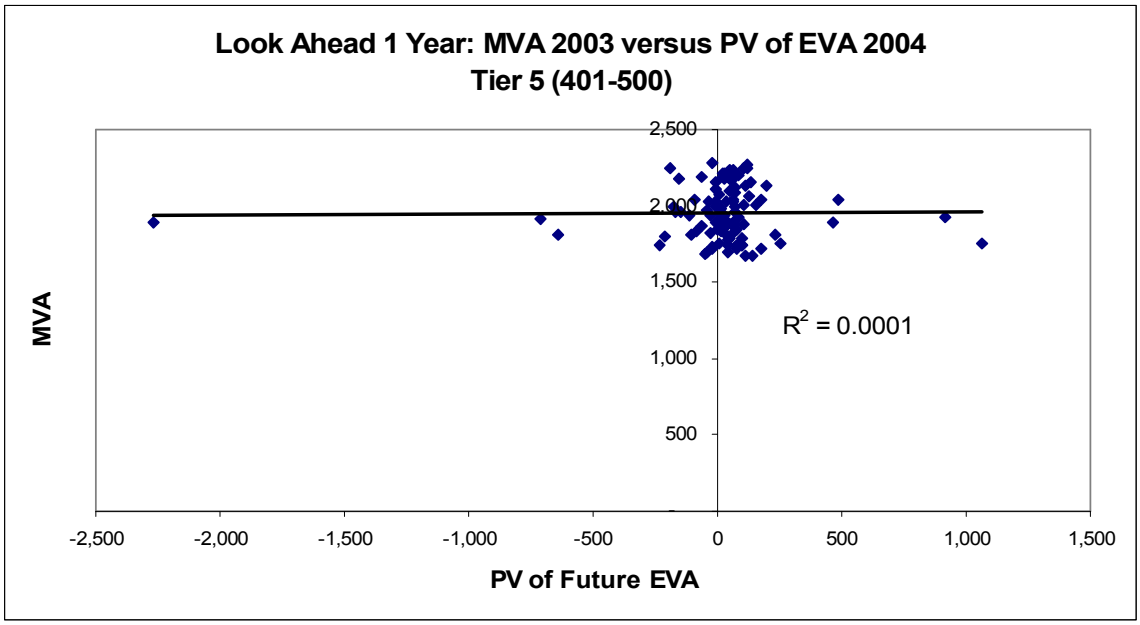
Look Ahead 1 Year: MVA 2003 versus PV of EVA 2004
Tier 5 (401-500)
MVA
2,500
2,000
1,500
1,000
500
R^2 = 0.0001
-2,500
-2,000
-1,500
-1,000
-500
0
500
1,000
1,500
PV of Future EVA

Exhibit 2C

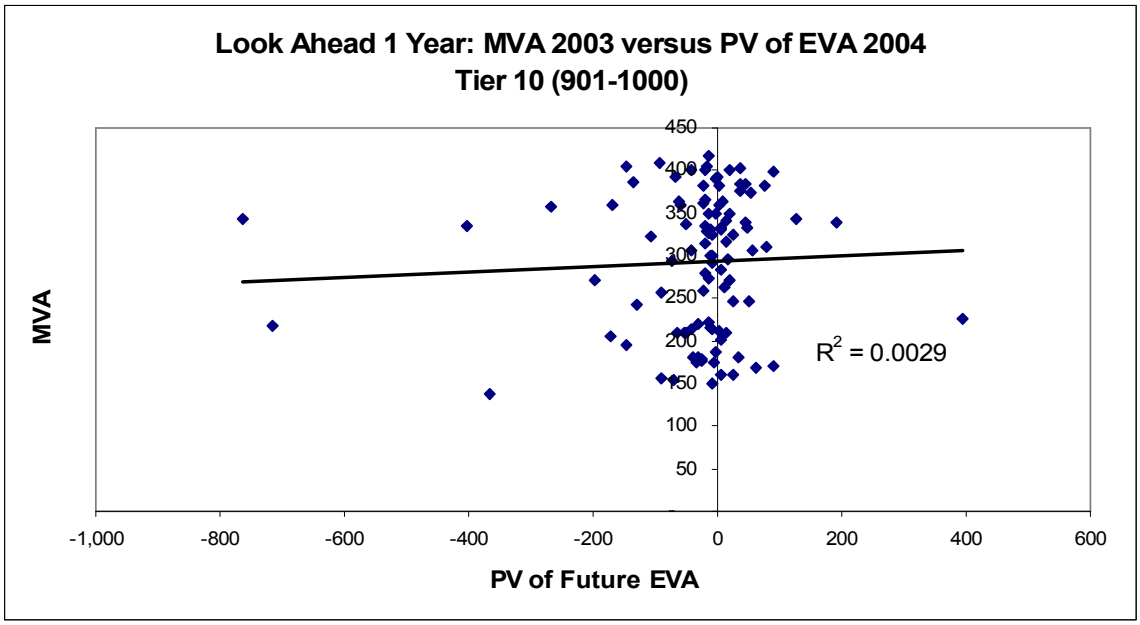
Look Ahead 1 Year: MVA 2003 versus PV of EVA 2004
Tier 10 (901-1000)
MVA
PV of Future EVA
R^2 = 0.0029
450
400
350
300
250
200
150
100
50
-1,000
-800
-600
-400
-200
0
200
400
600

