ONE WAY OF LOOKING AT FIRMS

James P. Catty

In the light of these forces, the way investors and managers look at businesses must be subject to change. In the past, it was relatively easy to decide if a business fell into the growth, stable, or cyclical categories. To value it, one merely applied a multiple to the earnings per share, also paying some attention to book value and major appreciated assets, such as real estate.

Today it is more complex. We realize that obtaining growth is not an easy or continuous process. McKinsey & Company, management consultants worldwide, analyzed the results of 404 firms with only one business, although often in many countries, in fifteen industries over 30 years. They found that only 10% of companies that exceeded the average growth of profits in their industry during any particular year were able to repeat that performance in each of the following nine.

This conclusion is supported by Sanford C. Bernstein & Co., a New York investment firm, which reports that, historically, only 10% of large US companies have been able to sustain a 20% annual growth in profits for five years and merely 3% could maintain this for over ten; one firm, Microsoft, had achieved it for fifteen years.

Businesses, like trees, start, flourish and eventually wither; in some industries the life cycle is short - the poplars, for instance - in others quite long, such as the California redwoods. The fact that a business may run its course, does not mean that the firm itself cannot continue to grow for a long time. For instance, The Governor and Company of Adventurers of England trading into Hudson's Bay - a title they have since shortened - celebrated its 330th birthday this year. They have been in furs, liquor, timber, land dealings, oil & gas and dabbled in mining; now they operate successful department stores in many urban centres, and who knows what they'll be doing a hundred years from now.

Successful companies can and must outlive any individual business. What sets them apart is their ability to create new activities. A good example is General Electric, one of the original twelve leading companies when the "Dow Jones Industrial Average" was first published in May 1896. It is still in the Index, and, measured by market capitalization, is now the third largest company in the world.

Our view is that every successful firm will normally contain examples of all of the following business segments, each in a different phase of its life cycles:

- Existing Operations
- Emerging Activities
- Future Opportunities

Existing Operations, often quite mature, form the heart of most organizations; usually they account for nearly all, sometimes even more than all, of the profits and cash flow as the other segments generally consume cash. Extending and defending the Existing Operations is critical to short-term performance; the cash they generate and the skills they nurture tend to supply many of the factors needed for the other segments.

Emerging Activities, normally in the expansion phase, often are capable of transforming the firm, but usually require considerable investment of cash and other resources. Though profits may be some time away, they are real businesses, with products, employees and, one hopes, customers and revenues. The objective is to complement and eventually replace the Existing Operations.

Future Opportunities are the seeds of expected trees that represent options on tomorrow's businesses, but they must be real activities rather than just ideas. Examples include research projects, test marketing, prototypes, alliances, anything that marks the first steps towards an actual business, even though there may not be profits for a decade. As many will fail, a firm should explore a number of such Future Opportunities.

Impact on Strategy

Some of those Future Opportunities will fail for internal reasons, others because of shifting industry trends; most will never become successful. Therefore a large number, with apparent promise and the support of management, needs to be underway at any time, but once their outlook seems diminished, they have to be shut down.

The segments pay off over different periods; the time frame will vary by industry, purpose and the depth of management's pockets. The timing of the pay-off, or it becoming a reality at all, is not directly connected with the need for funding and management support for Emerging Activities and Future Opportunities; they are not examples of short, medium and long-term planning, which deliberately defers some activities. Today, the successful firm has to contain many businesses in varying stages of maturity.

It is not unusual to find one, two, or even all three segments of a firm to be less than healthy. That may be for internal reasons, such as executives not devoting sufficient attention to one or more of them. Also, industry shocks can rewrite the expected fortunes of Existing Operations or Emerging

Activities overnight, and Future Opportunities just may not occur. If one or more segments are ailing, the firm's growth will inevitably falter.

However, an accurate diagnosis provides the starting point for a solution. Knowing the strong and weak points of each segment gives managers a good indication of how to prioritize growth initiatives. In some cases, after the analysis, management may even boldly suggest a company should not pursue growth, but sell out.

