

**ROTMAN SCHOOL OF MANAGEMENT  
UNIVERSITY OF TORONTO  
105 ST. GEORGE ST.  
TORONTO, ONT.  
CANADA M5S 3E6**



**LAURENCE BOOTH  
PROFESSOR OF FINANCE  
PHONE: (416) 978-6311  
FAX: (416) 971-3048  
INTERNET: booth@mgmt.utoronto.ca**

## **What Drives Shareholder Value?**

Presented at the Federated Press "Creating Shareholder Value" conference, October 28, 1998

## **What Drives Shareholder Value?**

Many corporate executives still focus on quarterly earnings figures as a key driver of stock market values. Although no-one can discount the importance of quarterly earnings numbers or the impact on the stock market of earnings surprises, they are not the fundamental driver. Stock market values are driven by real corporate performance, as compared to market benchmarks. The key relationship is whether the money entrusted to corporate management earns a higher return than the owners can get elsewhere. Focussing on this key relationship differentiates the value manager from other managerial styles. Implementing a “value managerial” system can be accomplished by two main metrics: a sales, operating margin, turnover metric and a more traditional return on investment, reinvestment rate metric. Both metrics are simply ways of expressing the underlying determinants of market value. The most critical decision facing a firm is whether to adopt a value based managerial system rather than a particular set of decision tools.

## **What Drives Shareholder Value?**

Discussion of finance topics involves both normative and positive statements, and it is important to be aware of their distinction. "Normative" statements refer to what "ought" to be and are usually derived from an assumption about how the world behaves. This is most evident in standard economics topics, where assumptions about human and corporate behaviour are made to derive supply and demand curves, which are then used to explain how prices are determined. Financial theory is an application of these standard economic models to explain how prices in the capital market are determined. As such, financial economists use essentially the same tools as their colleagues in other areas of economics to predict how, for example, equity prices "ought" to be determined, and how as a result corporate management "ought" to behave. In contrast, "positive" statements refer to "what is, was or will be," it is commonly referred to as an appeal to the facts.<sup>1</sup>

The above distinction between positive and normative statements is important, since it turns out that many heated arguments in finance, as in many areas of business, are in reality arguments over assumptions, not facts, that is, they are arguments over what "ought" to be. This is as true of shareholder value analysis, as it is of any other area of finance. In this paper, I will discuss the normative principles that underlie shareholder value analysis, as well as some of the positive evidence in its support.

### ***The Normative Justification for Creating Shareholder value.***

It is a normative statement that creating shareholder value (CSV) is the correct goal of the firm. Douglas Frost will be discussing in more detail the conflicts between different stakeholders in the firm, but I always use Figure 1 to demonstrate the dynamics. The

firm is the rectangular box with the managers “inside the box” in control of the firm’s operations. The firm buys labour, capital (both debt and equity) from investors, intermediate goods from suppliers and uses up what we commonly refer to as “free” goods, such as the right to emit pollutants and use social services provided by the state. The firm then creates its product, which it sells to consumers and in the process creates free goods, such as, for example, by increasing the level of education in the community by retraining its workforce. All of this production, in turn, occurs under the watchful eye of governments (all levels) and subject to societal pressure from other members of the community.

All of these stakeholders have some claim on the firm. How this tangle of claims on the firm subsequently gets resolved in terms of the firm’s objectives depends on both the legal structure of the country and the state of the markets in which the firm operates. Finance, as we understand it, has largely developed in countries with a common Anglo-Saxon legal heritage that places the ownership of the firm’s common equity as the primary determinant of elections to the board of directors, who then have a fiduciary responsibility to act in their interests. The corollary of this legal principal is that the stockholders are primarily interested in the maximisation of their wealth and ergo the market value of the firm’s common stock price. Hence, the focus of this conference on creating shareholder value.

The economic justification for creating shareholder value (CSV) as the over-riding objective of the firm primarily comes from an assumption implicit in most of the finance literature that all the markets in which the firm operates are perfectly competitive. This means that if the firm’s employment is increased or decreased, that the employees in figure 1 are indifferent. If they are hired, they are just getting market wages, and if they are laid, off they can immediately get equivalent jobs elsewhere. Similarly, suppliers and consumers can switch to other firms, and taxes to all layers of

government will be the same regardless of the firm's operations. As a result, the welfare of all other stakeholders in the firm is unaffected by the firm's operations, so that maximising the welfare of the stockholders causes no welfare losses to these other stakeholders. The implicit assumption underlying most of the shareholder value literature is, therefore, that there are no other stakeholders in the firm, except the stockholders! Or put another way, the normative statement that creating shareholder value should be the objective of the firm is based on the assumption that all markets are perfectly competitive.

The perfect market assumption is valid for small businesses in practically every country around the world, since they do not affect the functioning of other markets. However, for large businesses it is more questionable. In many of the less diversified European economies, the impact of certain large firms is critical for the functioning of their economies. As result, there is "worker" representation on the board of directors and the legal responsibility of the board is to take into account factors other than the interests of the stockholders.<sup>2</sup> At the other extreme, creating shareholder value has become the mantra of corporate USA, since the USA has by far and away the most diversified economy and the most competitive markets.<sup>3</sup>

Canada has historically sat in between these two extremes. The large number of interlocking ownership structures has made hostile takeovers scarcer than in the US, while governance structures have generally resulted in more captive, less active, boards. Additionally, the fact that Canadian equity has largely been trapped in Canada due to foreign ownership restrictions in tax sheltered plans, as well as the dividend tax credit, has meant that Canadian firms could pay less attention to their shareholders. Of interest is that the overall Canadian equity market has consistently underperformed that of the US.

In Tables 1 & 2 are average rates of return earned in the US and Canadian markets on equities, Government bonds and Treasury bills, as well as the consumer price index. Although Canadian fixed income returns have been higher than those in the US, equity rates of return have lagged those in the US. There are a variety of potential reasons for the poorer performance of the Canadian equity market, but the greater emphasis in the US on creating shareholder value is certainly a potential factor. As the North American Free Trade Agreement (NAFTA) has opened up the market for goods and services we are seeing more competition among firms. Consequently, Canadian market structure is moving closer to the US model. Similarly, as the international capital market becomes more integrated, it will intensify the pressure on Canadian firms to pay more attention to creating shareholder value.