Exhibit 3

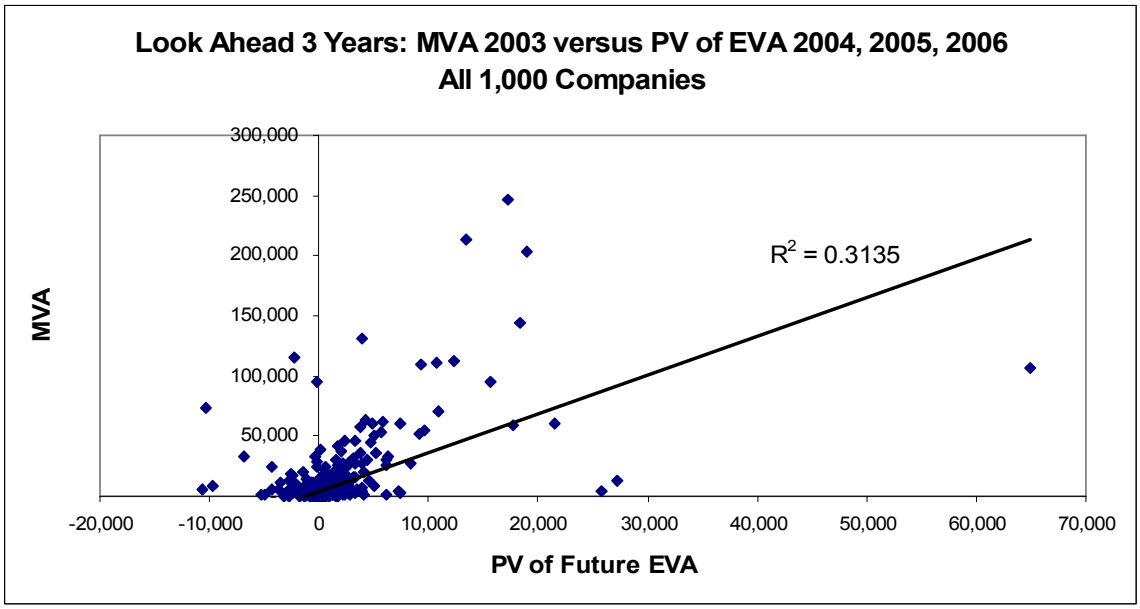
Look Ahead 3 Years: MVA 2003 versus PV of EVA 2004, 2005, 2006
All 1,000 Companies
MVA
300,000
250,000
200,000
150,000
100,000
50,000
R2 = 0.3135
-20,000
-10,000
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
PV of Future EVA

Exhibit 3A

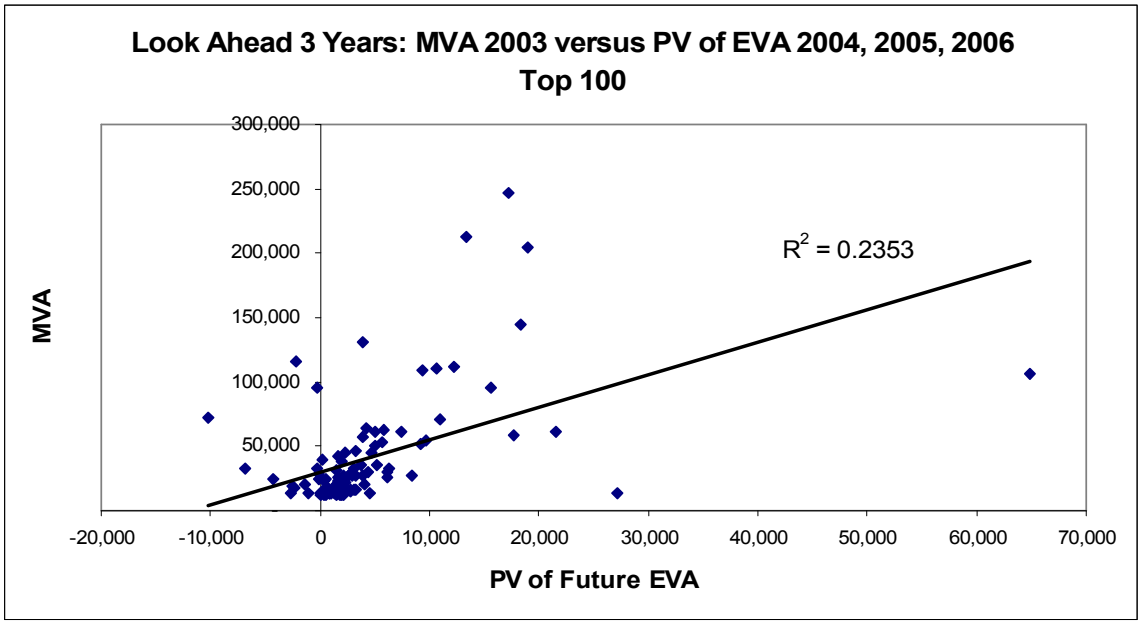
Look Ahead 3 Years: MVA 2003 versus PV of EVA 2004, 2005, 2006
Top 100
MVA
300,000
250,000
200,000
150,000
100,000
50,000
R^2 = 0.2353
-20,000
-10,000
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
PV of Future EVA