The essential questions are:

- Can the Existing Operations generate sufficient cash?
- Is the firm's cost structure competitive?
- What new competitors, technologies, or regulations may change the game?

Various Situations

Many firms do not have satisfactory endeavours in all segments as shown in the table below; this looks at several types of firms in terms of satisfactory ("S") and unhealthy or non-existent ("U") activities in each segment. We have also indicated positive (+), negative (-), or negligible (o) Free Cash Flow. It is based on our experience of a fair number of years and on a fascinating book, "The Alchemy of Growth" by three McKinsey partners, which formalized this approach.

	Existing Operations	**Emerging Activities**	**Future Opportunities**
Successful Firms Turn-arounds	S+	S-	S-
Obsessed with Growth	S-	U-	Uo
Running Out of Steam Start-ups	U-	U-	U-
Inventing a New Future – Ideas not Businesses	U-	U-	U-
Failing to Seed Prospects	S-	S-	Uo

In looking at a company, the first, and one of the most important things to do is to understand its position in each segment and its ability to generate and absorb cash flow.

TRADITIONAL APPROACHES TO VALUATION

A number of methods have traditionally been applied to value the assets and shares of businesses. These can be divided into two basic approaches: Transaction or Investment. Transaction (or Market) Based Values, using comparisons with actual sales, are preferable, because they reflect real rather than notional markets; however, as the necessary information is often difficult to obtain, Investment Based Values are normally adopted.

In establishing Investment Based Values, there is no single standard or specific formula for any of the methods used; the factors to consider will vary in each case. Generally, for privately-owned or closely-held companies, both earnings and asset based methods are employed, while publicly traded shares rely principally on earnings.

Transaction Based Value

To establish a Transaction Based Value, available information about actual transactions is used; these may be the sale or purchase of a portion of the business, any sale of its shares, and sales of shares or assets of comparable businesses. With over 2,000 quoted companies in Canada and 10,000 in the US, publicly traded comparables can usually be found. Several organizations in the United States maintain databases of private transactions in numerous industries. Data from other businesses, even if related, may need to be adjusted to give applicable results.

Net Income Value

The most common earnings based method involves normalising the pre-tax profits of a company to adjust for: non-operating income and expenses, such as investment transactions; sales of assets; and any extraordinary items, as for instance losses due to strikes. Normalized profits for the past few years, and projections for at least the balance of the current year and preferably the next two, are averaged to give an amount sustainable over the business cycle.

Finally, income tax is deducted, to establish Sustainable Net Income. This is then capitalised at a figure that reflects the general level of interest rates, the nature of the enterprise, perceived risks and expected growth. Investments, holdings in affiliates and available tax losses are added for the Net Income Value, while additional capital required is deducted.

Discounted Cash Flow Value

Another earnings based method determines the present value of the future cash expected to be provided by the business. It is based on projections of revenues, expenses, financing, debt repayment and capital expenditures. The projected cash generated in each period is discounted at a rate that reflects current yields, the specific risks, and a provision for the uncertainties inherent in long term projections. The sum of the present values to infinity is the Discounted Cash Flow Value.

In theory, the Discounted Cash Flow Value is the preferable method, as it is totally forward looking and considers the sources and uses of cash, the life blood of any business. In practice, long term projections are very difficult to prepare accurately, as conditions and risks will change over time. Therefore, when using the Discounted Cash Flow Value, it is customary to project operations for a limited period, up to five years, and then add a Terminal Value to the final year's projected cash flow before discounting.

The Terminal Value is normally estimated by one of the following approaches: capitalization of the Net Income of the final year of the projections; discounting that year's projected cash flow over the balance of the economic life, not more than twenty years, of the company's products or processes, or the final year's projected Book Value. All those involve projecting the future sales and profits of the business, which depend on the economic outlook, decisions by management and actions of competitors.