However, before discussing how to create shareholder value, it is important to point out how not to create shareholder value. From figure 1, there are many ways in which the overall value of the firm's operations (largely the firm's revenues) can be allocated. This means that one way to create shareholder value is simply to transfer existing value to the shareholders, at the expense of these other claimants. For example, the firm can skimp on pollution controls and increase contamination of the environment, leaving others to clean up its mess. The equity holders can also engage in activities that shift wealth from the bond holders to the equity holders, as often occurs during times of financial distress. Finally, I hate to say it, but many corporate financing strategies are tax motivated and merely transfer wealth from all tax payers to the firm's shareholders. There is no theoretical justification in economics to support creating shareholder value, when it is simply a transfer of wealth from other claimants on the firm to the common shareholders. The reason for this is simply that "society" as a whole is no better off. The economic justification for creating shareholder value is based on the efficiency gains of more productive operations and a better reallocation of resources.<sup>4</sup> This result stems from having managers become "value" managers, where they treat corporate

resources as they would if they were the owners.<sup>5</sup>

### ***Problems with Accounting Earnings***

It may surprise some, but stock market value is not created by accounting games to dress up the financial statements. This is not to deny that accounting statements are important, they obviously are, but the fact is that the stock market looks far into the future when assessing value. Consider the stock prices in Table 3 taken at random from quotes from the Financial Post on August 1, 1998. The quotes are for the first ten common equity issues for each letter from A to J. The first column is the stock price, the second the dividend yield and the third the implied annual dividend. The fourth column then values this dividend assuming that it goes on forever with a 5% discount rate. That is, the stock is treated as if it were a perpetuity preferred share. The final column gives that part of the share price that is not accounted for by the perpetuity values of the current dividend.

The final column of Table 3 makes for interesting reading. For BC Gas and Hammersen the growth components of the current stock price is relatively low at 26% and 16% respectively, which is what you would expect given their operations. However, for the other eight firms future growth accounts for 36-96% of the share price. This implies that shareholders are looking well beyond the company's current performance in valuing their shares. This in turn raises problems as well as opportunities.

BC Gas is primarily a regulated gas distributor and oil pipeline in British Columbia, where the bulk of its operations are regulated by the BC Utilities Commission to ensure a fair return to the common shareholders. This means that there are few surprises in its quarterly financial statements and any that there are, are likely to result in changes by the BCUC, so as not to have a significant long term effect on the shareholders. This is

the main reason why “growth” accounts for such a small part of BC Gas’s stock price. It also means that the market does not react very much to BC Gas’ quarterly results: there simply is not much “news” in them.

In contrast, for the other firms a large amount of the stock price comes from future growth prospects, which are very hard to predict. It is inevitable when valuing these “growth” companies that every piece of information is scrutinised in some detail to see whether the firm’s performance is still “on target.” In this state of scarce and limited information, one of the most “reliable” sources is obviously the firm itself through its quarterly statements. If these results are below market expectations, without any accompanying information to explain the discrepancy, investors will extrapolate the impact into the future. The result will be an immediate impact on the stock price, with a greater effect felt for those firms with a greater “growth” component in their stock price. ***It is one of the ironies of finance that it is the fact that the market values operations very far into the future, that causes it to react violently to short term results.***

This result has strong implications for corporate finance. First, there is no doubt that earnings management pays off. The market does not like surprises and the management of quarterly earnings can prevent dramatic market revaluations in response to what the firm may correctly estimate to be temporary phenomena.<sup>6</sup> On the other hand, it does not mean that the market is dumb and can be permanently fooled by the manipulation of financial statements. What the market is interested in is the underlying ability of the firm to generate real, not accounting earnings. This is a normative statement, however, a large amount of research over the last thirty years has gone into determining whether it is also a positive statement.

I do not have time to review all the evidence on how the market reacts to accounting

versus real decisions. Instead, I will discuss the two classic accounting issues that have been examined extensively: the use of FIFO/LIFO inventory valuation and purchase versus pooling accounting for mergers and takeovers, and how the market values research and development (R&D) expenditures.

Inventory valuation is a classic test of whether the market values accounting earnings or cash, since in the US whichever inventory method is used for the financial statements also has to be used for tax purposes. During the inflationary 1970's using first in first out (FIFO) for valuing inventory persistently underpriced the cost of goods sold, since the last items produced invariably cost more. This resulted in not only higher accounting earnings, but also higher taxes and consequently less cash.<sup>7</sup> In contrast, last in first out (LIFO) inventory valuation, priced cost of good sold with the last units produced, which although it reduced accounting earnings, also reduced taxes leading to stronger cash flow. Biddle and Lindahl<sup>8</sup> found that US firms switching to LIFO saw their stock price increase, despite lower accounting earnings, with the magnitude of the price gains increasing with the size of the tax gains. Several other US studies have found similar effects, that the market looks through cosmetic accounting issues to focus on underlying cash.

Accounting for mergers is a similar test of whether the market values a particular accounting method, when in this case the choice should have no real effect at all. If one firm “buys” another, the difference between the purchase price and the (revalued) assets of the purchased company is called “goodwill.” In purchase accounting, this goodwill is recorded as an asset and written off against future income, usually over the next forty years, thereby reducing accounting earnings. Moreover, until 1993 in the US, as is still the case in most countries, writing off goodwill had no tax implications.

Even though writing off goodwill is a classic “non-cash” charge in the income

statement, firms in the US frequently paid extra just to be able to get the transaction classified as a pooling of interests. In AT&T's acquisition of NCR, Davis<sup>9</sup> points out that AT&T incurred extra costs of almost \$500 million to ensure that the takeover could be treated as a pooling. Similarly in Canada, where it is harder to avoid purchase accounting, Royal Bank's proposed takeover of the Bank of Montreal, as well as the share exchange ratio, seems to have been heavily influenced by the desire to account for the transaction as a pooling of interests.