Exhibit 3B

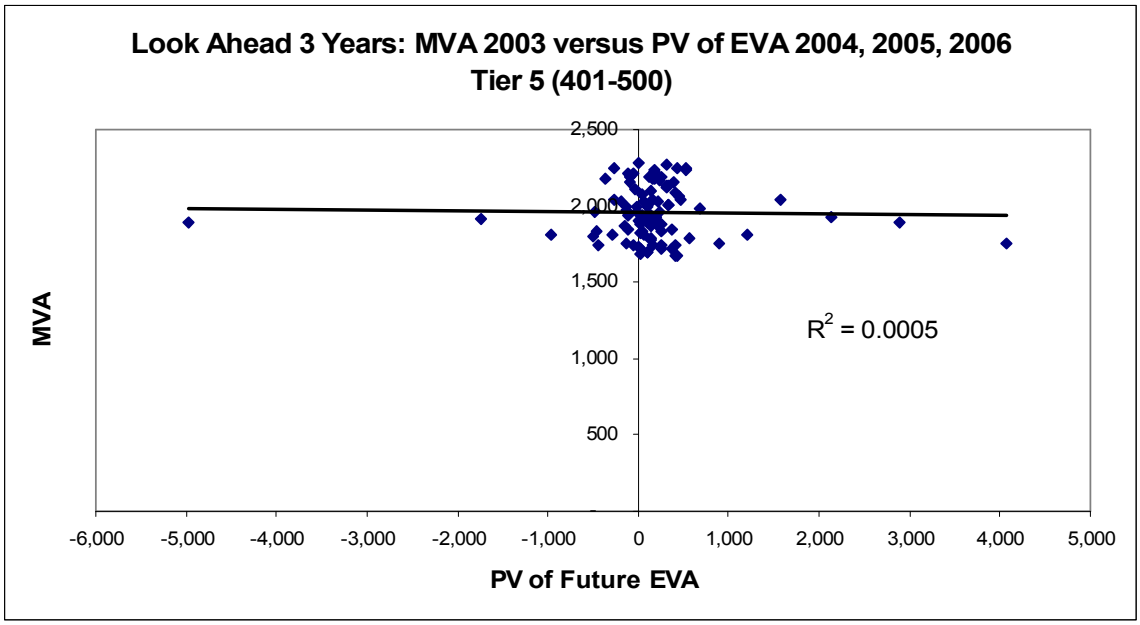
Look Ahead 3 Years: MVA 2003 versus PV of EVA 2004, 2005, 2006
Tier 5 (401-500)
MVA
2,500
2,000
1,500
1,000
500
R2 = 0.0005
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
PV of Future EVA

Exhibit 3C

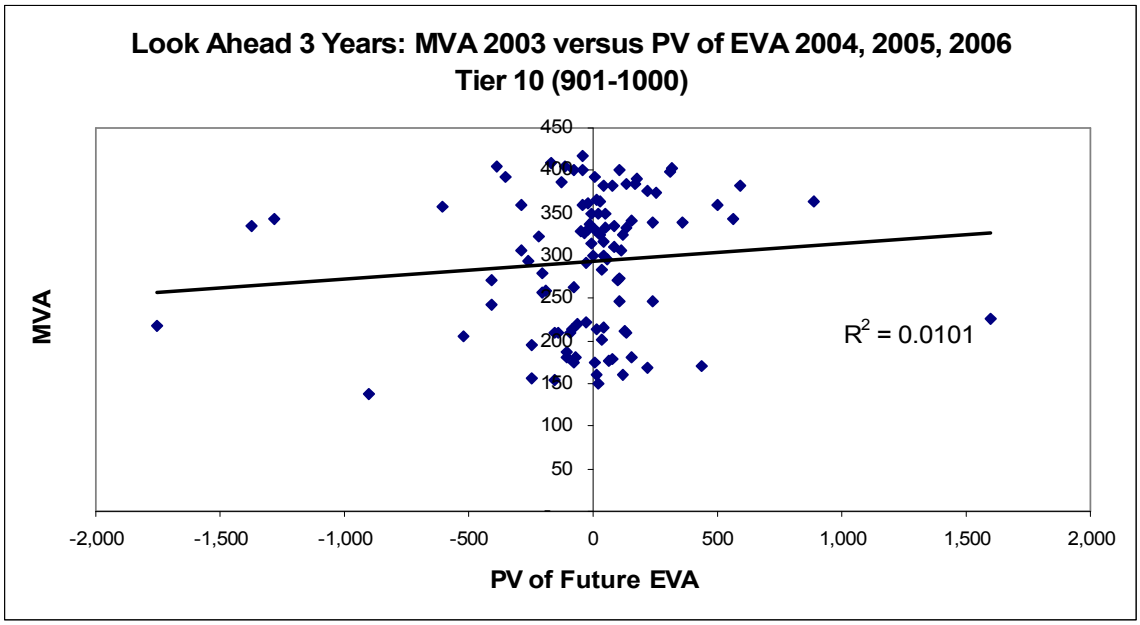
Look Ahead 3 Years: MVA 2003 versus PV of EVA 2004, 2005, 2006
Tier 10 (901-1000)
MVA
PV of Future EVA
R^2 = 0.0101
450
400
350
300
250
200
150
100
50
-2,000
-1,500
-1,000
-500
0
500
1,000
1,500
2,000