First Chicago Method

When the value of a firm, as is the case with most high-tech and Internet investments, is mainly dependent on a Business Plan and Financial Projections, the "First Chicago Method" of determining the Net Income Value is often used. This looks forward three to five years, and establishes a future value by capitalising the projected Net Income at that time.

Usually, three different "Outcome Scenarios" are considered: "Success", "Survival" and "Failure". Success is normally the Business Plan, Survival is based on modest growth, while Failure implies a continuation of the status quo. Though some may not consider this an absolute failure, it would be a negation of the growth prospects expected from high-tech. The amount for each Scenario is then adjusted to its "present value", weighted by the probability for the Scenario and added together. The required additional capital is deducted to give the Net Income Value. This method is the Discounted Cash Flow Value, with no cash being received during the period and a range of Terminal Values.

When dealing with a highly uncertain situation, such as Emerging Activities, many valuators use sensitivity analysis. This changes key variables in the financial projections to result in "what if" answers. CVS prefers to work with management and generate plausible scenarios for Alternative Futures; only for firms producing commodities subject to speculative price changes do we adopt sensitivity analysis.

Net Worth/Goodwill Value

Valuation theory puts greater emphasis on earnings based values than on asset based values, since benefits from any investment usually come from the future income generated by it. However, asset based values should always be taken into account. The Net Worth/Goodwill Value is the total of the tangible and intangible assets, less the liabilities, all at current values.

For this, the Book Values of a firm's tangible assets and liabilities are adjusted to reflect their current, usually going concern value. This is generally the price for which their function could be replaced, considering their age, condition and technology. Capital assets, especially land and buildings owned for a significant period, may well have values that differ considerably from their depreciated Book Values. When assets are restated, adjustments must be made for any related tax liability.

Intangible assets, such as patents, trademarks, brand names, real estate leases, licenses, franchises, trained workforce, etc., are normally either not recorded in the Financial Statements or shown at nominal values. All such Identifiable Intangible Items are also restated at an appropriate value, with full provision for related income taxes. Some Identifiable Intangible Items, for instance real estate leases, can give rise to a net liability. In such cases, provision must be made for the probable loss after the related tax saving.

Under Generally Accepted Accounting Principles, only purchased goodwill is recorded on the Financial Statements, usually relating to past acquisitions; development costs of a new product or process may also be shown. In either case, these amounts are recorded at cost less grants, tax credits and amortisation. For valuation purposes, they are replaced by effective goodwill. This normally depends on a company's proprietary technology or know-how as well as its profitability.

Where these items are is important, the effective goodwill tends to be related to total development costs incurred, whether expensed, reimbursed or capitalised. In other circumstances, one common approach is to estimate the effective goodwill by capitalizing the "excess earnings"; these are the portion of Sustainable Net Income derived from the non-identifiable intangible assets.

VALUATION APPROACHES FOR THE NEW ECONOMY

We consider the Internet as the "Railroads of the Twenty-first Century". One hundred and fifty years ago, at the height of the railroad booms in Europe and North America, investors did not understand railroad companies. In many cases, the shares fluctuated enormously and the industry caused numerous stock market "crashes". Many railroad companies failed; others gradually consolidated into the nine Class I systems that today dominate many aspects of North American transportation. Yet shrewd analysts, such as John Moody, the founder of the bond-rating firm, were able to develop methods to value the securities of these enterprises.

Today, in a much more sophisticated and better regulated world, there are techniques that allow the valuation of virtually every type of business. The following table sets out the valuation approaches for each of the three segments of corporate activity, indicating which are appropriate ("A").

	Existing Operations	Emerging Activities	Future Opportunities
Traditional Approaches			
Market			
Transaction Based Value	A	A	
Earnings			
Net Income Value	A		
Discounted Cash Flow Value	A		
First Chicago Method		A	
Asset			
Net Worth/Goodwill Value	A		
Modern Approaches			
Other Multiples		A	
Adjusted Present Value		A	
Equity Cash Flow	A		
Additional Approaches			
Real Options			A
Economic Value Generated	A		
Non-Financial Data	A	A	

Existing Operations

The most common method of valuing Existing Operations is the Net Income Value. In many cases, it is the practice to use actual Earnings Per Share rather than Sustainable Net Income, together with a Capitalization Rate obtained from traded securities. As a result, the Net Income Value is often a hybrid between the Earnings and Market approaches.