However, contrary to the predictions of the "accounting earnings model," Davis shows that the market does not reward firms for using pooling rather than purchase accounting and that "there is no evidence that paying to pool is a justifiable or profitable use of firm resources." Quite the contrary, Davis concludes that "purchased goodwill" is valued in the market and that the extensive US practise that he discloses, whereby goodwill is buried with other assets in defiance of SEC guidelines, does not help stock prices.

While a critical assessment of how the market values what are primarily financial statement issues shows that the market can "see through" some major accounting changes, what about real cash effects in the financial statements? A classic case here is how to treat research and development expenditures. Clearly, R&D is an investment, it is undertaken to produce new investments and products and to generate future cash. However, in almost all cases, R&D expenditures are immediately written off, rather than capitalised. The result, is that a reduction in "worthwhile" R&D helps immediate accounting earnings, at the expense of the firm's future prospects. If the market is indeed fixated on accounting earnings, we would expect to see high R&D firms with depressed earnings and stock prices.

Testing the impact of R&D on market values is difficult, since R&D expenditures are

frequently hidden in a firms' financial statements. However, Table 4 contains the 34 firms in the Financial Post data base that report R&D expenditures for every year from 1988-1997. Without being "scientific" the firms ranked by R&D expenditures as a percentage of total revenues also tend to have the highest price to book ratios. There are problems with using price to book ratios, but note that ISG and Develcon Electronics have negative accounting earnings, whether measured by the ten year average return on equity (ROE) or the ten year average earnings before interest and taxes (EBIT) profit margin. These low earnings are partly the result of very large R&D expenditures (40% and 12.4% of sales respectively), but the market prices their stock at almost seven times and 4 times book value respectively. In contrast, low R&D firms like MacMillan Bloedel, Domco, Celanese Canada and Potash Corporation of Saskatchewan are also low price to book companies, even though their accounting earnings are much higher. Clearly, for all these firms the market is looking beyond accounting earnings to arrive at prices based on other factors.

### ***What Does the Market Value?***

Again a discussion of what drives market values gets deep into normative and positive statements, but key insights can be gained from how professional valuers approach the problem. Most texts point out that accounting earnings are not cash, since they can't be spent. Further, since investors normally invest cash in the firm, they are interested in getting cash back. The standard finance answer to what the market values is therefore simple: ***future cash flows***. As a result, the discounted cash flow (DCF) approach is the recommended valuation method in every finance textbook and the basis for most "fairness opinions" in professional valuations. However, defining and calculating cash flow is somewhat controversial, since there are several definitions circulating in the investment community.

In a famous article Pearson Hunt<sup>10</sup> came back from a visit to Ireland with Professor Finagle's three laws of information:

- 1) The information we have is not what we want,
- 2) The information we want is not what we need,
- 3) The information we need is not available.

Professor Hunt discusses Finagle's laws in the context of what investment analysts want from a firm's financial statements. What they have are the financial statements with "accounting earnings" the bottom line. However, what analysts need for their valuations are not accounting earnings, but cash flow, the actual cash generated from the firm's operations. Most analysts start by simply adding back non-cash charges to obtain what is commonly referred to as "**cash flow**."<sup>11</sup>

In the context of the two accounting problems discussed earlier, dealing with cash flow removes the problem of amortising good will, since the goodwill that is disclosed and deducted from accounting earnings is then added back to get cash flow, thereby neutralising its deduction. In the same way the analyst would also add back depreciation, deferred income tax, amortisation of bond discounts, and all other writeoffs disclosed in the income statement, that do not involve cash. Cash flow is a huge improvement over accounting earnings, and focussing on it, rather than earnings largely removes the need to avoid purchase accounting. However, it is not what analysts wanted, even in 1975.

What analysts wanted was to undo as many of the accounting policies as possible to get to the true cash generated by the firm's operations. Adding back non-cash items was a start but was of no help, for example, in undoing the inventory accounting adjustments involved with FIFO and LIFO. However, note that if a firm uses FIFO for cost of goods

sold the most recent goods produced end up in inventory, as a result inventory increases faster than with LIFO. One way of offsetting this accounting treatment is to subtract from cash flow the increase in non-cash net working capital (NWC),<sup>12</sup> when we do this we get what is generally referred to as “**cash flow from operations**” (CFO). Firms that “overstate” earnings by using FIFO would then see the resulting increased inventory reducing their NWC and their CFO.

CFO also picks up other accounting games. Premature recognition of sales can boost sales, but instead of getting cash the firm may just get a doubtful long dated receivable. Similarly, offering discounts to major customers to book credit sales near the end of the year may boost sales and earnings, but would also increase receivables and NWC. As a result, focussing on CFO, instead of accounting earnings, nullifies most revenue recognition games. Similarly, overtrading by a firm by stretching its accounts payable will also show up in a lower CFO.<sup>13</sup>

Focussing on CFO undoes most of the pure accounting changes used by firms to try and disguise their true operating results. In Hunt’s terminology this is generally what analysts want, however, it is still not what they need. The reason for this is that firms can still control and possibly manipulate their capital expenditures. One firm with a large CFO may also have a very large capital expenditure (capex) program and thus be short of cash, whereas another with similar CFO could have very limited capex. Hunt argued that the capex needed to maintain the firm’s operations should be subtracted from CFO to get the true cash generating ability of the firm. The result is what Pearson Hunt called the firm’s funds position, and which is now more commonly referred to as **Free Cash Flow** (FCF).

Free Cash Flow is normally defined as:

$$FCF = \text{net income} + \text{non-cash items} - \text{increased NWC/capex} \quad (1)$$

It captures whether or not the firm actually generated cash from its operations, after adjusting the earnings for non-cash items, the need to reinvest in NWC and new capital expenditures to maintain the firm's operations. In principle, the idea is simply to see whether the firm's operations generated cash that could either be returned as a dividend, or equity buyback, to the stockholders, or be used to fund an expansion of its operations and/or acquisition of other firms.

Hunt's definition of FCF is the standard definition and is commonly used in securities valuation.<sup>14</sup> However, when companies are being valued by professional valuers one final adjustment is needed, this is to adjust for the firm's financing. While we started off with net income, which is owned by the stockholders, we subsequently added back depreciation, as well as subtracting out capex and changes in NWC, both of which involve financing from all of the investors in the firm, both debt and equity. To be consistent we, therefore, need to adjust the firm's earnings for financial charges resulting from different financing decisions. This is accomplished by adding back the after tax interest charges, using the firm's marginal tax rate. The resulting definition of FCF is that which is normally used for valuation purposes.