Exhibit 4

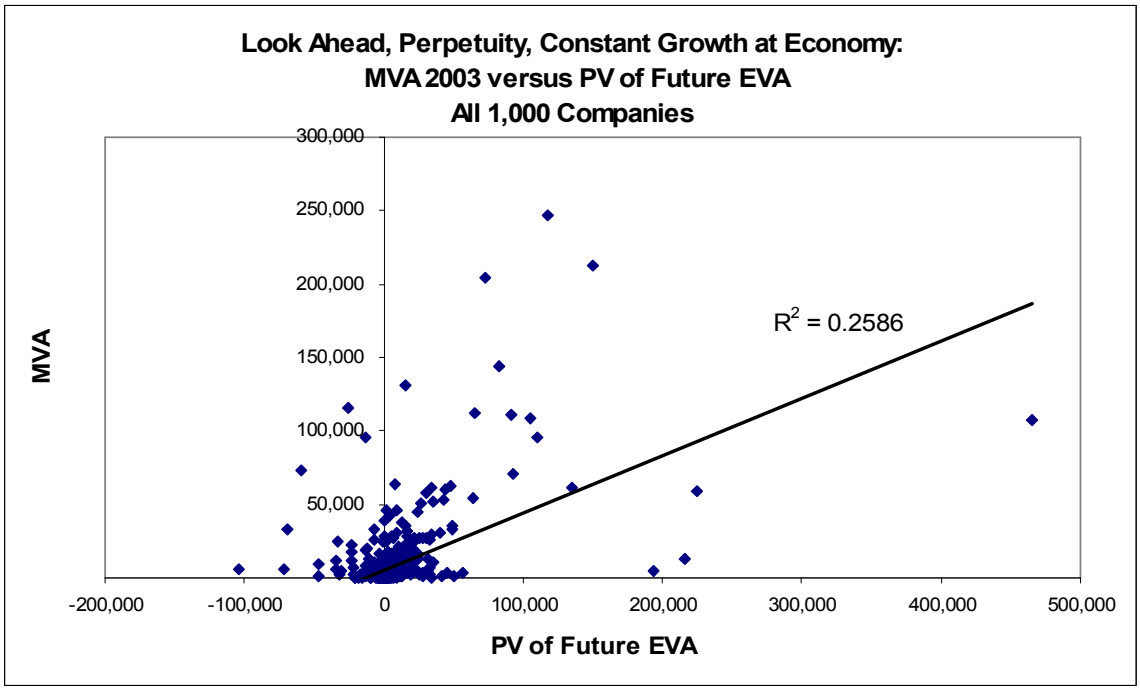
Look Ahead, Perpetuity, Constant Growth at Economy:
MVA 2003 versus PV of Future EVA
All 1,000 Companies
MVA
PV of Future EVA
300,000
250,000
200,000
150,000
100,000
50,000
-200,000
-100,000
0
100,000
200,000
300,000
400,000
500,000
R2 = 0.2586

Exhibit 4A

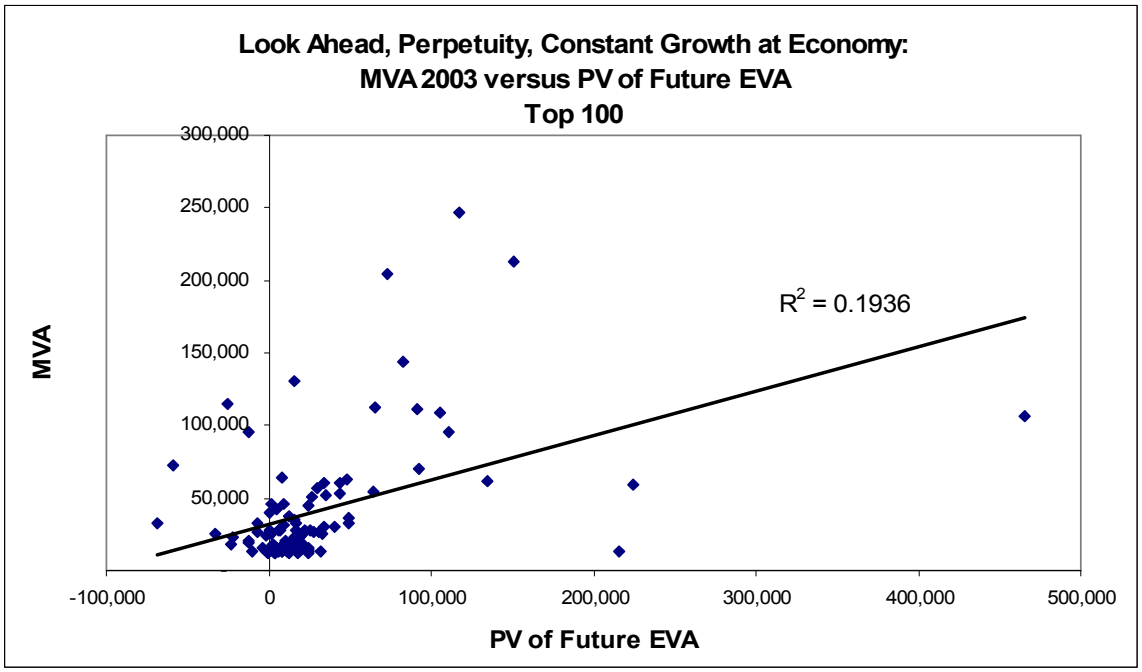
Look Ahead, Perpetuity, Constant Growth at Economy:
MVA 2003 versus PV of Future EVA
Top 100
MVA
PV of Future EVA
R^2 = 0.1936
300,000
250,000
200,000
150,000
100,000
50,000
-100,000
0
100,000
200,000
300,000
400,000
500,000