This is not satisfactory, especially for a "growth company". It confuses the three segments by combining the Existing Operations with the Emerging Activities and ignores the Future Opportunities. It is absolutely essential for any realistic results to isolate each segment and value it separately.

For Existing Operations, depending on the expected economic life, the choice is between capitalizing earnings or discounting cash flow. In our view, because of its simplicity and general acceptance we prefer the Net Income Value, with adjustments to remove all costs and revenues pertaining to the Emerging Activities and the R&D expense related to Future Opportunities.

In establishing the Capitalization Rate, valuators normally look to the "Equity Premium"; this is the excess of the rates of return on publicly traded shares over those on government bonds. Traditionally, the longest possible term has been used; in the United States, the available series runs from 1926 to the present. However, as securities regulations and corporate governance have

improved greatly over the past seventy years, we only use data going back to 1951, when war time controls were eliminated.

Emerging Activities

The Emerging Activities in any business involve a large number of uncertainties. No matter how hard management tries, it is not possible to produce budgets or financial projections that will accurately reflect the results of the next year, much less two or three years in the future.

Therefore, we consider it absolutely essential to produce a number of scenarios for Alternative Futures; we found a minimum of three and a maximum of five to be most practical and enlightening. These will not be the typical "most likely", "best case", "worst case" versions of the Income Statement commonly used in budgeting, but complete sets of financial projections, reflecting, in detail, the effects of various assumptions relating to the underlying business.

The value of each scenario will normally be obtained by the Adjusted Present Value ("APV") Method. This is an updating of the traditional DCF Approach which segregates the operational and financial components of the value and analyzes them separately. This is preferable to using a single discount rate, commonly the WACC (Weighted Average Cost of Capital) that bundles the financing and tax effects into a single number, implicitly assuming an optimal capital structure.

The first step in valuing an Emerging Activity is to calculate the APV of the cash flow for each scenario as if it were completely financed with equity, using either the cost of capital to the company, or to an equivalent, unlevered enterprise, as the Discount Rate.

The second step is to look at the present value of the Tax Shield generated by any Capital Cost Allowances (tax depreciation), together with the interest effect of the portion of the Working Capital or other assets, such as real estate, supplied by debt. This is likely to be low or zero in the early years, but may be significant in establishing the Terminal Value. Other factors to be considered in this step are any grants or subsidies, as well as investment or R&D tax credits. The APV of a scenario is the total of that of the Equity plus that of the Tax Shield; the latter normally uses a much lower Discount Rate due to the relative certainty of it being able to be applied to profits from Existing Operations.

When the APV method is used to value potential acquisitions, significant debt may be involved: the Tax Shield should also reflect the changing capital structure over time, the costs of "potential financial distress", as well as financing costs.

After establishing the APV of each Alternative Future scenario, the third step is for management to estimate their probabilities. With three scenarios, it is relatively easy to produce high and low

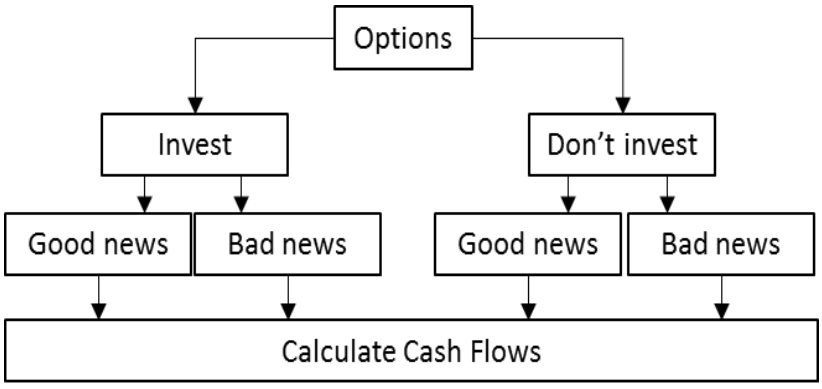
ranges, but with five, it can become extremely difficult. The final step is to multiply each APV by its probability and add them together to give the value.