This "valuation" definition of FCF has the unique advantage of abstracting from how the firm financed its operations. This is needed in valuing firms, since conventionally the firm as a whole is valued and then the debt subtracted out to get the equity value as the residual. The reason for this is that how to finance an acquisition is determined after the total value is calculated. FCF is still not a perfect measure, it is difficult to pick up firms that are deliberately running down their fixed assets, and thus overstating their earnings and FCF. To pick this up the analyst needs to look at turnover ratios and actually get out and kick tyres. However, FCF is the best available measure of the firm's ability to generate cash. It is the valuation analogue to the measure of cash normally

recommended for use in standard capital expenditure analysis.

Firm value is then determined by projecting FCF over a fixed time horizon, usually five or ten years. At the end of this time period a terminal value is forecast based usually on a multiple of earnings before interest and tax (EBIT), a perpetuity FCF multiple or a premium to book value. The resulting stream of inflows is then discounted back to get a current value of the firm's operations using an appropriate weighted average cost of capital.<sup>15</sup> The value of any "redundant" assets, like surplus marketable securities not needed to generate the FCF stream, is then added to this value and the values of any non-debt liabilities, such as unfunded pension liabilities or other warranty/legal liabilities subtracted.

### ***What are the "Value Drivers" Behind the FCF Approach?***

There are a variety of different models offered by consultants for predicting FCF, all of which emphasis slightly different "value drivers." However, all internally consistent models can be reduced to the Free Cash Flow model just discussed.<sup>16</sup> I like to forecast and analyse FCF by breaking it out into its four major components: operating cash flow, tax benefits, NWC and capex and then making them all dependent on future sales growth. Anyone familiar with cash flow forecasting for a non-financial company<sup>17</sup> will know that getting the sales growth rate right is the key to a successful forecast and as a result the key driver for forecasting FCF.

The most difficult numbers to analyse are the non-investment components of FCF. Adding back the after tax interest charges to net income is equivalent to regarding the firm as wholly equity financed. This leads to focussing on earnings before interest and tax (EBIT). However, this number reflects the deduction of non-cash charges like depreciation and amortisation, so a better number is to back up the income statement to

earnings before interest, tax, depreciation and amortisation (EBITDA), which is generally referred to as operating income. Taxes are always complicated, so it is frequently easiest to analyse them separately, if possible. The EBITDA is then treated as fully taxable, giving the key number as  $EBITDA(1-T)$ , where T is the corporate tax rate. Expressing this as a percentage of sales revenue then gives the after tax operating margin ( $EBITDA(1-T)/\text{sales}$ ). Although the after tax operating margin is the conceptually correct measure, in practise a before tax measure is often used<sup>18</sup> simply because marginal tax rates do not vary much across companies, once you adjust for the different depreciation rates that give rise to deferred taxes.<sup>19</sup>

The advantage of focussing on operating margins over more conventional measures are several. First, they can be used in comparisons across firms with different capital structures. Firms with a large amount of debt financing, for example, generally have lower net margins simply because of the large amount of interest. Second, firms with newer fixed assets generally have larger depreciation charges and, as a result, lower earnings. Finally, EBITDA removes the effect of the non-cash charges like goodwill, which are buried in the amortisation numbers.<sup>20</sup>

Since amortisations are generally not tax deductible, not deducting them from EBITDA in the first place is the same as subsequently adding them back. However, for depreciation, there is value in the fact that for tax purposes firms are allowed to deduct capital consumption allowances (CCA or tax depreciation). In Canada the value of the tax shield from CCA is calculated from a simple formula based on the fact that capital consumption allowances are calculated on a declining cost basis.<sup>21</sup> The tax value from existing and future depreciable assets is also increased by the value of any tax loss carry forwards. Analysing the tax shield value of a firm's operations is frequently difficult, since some firms hide the information in their statements. However, depending on the firm's past and immediate future these tax shields can be a

significant component of value.

The final two components of FCF are NWC and capex, so that if the tax benefits of FCF are analysed separately, FCF can be forecast as

$$FCF_t = M S_0 (1+g) - (i+c) g S_0 \quad (2)$$

where  $M$  is the after tax operating margin ( $EBITDA(1-T)/Sales$ ),  $i$  and  $c$  the forecast NWC and capex expressed as a percentage of sales respectively, and the forecast sales level is just the current sales ( $S_0$ ) level times one plus the forecast sales growth rate.<sup>22</sup>

The key to understanding this equation is that the operating margin is earned on the total sales level, whereas extra NWC and capex is only needed to support the incremental sales.

The above equation captures the key value drivers in a firm's operations. The operating margin captures the contribution of each dollar of sales. Unlike the net profit margin it is "uncontaminated" by the way in which the firm is financed (interest), by the allocation of non-cash charges like goodwill which are largely arbitrary, or the existence of extraordinary writeoffs and income. The NWC and capex ratios then take into account the extra investment needed to support sales growth. They are simply the inverses of their respective turnover ratios. As such, they capture the efficiency of the firm's operations. Firms that use their resources efficiently will have high turnover ratios, so that  $i$  and  $c$  will be relatively low, increasing FCF and firm value. On the other hand, firms with lax working capital management and excessive capital expenditures will find themselves short of cash.