Exhibit 4B

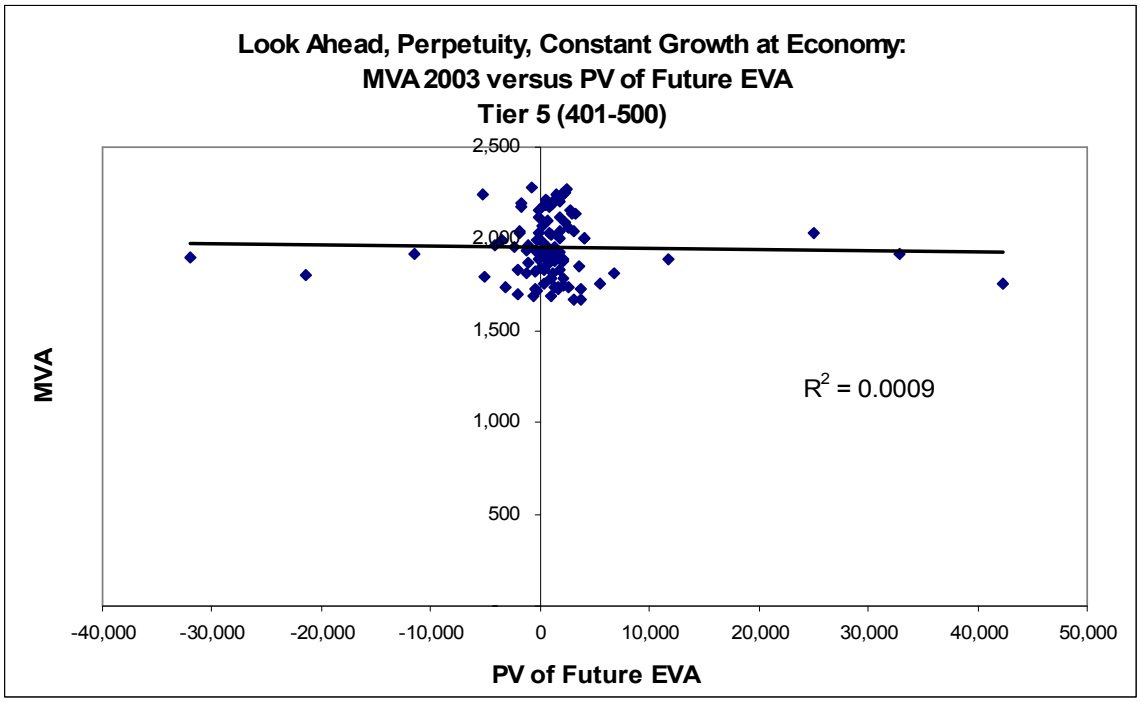
Look Ahead, Perpetuity, Constant Growth at Economy:
MVA 2003 versus PV of Future EVA
Tier 5 (401-500)
MVA
2,500
2,000
1,500
1,000
500
R^2 = 0.0009
-40,000
-30,000
-20,000
-10,000
0
10,000
20,000
30,000
40,000
50,000
PV of Future EVA

Exhibit 4C

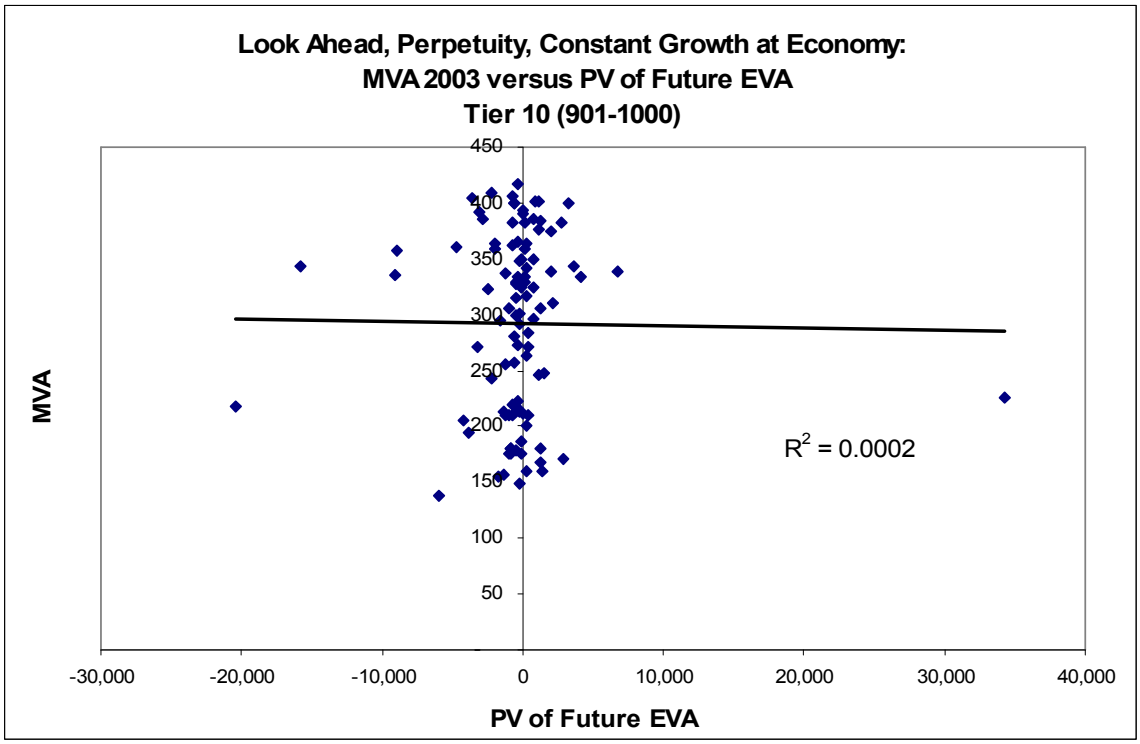
Look Ahead, Perpetuity, Constant Growth at Economy:
MVA 2003 versus PV of Future EVA
Tier 10 (901-1000)
MVA
PV of Future EVA
450
400
350
300
250
200
150
100
50
-30,000
-20,000
-10,000
0
10,000
20,000
30,000
40,000
R2 = 0.0002