Future Opportunities

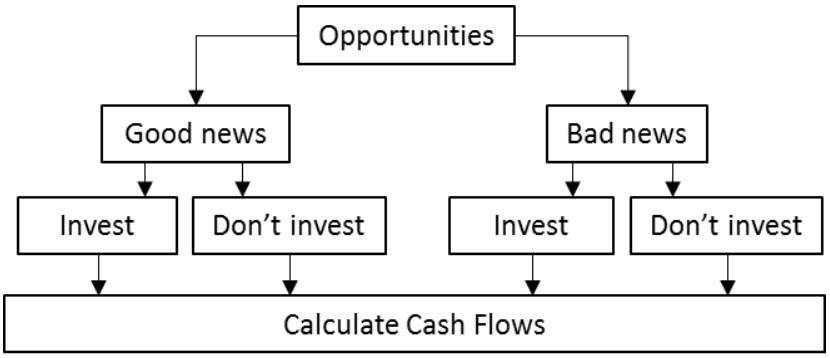
Opportunities are possible future operations, but with a major difference. With operations, management makes decisions and then finds out what happens; traditional valuation methods are designed for this sort of problem. When it concerns opportunities, management must endeavour to find out much of what will happen before major decisions are made.

For example, establishing an R&D budget involves informally valuing opportunities. Current spending on a particular project will not create any cash flow, but ensures the opportunity to make a further investment later, depending on how things look at that time. Traditionally, opportunities have been valued implicitly by being included in the growth rate of the Existing Operations. Only when they have matured to the point where the investment can no longer be deferred, do they join the queue of projects awaiting funding. Often champions arise to promote and defend opportunities they regard as valuable, resulting in such "strategic projects" being assigned a lower "hurdle rate" than routine investments.

The following diagrams, based on an article by Timothy Luehrman in the Harvard Business Review, May 1997, demonstrate the difference.



One Way of Looking at Firms



The right to start, modify or stop a business activity at some time in the future is different from the obligation to operate it now. The crucial decision to invest or not will not be made until some uncertainty is resolved or time runs out. In financial terms, this is analogous to an option which gives the holder the right, but not the obligation, to buy (call) or sell (put) something at a specified price on or before a future date.

A call option on a share may grant the right to buy for, say, $100 at any time within the next year. If the share trades at $110, the option is worth more than the $10 "in-the-money" amount, as it has substantial leverage participating dollar for dollar with the share if it rises. If the share trades at $90, the option is still valuable, because it does not expire for twelve months and during that period the price may well exceed $100.

The phrase used about Corporate Opportunities "if R&D proves that the concept is valid" is analogous to "if the share price rises in the next few months", while "we'll go ahead and invest" is similar to "we'll exercise the option".

Valuing options in the financial industry is a complex matter as traders want the "right answer" before making a transaction. In valuing Future Opportunities within a company as "real" options, the objective is to get as close to the truth as possible without becoming too fancy.

Example of Real Option Value

Expressing an Opportunity in the form of a Real Option can give a more realistic value for a high-tech start-up. Such firms have negative cash flows from R&D and marketing in the first few years, during which they will likely find staff, obtain customers, select programs and systems and build a plant. Thereafter, they obtain sales and - hopefully - profits. Traditionally, the DCF Value is used with a lower discount rate for the negative cash flows in the early years. In practice, management has the option, not an obligation, for further spending. If at the end of the first year the technology proves unsatisfactory or the market weaker than expected, the next year's outlays can be deferred or abandoned.