Using this equation to forecast allows the components of FCF either to be forecast based on target ratios and a forecast sales growth, or actual planned dollar values, for

example for capex, with others as fixed ratios. Either way sensitivity analysis with respect to FCF and firm value is relatively easy and clear cut. This modelling of FCF also points out directly that sales growth usually hurts FCF, since for most firms  $i$  &  $c$  are larger than  $M$ , that is, sales growth usually results in immediate capex and NWC expenditures at the expense of limited increases in after tax EBITDA.<sup>23</sup>

Some analysts don't like this formulation of FCF, since it does not immediately highlight profitability, instead it focuses on turnover ratios and profit margins. However, in Appendix A it is shown that we can easily reformulate the FCF equation in terms of profitability and reinvestment rates,

$$FCF_t = IC_0 ROI (1 - b) (1 + bROI) \quad (3)$$

where the  $ROI$  is  $EBIT(1-t)$  divided by the average invested capital ( $IC$ ), and reflects the return on all the capital invested in the firm; and the "plowback" or retention rate ( $b$ ) is the incremental change in invested capital as a percentage of  $EBIT(1-T)$ . Intuitively,  $IC_0ROI(1+bROI)$  is the forecast after tax EBIT, based on the prior invested capital, return on investment and growth rate, and  $-bIC_0ROI(1+bROI)$  is the amount reinvested and thus subtracted to get FCF.

The advantage of this approach is that instead of focussing on operating margins, we are focussing on incremental investment and profitability, which for finance people is usually more intuitive. Equation (3) for the firm as a whole is equivalent to the familiar equity share valuation formula, which uses the return on equity and the earnings retention rate. The intuition in both cases is the same: FCF increases with the profitability of the firm and the firm's reinvestment rate. The " $bROI$ " growth term is normally referred to as the firm's "sustainable" growth rate, since it is the long run growth rate that flows from the firm's profitability and reinvestment rates.

Equation (3) is also useful, since whether or not this additional growth is valuable depends on whether the additional invested capital can be invested in the firm at a rate higher than the firm's weighted average cost of capital. Although, all of corporate finance uses this same critical concept, by focussing on profitability rates it is explicit in this formulation. In contrast, in the previous sales oriented model the idea of an investment hurdle rate is implicit, it is buried in the operating margin and turnover rates, rather than being explicit.

For example, suppose the free cash flows in equation (3) go on forever and that the firm's *ROI* and plowback rates are some long run average value. These are, of course, unrealistic assumptions, but they generate some interesting insights, since the value of the firm becomes,

$$V = \frac{IC_0 ROI}{k} + \frac{bIC_0 ROI}{k - g} \left[ \frac{ROI - k}{k} \right]$$

where the growth rate in the firm's FCF is the sustainable growth rate. This is a minor variant of the famous Miller and Modigliani<sup>24</sup> "investment opportunities" equation that is the basis of most valuation models.

The first part of the equation is just the return from the current level of invested capital discounted in perpetuity, this is frequently called the present value of existing operations, since it just reflects the value of current operating income stretched into perpetuity. The second part reflects the present value of the reinvested income (*bIC<sub>0</sub>ROI*) for each subsequent period, since the income is valued at the sustainable growth rate, *g* and discounted back at the weighted average cost of capital (*k*). This present value of future investments is then multiplied by the *ROI* minus the WACC, which represents the ability to earn more than the firm's overall cost of capital. The

second part is therefore commonly referred to as the present value of future growth opportunities.

Breaking the value of the firm into these two parts, existing and future growth opportunities allows for a simple two by two description of corporate values as in Table. 6. Similar to the famous Boston Consulting group growth share matrix, a firm with very high value from existing as well as future opportunities is a “star,” possibly Microsoft, while a firm with low current and low future opportunities value is a “dog.” In between, are the two interesting cases, a firm with low current value, but high future opportunities would be a “turn around” in the BCG matrix, but in finance we think of these as growth stocks, like Yahoo... Finally the high existing but low future opportunities would be the standard “cash cow,” like the tobacco companies.

The above “stereotyping” of corporate value flows from the basic valuation equation and adds some “character” to the prior discussion about forecasting future free cash flows. However, difficult as it is to project free cash flows, this can not be done in isolation; it has to flow from an understanding of the business and its prospects. Although, professional valuers may carefully assess the future free cash flows, such an exercise requires a large amount of effort and skill. In this respect, the growth share matrix by reducing the complexities of valuation to four simple quadrants may be a more realistic way in which investors actually view different stocks as “stories.”

The growth share matrix also completes the discussion started with Table 3. From Table 3 we saw that the perpetuity value of the current dividend for BC Gas was a large part of its share price. From Table 6, we can see that BC Gas is essentially a cash cow; regulators should award BC Gas its cost of capital implying that there are very limited growth opportunities. In practise, incentive regulation and some non-regulated business adds some limited growth opportunities. From Table 3, as the proportion of

valuing flowing from growth opportunities increases, investors turn more towards genuine stars and growth stocks, while placing less and less reliance on the value of current opportunities.

### ***How Do These Models Help Create Shareholder value?***

The discussion in the previous section is a brief overview of how professional valuations are done to determine firm value, and how this links with corporate stereotyping. By breaking out the standard FCF definition into its components, we can then understand the valuation drivers underlying shareholder value creation. Since the “creating shareholder value” concept moved out of academia into the business world, a small (?) cottage industry has developed to help companies implement management procedures aimed at creating shareholder value. Knowing how the market values companies is only the first step to creating shareholder value, the critical second step is implementing internal control procedures to encourage managers to actually create value. This is what is commonly referred to as changing the corporate culture by creating “value managers.”

However, creating value managers requires that managerial performance be judged by the correct criteria, and what the previous sections have shown is that, not only are there a variety of ways for defining FCF, but there are also a variety of performance tools that result. In principle, choosing the wrong tool or implementing only part of the FCF formula can produce results that destroy shareholder value, rather than increase it. This has led to considerable controversy as to how to implement shareholder value creation.

The “grand-daddy” of shareholder value creation is EVA<sup>25</sup> or economic value added. EVA makes similar types of adjustments to net income as discussed above, but then

explicitly subtracts a full capital charge (cost of capital times book value of assets) from operating income to estimate economic value added. If EVA is implemented on a pro-forma basis then it is identical to the valuation equation 4, as such it is fully consistent with the traditional textbook implementation of financial valuation models.