Exhibit 5

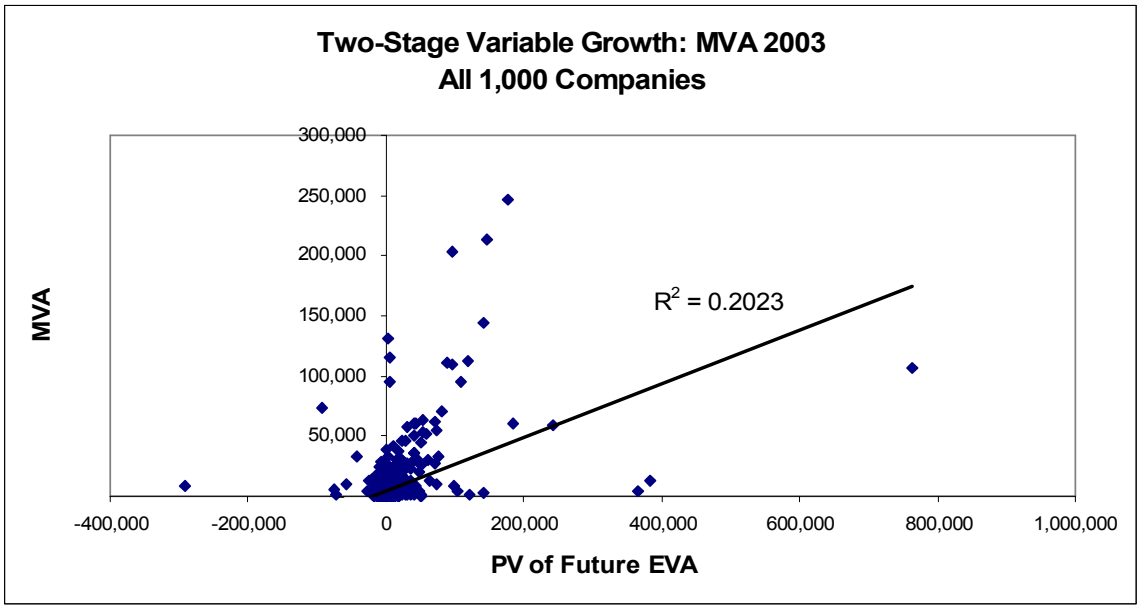
Two-Stage Variable Growth: MVA 2003
All 1,000 Companies
MVA
300,000
250,000
200,000
150,000
100,000
50,000
R^2 = 0.2023
-400,000
-200,000
0
200,000
400,000
600,000
800,000
1,000,000
PV of Future EVA

Exhibit 5A

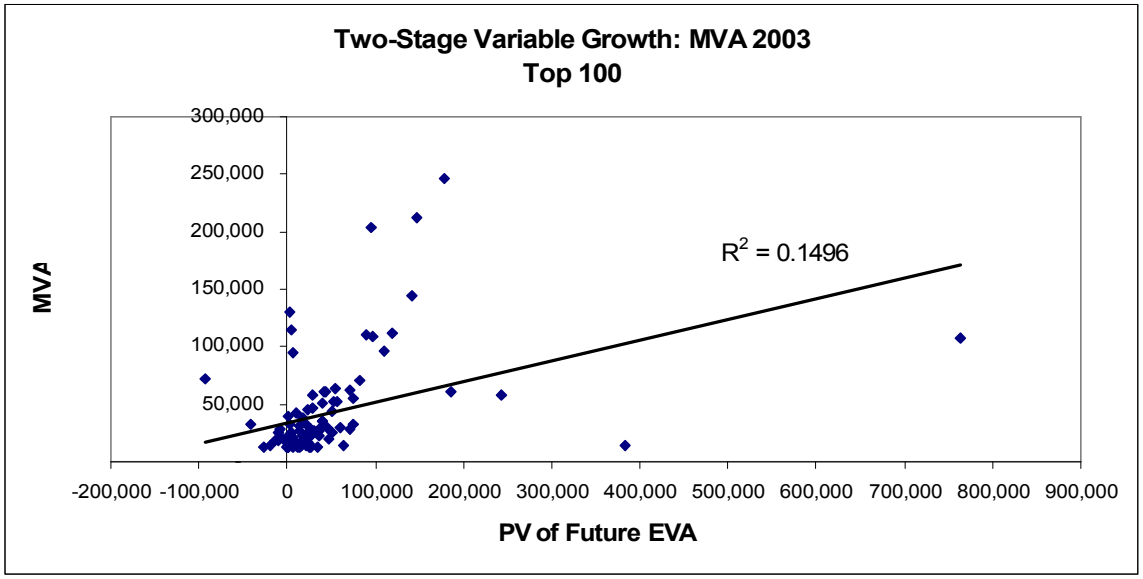
Two-Stage Variable Growth: MVA 2003
Top 100
MVA
300,000
250,000
200,000
150,000
100,000
50,000
R^2 = 0.1496
-200,000 -100,000 0 100,000 200,000 300,000 400,000 500,000 600,000 700,000 800,000 900,000
PV of Future EVA