For example, an entrepreneur wishes to establish a digital switch manufacturer. A traditional DCF analysis indicates a value of $10 million. In the first two years, the company will: assess the market, design & test the equipment, hire key managers, sign up suppliers and establish distributors at a cost of $1.2 million. At the end of the period, a decision must be made whether to build the manufacturing plant at a cost of $6 million or sub-contract production. That decision will depend on the situation at that time, which may result in a value different from the $10 million of today. Assume guideline (comparable) companies have a 25% cost of equity and annual share price volatility of 45%, what is the value of this project today?

Conventional DCF techniques produce a negative value of $420,000; this implies that the enterprise should be abandoned, saving start-up funds. However, the decision to build a plant at the end of year two is, in effect, a "call option", to be exercised only if its cost is less than the market value at that time.

In two years, the value of the Opportunity will be $6,400,000 ($10,000,000 discounted at 25% for two years) compared with the $6,000,000 estimated cost of the plant. Therefore, at that time, it would be in-the-money by $400,000. Using the most common Option Pricing Model (Black-Scholes), the ability to wait for two years before making a second investment decision has a value of $2,000,000. To purchase this requires the commitment of $1.2 million today, giving a Real Option Value of $800,000 for the enterprise.

Other Multiples

Today, in the software industry, Capital Expenditures in the form of R&D is written off as incurred, a practice that is accepted by both Revenue Canada and the IRS. The same is true for many Internet companies, where enormous amounts are spent on marketing to create the "Customer Base", which is a significant "Capital Asset". In both cases, substantial losses are the result. The following table shows the various profit levels of a business:

	Sales	
less	Cost of Sales	
	Gross Profit	
less	SG&A Expenses	
	Operating Cash Flow	(EBITRAD)
less	Research & Development	
	Business Cash Flow	(EBITDA)
less	Depreciation & Amortization	
	Operating Profit	(EBIT)
	Interest	
	Pre Tax Profit	(EBT)
less	Income Taxes	
	Net Income	

When there is no bottom line to which a multiple can be applied, many financial analysts have turned to higher levels such as: Sales, EBITRAD, EBITDA, EBIT and EBT. Of those, the most common is EBITDA, which is related to Enterprise Value ("EV" = the total of all debt and preferred shares at book value, plus the common equity at market value).

One application of the EV/EBITDA Ratio is shown below, which compares, on a simplified basis, Rogers Communications with Inco. It demonstrates that, when expressed in those terms, exaggerated Price/Earnings Ratios become at least comprehensible numbers.

$million	**Rogers**	**Inco**
Net Income	(100)	50
Per Share $	(0.55)	0.33
Depreciation	500	200
Interest	400	150
Tax	-	20
EBITDA	800	420
Debt at Bank	5,000	2,000
Equity at Market	4,000	5,000
	9,000	7,000
PER	na	100
EV/EBITDA	11.3	16.7

In valuing software companies, we prefer to go one step up the chain and use EBITRAD, which also adds back R&D, in that industry a capital item.

From a strategic point of view, management of e-commerce companies are right to keep spending on marketing, even though this results in accounting losses. e-Commerce is still in its infancy and its rapid growth is showing little signs of slowing down. The general view is that businesses which are the first to move into a market and spend enough, capture the most customers at the lowest cost and manage to keep them.

Even though the Internet has speeded up many activities, it takes time to build a real business online. From its founding in 1985 until 1996, AOL did not make a profit. Now, with only reasonable earnings and a multi-billion dollar market capitalization, it is in the process of merging with Time Warner, the world's largest media company, to which the market has given a lower value. The big question is how long e-commerce companies should "investment spend" on marketing and accept the deferring of profits.

Based on our three-segment model of business activity, Existing Operations should be encouraged to become profitable after two to three years, with the funds being allocated to Emerging Activities. Future Opportunities may take up to ten years to yield results.

Equity Cash Flow

Usually in valuing a company one asks the question "What is this bundle of Operations and Opportunities worth?" Sometimes, in particular when companies participate in joint ventures, partnerships or strategic alliances in which they share ownership of the activity with other parties, another question has to be asked. "What is the value of an equity claim on this bundle of Operations and Opportunities?"