Competitor measures include total business return from the Boston Consulting Group, Cashflow ROI from Holt Value Associates and Shareholder Value Added (SVA) from the LEK/Alcar group.<sup>26</sup>

Differentiating between the effectiveness of these different measures and traditional net income or residual income measures has proven extremely difficult. The standard approach has been to examine the relationship between the chosen measure, such as EVA, and subsequent stock market performance. However, both Kramer and Pushner and Chen and Dodd<sup>27</sup> find that the relationship is weak at best and very similar across different measures. To a large extent this should not be a surprise since from Tables 3 and 6, for many firms the stock market value is very dependent on future prospects. What this means is that the current annual statements, even extensively restated to get free cash flow or EVA, are not as important as the growth opportunities built into the stock price, and it is variation in these expectations that account for most of the subsequent stock market performance.

However, even if most of these measures are very highly correlated and only loosely related to subsequent stock market performance, it does not mean to say that the choice between them is arbitrary. What is most important is not the measure of CSV, but the cultural change created by switching to a value management culture. Here the critical influence is the management compensation plan and ensuring that compensation is tied to value creation, not destruction.

At its most basic, CSV has the following message: the market values firms that:

- increase the productive use of their assets by increasing turnover ratios, and
- increase profit margins, and as a result
- increase profitability,

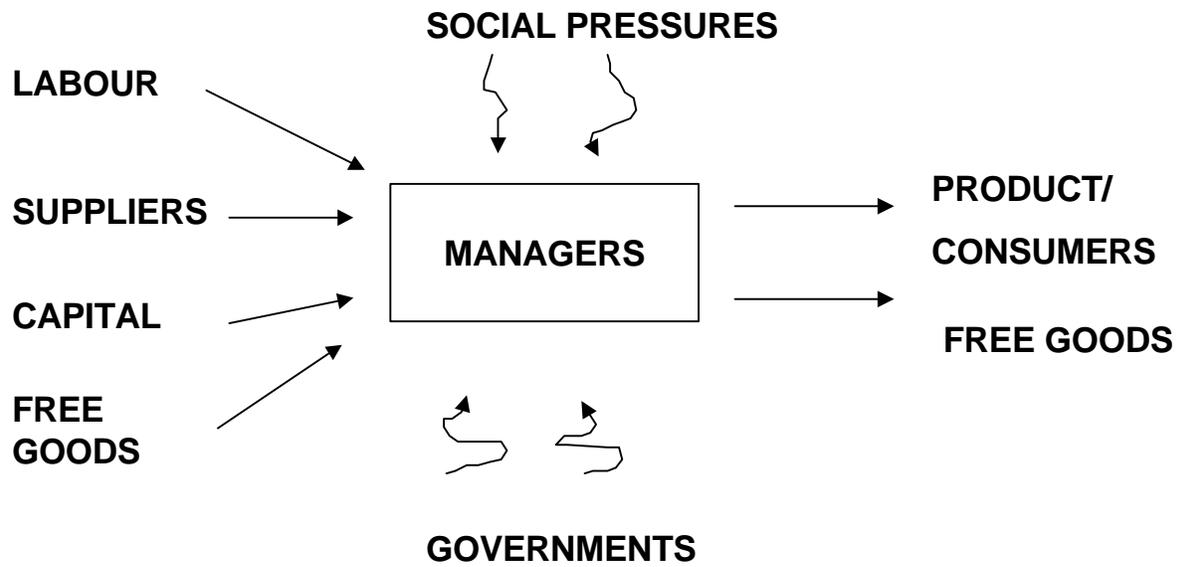
Increasing sales growth rates create shareholder value

- as long as the reinvestment of invested capital is expected to earn returns that exceed the firm's cost of capital,
- conversely firms without such opportunities **destroy** shareholder value by reinvesting and should instead return the money to shareholders through dividend increases or share buybacks.

These statements are largely motherhood statements in finance, but it is remarkable how often they are not reflected in managerial policies within the firm and the corporate culture and as a result do not help create value.<sup>28</sup>

Figure 1

## Creating Shareholder Value



<b>Table 1: Canadian Estimates</b>				
	TSE300	Canadas	T. Bills	CPI
1926-1956				
AM	12.71	4.00	0.84	1.59
GM	10.44	3.87	0.62	1.47
Volatility	21.90	5.32	0.57	4.96
1957-1997				
AM	11.24	8.13	7.51	4.59
GM	10.05	7.62	7.44	4.54
Volatility	15.96	10.79	3.94	3.32

<b>Table 2: US Estimates</b>				
	S&P500	Treasuries	T. Bills	CPI
1926-1956				
AM	13.05	3.38	1.14	1.54
GM	10.11	3.27	1.14	1.40
Volatility	24.47	4.85	1.20	5.39
1957-1997				
AM	12.88	7.26	5.81	4.45
GM	11.67	6.72	5.77	4.40
Volatility	16.18	11.09	2.76	3.12

Note. AM and GM stand for the arithmetic and geometric average rates of return respectively, volatility is the standard deviation of the annual rates of return.

<b>Table 3: Stock Market Horizons</b>					
Stock	Price	Dividend Yield	Dividend	Perpetuity	Growth %
AGF	25.75	1.10	.283	5.66	78.0
BC Gas	30.60	3.70	1.13	22.60	26.0
CAE	11.50	1.40	0.161	3.22	72.0
Dennings	3.50	2.90	0.102	2.04	42.0
EL Fin	285	0.2	0.570	11.4	96.0
Fahnstck	26.75	1.6	0.428	8.56	68.0
GSW (A)	14.05	1.4	0.197	3.94	72.0
Hammersn	6.95	4.2	0.292	5.84	16.0
Intrawest	29.60	0.5	0.148	2.96	90.0
Jannock	15.5	3.2	0.496	9.92	36.0
Average					<b>60.0</b>