Exhibit 5B

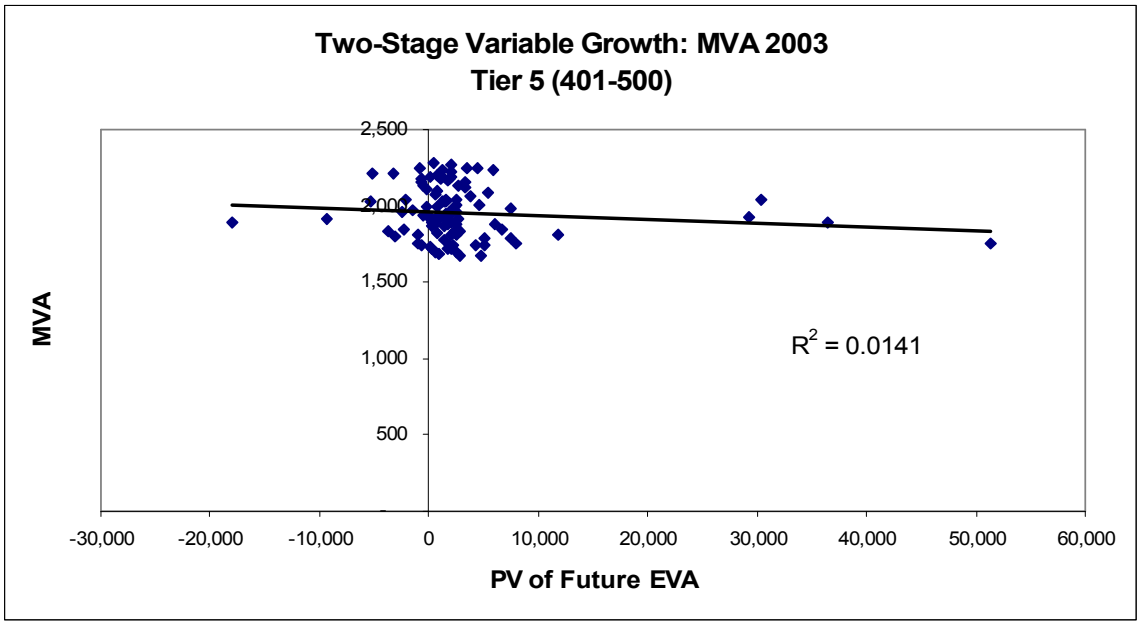
Two-Stage Variable Growth: MVA 2003
Tier 5 (401-500)
MVA
2,500
2,000
1,500
1,000
500
R^2 = 0.0141
-30,000
-20,000
-10,000
0
10,000
20,000
30,000
40,000
50,000
60,000
PV of Future EVA

Exhibit 5C

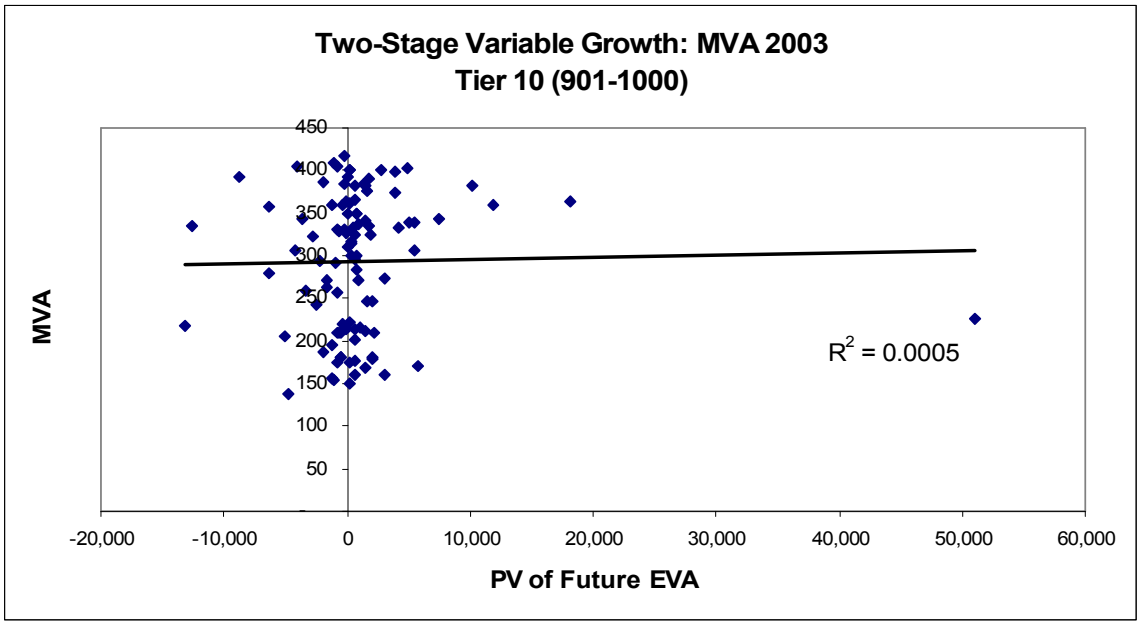
Two-Stage Variable Growth: MVA 2003
Tier 10 (901-1000)
MVA
450
400
350
300
250
200
150
100
50
R^2 = 0.0005
-20,000
-10,000
0
10,000
20,000
30,000
40,000
50,000
60,000
PV of Future EVA