For such enterprises, it is necessary to establish not merely the value of the activity as a whole, but, in particular, that of the company's interest. The straight-forward way to value this is to estimate its share of the expected future cash flows and then discount them at an appropriate rate. It is often referred to as the Equity Cash Flow ("ECF") approach and is analogous to the "cash-on-cash" return used by real estate appraisers.

In this, both the cash flows and the discount rate differ from those of the traditional or APB approaches. The cash flows must include all fixed charges, such as interest and principal payments, and the discount rate reflect the effect of the financial leverage.

When financial leverage is high, the shares of a firm are effectively a call option on the business. If the business is successful, managers "exercise the option" by repaying some of the loans. If it runs into trouble, the firm will be reorganized and the shareholders receive something for the tax losses which remain in the shell. Under these circumstances, the use of an OPM is not practical, as highly levered equity is in effect a complex sequence of related options, including options on options.

Economic Value Generated

This approach is discussed in detail by John Ferguson as "Economic Value Added". We consider EVG a management tool that:

- Measures the Owners' Benefits
- Accounts for the Cost of Capital
- Reduces Effects of Accounting Differences
- Reflects Creation or Destruction of Wealth.

Many large, well-known companies do not generate any economic value. Siemens, the international electrical/electronics firm, announced in 1999 that it would have a positive EVG by 2001!

Profits are earned when a product or service is sold for more than its total cost of production. Economic Value is generated when a business has a cash return that exceeds the total cost of the capital employed (often called the Capital Charge). The cash return is net revenue less: cash operating costs, maintenance capital expenditures and taxes paid on operating profits. The Capital

Charge is the capital employed, multiplied by the desired after-tax rates of return.

EVG can be applied to any operation; let's look at a convenience store, which is essentially a cash business:

	$'000
Sales	180
Cost of Sales	105
Gross Profit	75
Operating Costs	50
Operating Profit	25
Interest	5
Pre-Tax Profit	20
Income Tax	5
Net Income	15

If Prime is 6%, what return should we look for? Say between twice and three times prime, i.e. 12% to 18%; let's use 15%. Things went well!

.	**$'000**
Our Investment	60
Expected Return (15%)	9
Actual Return	15
Excess	6

We earned $6,000 more than expected, a 10% abnormal return. This is the Economic Value Generated by the business.

Brand Values

One objective of any business is to establish a brand name. Many brands, such as Coca Cola, Xerox, Kleenex, or Volkswagen are known throughout the world and have enormous value as they elicit recognition and encourage purchases. If given a choice between two similar items, consumers will choose the one with the name they recognize, even if it is more expensive.

Brand Equity is a set of assets (and liabilities) linked to a brand's name and logo that adds to (or subtracts from) the benefits provided by a product or service to customers. Brand Equity exists when customers are aware of the brand, loyal to it, and perceive it as denoting quality. Customer

loyalty in purchasing a brand time and time again is the most important value in the name of a brand as it contributes to an even and predictable income stream.

Like nearly all assets, brands can be valued by the three traditional approaches: Cost, Market and Income. However, in certain cases, such as Scotch, it is almost impossible to separate the value of the brand from that of the aged inventories it requires; without the inventories, the brand would not be the same, whereas the stocks on their own would have to be sold at fire sale prices. The Cost Approach, which sums up the present value of all past expenses incurred to create the brand is intuitively appealing. However, in the case of some entrenched brands, the result may be unreasonable and even exceed the Fair Market Value of the entire company. Estimating the cost of recreating the brand is not usually possible.

The Market Approach focuses on transactions in brands. Unfortunately, there is very little data of this type in Canada, and not much in the United States. Sometimes one can identify a comparable brand, such as another type of whiskey that has been involved in a recent transaction, and use it as a proxy.