**Table 4: R&D and Stock Prices**

	Price/book	R&D	EBIT %	ROE
BioChem Pharma Inc.	6.980	40.137	9.856	0.089
I.S.G. Technologies, Inc.	5.811	29.611	-28.287	-50.481
CAE Inc.	3.367	15.358	3.536	3.696
Northern Telecom Limited	2.540	12.634	7.351	9.675
Cognos Incorporated	4.289	12.493	7.010	7.777
Develcon Electronics Ltd.	3.920	12.414	-25.818	-69.245
Corel Corporation	3.511	11.810	10.477	1.182
Newbridge Networks Corporation	6.025	10.243	21.986	20.663
Draxis Health Inc.	4.800	8.466	54.286	14.565
Canadian Marconi Company	1.144	8.294	7.984	6.213
International Verifact Inc.	4.167	7.988	-6.974	-8.770
Mitel Corporation	2.078	7.891	1.678	-1.621
Geac Computer Corporation	3.122	7.835	9.089	8.304
BCE Inc.	1.550	7.020	15.196	9.981
Scintrex Limited	0.844	6.359	-0.000	-0.134
Spar Aerospace Limited	1.750	3.624	1.117	0.217
Teleglobe Inc.	1.540	2.004	20.923	7.099
Haley Industries Limited	1.856	1.649	5.693	4.150
DuPont Canada Inc.	1.960	1.423	12.221	15.962
Inco Limited	2.080	1.309	16.145	20.667
Alcan Aluminium Limited	1.180	1.306	8.015	7.780
Foremost Industries Inc.	1.460	1.243	3.065	6.095
Unican Security Systems	2.022	1.153	10.176	11.954
MDS Inc.	1.760	1.141	12.527	10.654
Magna International Inc.	1.620	1.029	7.324	7.630
Shaw Industries Ltd.	1.860	0.766	13.585	18.646
Cameco Corporation	1.314	0.667	25.596	6.502
GSW Inc.	0.930	0.650	3.849	8.316
Celanese Canada Inc.	2.460	0.601	22.225	24.258
Potash Corp. of Saskatchewan Inc.	1.222	0.493	28.567	8.940
Domco Inc.	1.389	0.467	6.583	10.628
MacMillan Bloedel Limited	1.390	0.281	5.281	5.597

## **Table 5 : Free Cash Flow**

### **Net Income**

**Plus Non Cash items**      depreciation, goodwill amortisation, deferred income taxes, bond discount amortisation, foreign exchange adjustments, earnings of non consolidated firms, and any other non-cash items.

Why:      No cash involved; they hide the true cash generated by the firm.

**Minus changes in NWC**      largely additional receivables and inventory net of payables and accruals.

Why:      Increased credit sales and premature revenue recognition shows up in increased receivables, inventory accounting differences show up either in the income statement or inventory plus producing for inventory costs just as much as producing for goods sold for cash, payables are sometimes manipulated,

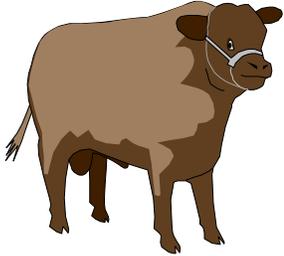
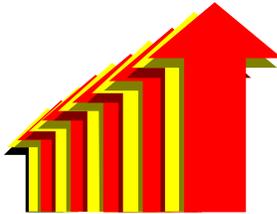
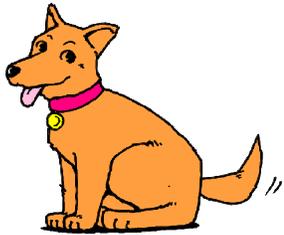
**Minus capex**      subtract all capex, but not “diversifying” investments unrelated to existing operations,

Why:      Adding depreciation (wearing down of capital) without subtracting capex overstates cash generated.

**Plus Financial charges**      Add back after tax interest charges using the marginal tax rate.

Why?      Two otherwise identical firms will have different FCF if they have been financed differently.

**Table 6: A Finance Growth Share Matrix**

		<b>PV Future Opportunities</b>	
		High	Low
<b>PV Existing Opportunities</b>	High		
	Low		

## Appendix A: Reconciling the Metrics

Define:

Invested capital (IC)      shareholder's equity plus all interest bearing debt, net of surplus "cash."

Net Working Capital:      Current assets minus current liabilities, plus all interest bearing debt, minus surplus cash,

ROI:                          Earnings before Interest and tax, after tax at the firm's marginal rate, divided by invested capital or  $EBIT(1-t)/IC$ .

Incremental capex:      total capex minus depreciation & amortisation (DA),

new invested capital:      incremental capex plus incremental NWC,

Plowback rate (b):      new invested capital divided by  $EBIT(1-T)$

Then,

$$FCF = net\ income + interest\ (1-T) + DA - increased\ NWC/capex$$

Adding back the after tax interest,  $interest(1-T)$ , to net income gives  $EBIT(1-T)$ , and then subtracting depreciation and amortisation from increased NWC/capex gives new invested capital. If new invested capital is then defined as the "plowback" or retention rate of  $EBIT(1-T)$ , and ROI defined as  $EBIT(1-T)$  divided by the average invested capital, the FCF at time t is then,

$$FCF_t = IC_t ROI (1-b)$$

Further, if we back up one period, the invested capital at t is just the invested capital at t-1, plus the incremental FCF from t-1 that has been reinvested, that is,

$$FCF_t = IC_0 ROI (1-b) (1 + bROI)$$

The key determinants of future FCF are the ROI, and the plowback (retention) rate, which together determine the sustainable growth rate.

## Appendix B

### Key Performance Tools: Sales Oriented Model

- sales growth rate
- operating margins
- incremental investment rates
  - NWC
  - capex

Alfred Rappaport<sup>29</sup> introduced the concept of the “threshold” operating margin on new sales consistent with creating shareholder value. Assuming that new sales of one dollar cause incremental investment in both NWC and capex of  $f$  and generate new after tax operating profits of  $M$ , then if the sales are in perpetuity and the firm discounts the stream of cash at  $k$ , the incremental return is  $M/f$ , and the threshold margin  $fk$ .

For example, suppose incremental investment is 50% of sales, and the operating margin is 10%, then an additional \$1mm in sales requires \$0.50mm in incremental invested capital and generates \$0.1mm in after tax EBIT. Further, suppose the firm’s cost of capital (discount rate) is 15%, should the firm expand sales?

Since the incremental return is 20% ( $0.10/.5$ ) and exceeds the 15% cost of capital the sales expansion is a good idea. Alternatively, since the 10% operating margin exceeds the 7.5% ( $.10*.15$ ) threshold margin, using the operating margin approach we can also see that the sales expansion is a good idea.

Creating value then involves increasing sales, increasing operating margin, reducing investment intensity and/or reducing the cost of capital.