Exhibit 6
DCF Results by EVA Style Quadrants*

One-Step-Ahead Model	MVA (2005) = PV of EVA		R-Squared
Performance 1000	All 1000 Sample		0.4515
	EVA Style Quadrant	*EVA Condition*	
Quadrant 1	Under-investment	Positive	0.7963
Quadrant 2	Wealth-creating Growth	Positive	0.4803
Quadrant 3	Wealth-destroying Growth	Negative	0.0612
Quadrant 4	Restructuring	Negative	0.0297

*EVA style quadrants defined in Abate, Grant, and Stewart (2004)

* The author thanks James Abate of Centre Asset Management (www.centreasset.com) for helpful comments. The author is also grateful to Sirin Hanjaroen and Shaoli Fu for excellent research and computational assistance.

[1] See for example, the free cash flow (FCF) and economic profit (EVA) valuation models described by Grant (2003).
[2] EVA® is a registered trademark of Stern Stewart and Co.
[3] We also explored the MVA and EVA relationship for companies listed in the Performance 1000 Universe in Tier 2 and Tier 9 wealth profiles, with *no* meaningful change in results. That is, the robust pricing result for Tier 1 companies does *not* extend to Tier 2 or Tiers 5, 9 and 10 for that matter. We realize that alternative valuation models such as multiples of assets or book values may be more appropriate for asset laden, yet troubled companies that are likely to remain rather than go out of business. For low MVA companies, earnings prospects may be too uncertain, and not reliable when determining stock price.
[4] The accounting approach to estimating economic profit relies on accounting income and balance sheets, footnotes to financial statements, and external information such as "beta" used to measure the cost of equity. The finance approach to economic profit rests on a discounting or present value process, with the intent of determining market value added (MVA).
[5] See Fabozzi and Grant (2000).
[6] A caveat applies to the word "contemporaneous" in our description of the empirical relationship between MVA and EVA. In actuality, the EVA values reported in the Performance Universe are *not* available until about April of the following year, after reporting results have been obtained for companies such as retail. Consistent with the direction of our study, this suggests that a certain element of prospective valuation may be evident in the relationship between MVA and EVA, with data for the same year in the Performance Universe.
[7] It is interesting to note that when we include the 1274 companies that were reported in the entire Stern Stewart Performance Universe at 2006, we find a positive relationship between MVA and EVA for top wealth creators (revised Tier 1 with R-square at 38%) *and* actual wealth destroyers (revised Tier 10 for negative MVA companies having R-square at 65%!), but again, no relationship in the cross sectional regression for the middle-of-the road companies (Tier 5). This is important because several of the additional companies actually have negative MVA, a sign of real wealth destroyers. We also find this result in a DCF context. If correct, this suggests that the role of EVA valuation analysis may be increasing, with economic profit insight regarding the rationalization of capital now being pursued by analysts and managers at both ends of the MVA spectrum.
[8] Note too though that the linear relationship between MVA and EVA for the top wealth creators (Tier 1 profile) implies that a management (or industry, etc.) induced decrease in the economic profit outlook will reliably result in a reduction in MVA and stock price.
[9] As we noted, for asset laden, yet challenged companies where earnings guidance is a concern, stock price may be driven by other valuation measures such as multiples of assets or book value.
[10] See Grant (1996).
[11] Regression results are available from the author.
[12] See the "JLG Dow Fundamental" (www.jlgresearch.com) for stock market insights on EVA valuation in practice. See also JLG Research for software to conduct free cash flow valuation analyses and to estimate EVA with value-based accounting adjustments.
[13] We noted before that there may be a prospective element in the so-called contemporaneous relationship between MVA and EVA due reporting considerations.
[14] Our regression results on MVA in the *one-step-ahead* EVA valuation model (as well as other reported EVA valuation models) are consistent across several years, including 2000-2005. We report the MVA regression results for year 2003 because in the next section we apply a *three-step-ahead* EVA valuation model, covering the percentage of MVA at 2003 explained by the present value of EVA for years 2004-2006.
[15] Indeed, we ran the regression between MVA and the present value of *actual* EVA reported one year later. We use actual EVA for expected values in our later regressions as well.

[16] It is interesting to note that the R-squared values are meaningful for wealth creators *and* wealth destroyers (companies with negative MVA) in the DCF relationship when using the *entire* sample of companies reported in the Performance Universe. For example, at year-end 2005–with 1274 companies reported (actually 1245 companies were used)–the R-squared values for top wealth creators (Tier 1), middle-of-the-road wealth creators (Tier 5), and *actual* wealth destroyers (Tier 10) in the one-step-ahead EVA valuation analyses are 35%, 1%, and 44% (!), respectively.

[17] The EVA valuation results assuming zero growth and individual company growth (with 10-year annualized growth rate) do not differ materially from the EVA results obtained in the constant growth model with EVA growth at the economy rate (at 3%).

[18] We assume constant EVA growth commencing at the terminal period.

[19] Alternatively, our findings suggest that the market places little-to-no DCF-based value on companies that cannot rationalize their capital.

[20] See Grant and Trahan (2009) for EVA style-based acquisition pricing results.

[21] We are continuing to explore the *prospective* relationship between wealth destroyers in a larger universe, with promising results so far.