For the Income Approach, a combination of the Discounted Cash Flow and Net Income Approaches is used. In it, the Free Cash Flow is established for each year; then the return that can be ascribed to each category of identifiable physical or intellectual assets is subtracted. The residual earnings are treated as resulting from the brand itself. The present value of these annual amounts is generally estimated for five years, with a Terminal Value based on a continuation of the growth in perpetuity. The Discount Rate selected is usually based on similar brand transactions and is normally between 15% and 20%.

Non-Financial Factors

A number of studies, including one in "Measures that Matter" by Ernst & Young in 1999, have demonstrated that "non-financial factors can be used as leading indicators of future financial performance", and, when such factors were taken into account, earnings forecasts were more accurate, reducing risk. Some important non-financial factors are:

- Quality of Management
- Effectiveness of Product Development
- Market Share
- Brand Image
- Management Credibility
- Quality of Products & Services
- Ability to Attract & Retain Qualified People
- Customer Satisfaction

The PEG Ratio

In establishing appropriate Capitalization Rates or their more common reciprocal Price/Earnings Ratios ("PER"), the most important single factor is probably the growth rate. The PEG ratio, obtained by dividing the PER by the growth rate, is used by financial analysts to compare the relative "expensiveness" of shares.

The following table looks at four "growth stocks", two US and two Canadian; it shows that when growth is rapid, a three-figure Price/Earnings Ratio, such as that of JDS, may not result in an "expensive" stock in two years' time.

	PER	Growth Rate	PEG	2 Years Forward PER
Coca Cola	40	8%	5.0X	34X
Microsoft	80	35	2.3X	44X
Nortel	90	25	3.6X	57X
JDS	120	80	1.5X	37X

Growth v. Value

As mentioned previously, investors often divide publicly traded shares into Growth or Value stocks. One use of PEG is to compare the estimated "target prices" in two years' time of a Growth and Value stocks. For convenience, each has current EPS of $1.00. The Growth stock is expected to be worth 3.6 times the Value stock.

Economy	Base EPS	Growth Rate	PEG	PER	Target Year 2
New	$1.00	20%	1.5	30	$43.20
Old	$1.00	10%	1.0	10	12.10

Caution

It is essential to apply a "smell test" to all valuations. To demonstrate the improbability of some valuations, John Kay, a Director of London Economics, in an article in the Financial Times, uses the example of "C.com", a world leader in a growing market, which by 2010 is expected to have an annual volume of US $500 trillion.

If C.com can maintain its current 5% market share and earn a 1% net margin in that year, its prospective annual profit will be US $250 billion. Assuming a market growth of 5% thereafter and a 10% Discount Rate, the present value of C.com is US $5,000 billion, ten times that of Cisco, Microsoft or GE.

C.com is actually a real business, the foreign exchange trading operations of Citigroup, which, including all other banking and insurance activities, is valued at about US $170 billion. There are two problems with such a value for C.com: the first is mindlessly projecting trends, "a trend is a trend, but must always end"; the second is that, over time, margins "revert to the mean".

Reality Checks

The final item in this paper describes two reality checks we have found useful. The first is the "Q" ratio, which was developed by Nobel Prize winning economist James Tobin. The second is to determine the implicit discount rate between the current and future values of a share.

The "Q" ratio measures the relationship between a company's Market Capitalization and the cost of replacing its physical assets. The importance of knowledge to software companies is shown by their high "Q" ratios of seven-to-one or more. Old economy companies, such as those in the forest products industry which is dominated by plant, equipment and, in the United States, large amounts of privately owned timber, have "Q" ratios of around one-to-one.

Some years ago a Canadian steel company with a capacity of 400,000 tons a year was accorded a Net Income Value of $700 million by a major accounting firm, using a PER of 14.6X, based on comparable companies listed on the TSE. Adding the $100 million of debt resulted in an Enterprise Value of $800 million, or $2,000 per ton of capacity.

At about the same time, another steel company was increasing its output by 140,000 tons at a cost of $50 million, or $357,000 per ton. Using this figure, the steel company being valued, had a "Q" ratio of 5.6X, a level more common for technology companies, suggesting that the original valuation should be reviewed.