## **Appendix B**

### **Key Performance Tools: ROI Oriented Model**

- ROI
- reinvestment rates
- FCF growth rate:
  - sustainable growth *bROI*

The “standard” finance model emphasising investment rates and future profitability. Creating shareholder value then involves increasing ROI in existing investments, and increasing reinvestment rates, when expected ROI exceeds the firm’s cost of capital. This approach has the advantage of the most direct link between ROI and the cost of capital, but falls into the standard ROI trap that the firm should increase value by increasing ROI. The problem is that the ROI, like all return measures, can be maximised by simply cutting investment and only investing in very profitably projects that equal or exceed the current ROI. As a result, high ROI firms frequently under invest, since accepting lower ROI projects causes their ROI to fall and are rejected, even though the project’s ROI exceeds the firm’s cost of capital.

The “standard” finance model is not recommended for small, junior, companies with high R&D levels, limited short term profit potential and large sales potential.<sup>30</sup> The ROI metric is best applied to mature corporations, where increased efficiency and better asset utilisation are the keys to generating higher FCF. In contrast ,the sales model is best suited to smaller innovative companies.

## End Notes

1. The above definitions are from my “A” level economics textbook, R. G. Lipsey, An Introduction to Positive Economics, 2nd Edition, Weidenfeld and Nicolson , 1969, page 4.
2. This is also justified by the illiquid state of the equity markets and the low reliance put on equity financing.
3. However, even in the USA, some states require that the board of directors consider factors other than the interests of the shareholders, for example, during hostile takeovers.
4. This point needs emphasising, since I have spent many hours discussing the ethical issues surrounding CSV with business ethicists and “environmentalists,” who are extremely hostile to the concept.
5. The crux of the CSV movement is that the modern corporation separates ownership from control. As a result, the incentive structure facing senior management in large corporations leads them to mismanage corporate resources since they are not immediately answerable to the owners.
6. By earnings management I mean minor revenue recognition and expenditure scheduling along with recognition of gains and losses on asset disposals, which can smooth earnings without significant long term effects.
7. In Canada most firms use FIFO, which is why an additional 3% inventory writeoff was allowed for tax purposes.
8. G. Biddle and F. Lindahl, “Stock Price Reactions to LIFO adoptions: The Association between Excess Returns and LIFO Tax savings,” Journal of Accounting Research (Autumn, 1982).
9. Michael Davis, “The Purchase Vs Pooling Controversy: How the Stock Market responds to Goodwill,” Journal of Applied Corporate Finance, Spring 1996.
10. Pearson Hunt, “Funds Position: Keystone in Financial Planning,” Harvard Business Review, May-June 1975.
11. The Financial Post’s FPAnalyst data base and software defines cash flow in this way as net income plus non-cash charges. Others call this measure cash flow from operations, for example RBC-DS in their Foundations publication.
12. Financial analysts generally define NWC as current assets minus spontaneous liabilities, that is, payables and accruals. All interest bearing short term financing is ignored.
13. The Financial Post in FPAnalyst defines CFO in a this way.
14. RBC-DS and the Financial Post both define FCF as above, less dividends. The only distinction is that the FPA subtracts all capex, whereas RBC-DS subtracts “maintenance” capex.

15. The weighted average cost of capital (WACC) is defined as

$$WACC = \frac{E}{V} K_e + \frac{D}{V} K_d(1-T)$$

where  $E/V$  and  $D/V$  are the equity and debt financing proportions, and  $K_e$ , and  $K_d(1-T)$  are the costs of equity and debt financing respectively, and where the cost of debt is on an after tax basis the same as the equity cost.

16. A good discussion of this can be found in J. Fred Weston et al, Mergers, Restructuring and Corporate Control, Prentice Hall, 1990.

17. The following comments do not apply to natural resource stocks, where the direction of commodity prices is obviously the key.

18. RBC-DS, for example in its Foundations reports the pretax EBITDA/Sales ratio as one of the firm's key financial ratios.

19. Some like to separate the operating margin into the gross margin and the fixed cost ratio to capture the effects of operating leverage. However, the accounting treatment of fixed costs frequently does not allow this.

20. Operating margins also ignore income from other investments. The value of other income is added to firm value with "redundant" assets.

21. The formula is

$$CCA = \frac{\delta A}{(k+\delta)}$$

where the value of the CCA shield determined by the CCA rate ( $\delta$ ), the discount rate ( $k$ ), and the amount of undepreciated assets ( $A$ ).

22. See Laurence Booth, "An Application of Valuation Principles: Peoples Jewellers Purchase of Zales," in (R. Rupert editor) Canadian Investment Banking Review, McGraw Hill Ryerson, 1992.

23. The firm's break-even growth rate can be calculated by setting  $FCF=0$  and solving for  $g$ . This formula ignores the CCA tax advantages, but clearly points out that a firm's FCF grows faster with higher NWC and capex turnovers (low  $i$  &  $c$ ) and higher operating margins. The idea that there is a sales growth rate that the firm can grow at without needing external funds

was popularised by R. C Higgins, “How Much Growth Can a Firm Afford,” Financial Management, Fall 1977. For most firms  $M$  is less than  $i + c$ .

$$g = \frac{M}{(i + c - M)}$$

24. See M. Miller and F. Modigliani, “Dividend Policy Growth and the Valuation of Shares,” Journal of Business, October 1961.

25. This is a trademark of Stern-Stewart.

26. Randy Myers, “Measure for Measure,” CFO Magazine, November 1997.

27. J. Kramer and G. Pushner, “An Empirical Analysis of Economic Value Added as a proxy for market value Added,” Financial Practice and Education 7-1, Summer 1997.

S. Chen and J. Dodd, “Usefulness of Operating Income, Residual Income and EVA: A Value Relevance Perspective,” paper presented at the 1998 AAA annual meeting.

28. Appendix B summarises some of the implications for CSV.

29. See B. Balachandran, N. Nagarajan and A. Rappaport, “Threshold margins for Creating Shareholder Value,” Financial Management, Spring 1986.

30. Technically, such firms “look” like call options, and increasingly people are trying to apply real option pricing theory value them.