

A decorative graphic on the right side of the page. It features three blue circles of different sizes, each composed of three concentric rings in varying shades of blue. Two thin blue lines intersect at a point between the top two circles, and another thin blue line extends from the bottom right towards the bottom circle.

# Value Investing Model

User Manual

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## Value Investing Overview

Amongst the various investment styles, Value Investing has established a historical track record of outperformance amongst other investment styles. Founded by Benjamin Graham and David Dodd in the late-1920s, the principle of Value Investing is to purchase companies that are underpriced by the market and has the potential to realize its intrinsic value in the future. With a conservative focus, Value Investors only value a company based on its historical financial position over an entire business cycle, and evaluate if management is capable of replicating past success. Value Investors are not willing to pay extra for company's potential future growth beyond the intrinsic value it is worth today. To evaluate the intrinsic value of a company, Value Investors use two approaches: 1) Net Asset Value (NAV) approach and 2) Earnings Power Value (EPV) approach. In alignment with the principle of conservatism, Value Investors apply a margin of safety to the intrinsic value to compensate for the assumptions and errors made throughout the valuation process. Thus, if the determined entry price (intrinsic value less margin of safety) of a company is greater than the current trading price, the company is considered a value buy.

Taking the methodology of Value Investing, this model provides the convenience of automating the process of Valuing Investing. Investors need to select a publicly-traded North American company and provide additional information based on the notes of the company's annual reports and investor's assumptions. Automatically extracting the company's financial reports through internet sources, the model, in combination with the information provided from investors, will calculate the firm's Net Asset Value (NAV) and Earnings Power Value (EPV). As such, the model will provide the basis of Value Investing and determine if the selected company is considered a value buy. Users also have the flexibility to provide own intuitions by altering various financial inputs, in which the program will automatically update the valuations based on the new inputs.

While traditional valuation models may be able to calculate a firm's equity value without inputs by a user, value investing requires tremendous intuition on the part of the investor regarding the firm's business model, management efficiency, strategic positioning in the industry and general economic conditions. As such, this model is designed for users with a background in the art and science of value investing. Beginners to the investment approach should therefore learn about the style prior to using this model.

### ***Limitation to this Model:***

- 1. This model can only be executed with connection to the internet.***
- 2. Due to the regulatory and structuring of financial statements, this version of the model cannot be used to value financial institutions.***
- 3. This model does not value potential growth aspects of value investing.***
- 4. This model will generate valuation based on past 5 years of financial results, counting from the indicated valuation date by the user in order to incorporate a full business cycle.***
- 5. Using electronic database, incomplete financial reports might be generated due to the errors from the external databases used. Thus, this model will only provide valuation based on the information provided by the databases. Users should verify the completeness of data and make alteration accordingly.***
- 6. This model will only generate valuations of only the current year.***
- 7. This manual will only explain the intuition of this model. However, explanations on calculations will not be provided.***

## Finding a Potential Candidate: The Screening Process

Historical research and evidence has found that while any company can potentially be undervalued, most of these companies share common characteristics. As such, it is imperative that the user take time to first search for companies that meet enough criteria to make the valuation worthwhile. Some common screening measures utilised by value investors are:

### Preliminary Screen Criteria

1. **Low Price/Earnings (P/E) Multiple**
2. **Low Price/Book (P/BV) Multiple**
3. **Low Analyst Coverage**
4. **Small Market-Capitalization**
5. **Developed Market Presence**
6. **Spin-Off Companies**
7. **Temporary Financial Distress**
8. **Temporary Company Problems**
9. **Consistent Dividend Payout**

If a company meets the majority of pre-screen criteria with strong focus on Low P/E, the company is considered a potential value buy.

## Valuation Process

### Weighted Average Cost of Capital (WACC)

The finance theory states that the value of assets is the present value of future cash flow at some type of discount rate. The rate used is the company's weighted average cost of capital (WACC). Value investors utilize a different approach to finding this value than traditional investors. Note that the calculation used here depends heavily on the user's understanding and intuition regarding the business risk of the company.

The model requires the user to assess the business risk and financial risk of the company. Based on this business risk determination, the model will calculate the optimal capital structure for that specific business risk. The model will then determine the company's current debt to capital weighting from the financial statements and what financial risk this weighting implies for the company.

Business risk is based upon the volatility and cyclicity of company's earnings ability amongst external and internal factors, such as economic cycles, market demand and supply, competitions, etc. Financial risk is based on the riskiness of the company's operation and determines at what level of debt to capital ratio the company should bear. For example, a high business risk company with a high level of debt to capital would be more risky, which will lead to high financial risk. Understanding the business and financial risks that are specific to the company, the model will be able to determine the appropriate Equity Risk Premium. In conjunction with the provided Cost of Debt, the model will calculate the WACC for the company.

The following chart provides the guideline of evaluating business and financial risks:

Business Risk	Target Debt to Capital	Financial Risk	Equity Risk Premium	Risk Corresponding Credit Rating
<b>High</b>	>29%	<b>High</b>	8%+	BB to C
	5% to 29%	<b>Medium</b>	7.5%	BBB to B

	<5%	<b>Low</b>	6%	AA to BBB
<b>Medium</b>	>49%	<b>High</b>	5.9%	BBB to B
	30% - 49%	<b>Medium</b>	5%	AA to BBB
	<30%	<b>Low</b>	4%	AA to A
<b>Low</b>	>70%	<b>High</b>	3.9%	BBB to A
	50%-70%	<b>Medium</b>	3%	AA to A
	<50%	<b>Low</b>	2%	AAA to AA

## Return on Invested Capital (ROIC)

WACC is the determined return the company has to generate in order to satisfy the risk and reward of all stakeholders. As such, it is important to evaluate the return the company can achieve through its earnings ability – ROIC. ROIC is return on invested capital, which includes all operating assets plus net working capital. ROIC is determined in two ways: 1) book value of invested capital and earnings and 2) replacement value of invested capital and normalized earnings. In many cases, ROIC Second Pass (Replacement method) is less than ROIC First Pass as First Pass is understating invested capital using book value. The difference between ROIC and WACC determines whether the company has efficient operations. If  $ROIC > WACC$ , the company has the capability of generating greater earnings from its operating assets in comparison to the cost of funding its operating assets. The opposite holds true for  $ROIC < WACC$ .

## Net Asset Value (NAV)

Net Asset Value (NAV) approach is to determine the reproduction value of the company – how much an external party would have to pay to buyout the company's assets and liabilities today with no consideration of synergies and other benefits. This metric calculates the equity value of a firm by deducting liabilities from the total asset value. Since it is the reproduction value at current market price, the value of assets and liabilities have to be adjusted to reflect its true value.

On the asset side, this model will make the following major adjustments:

Asset Types	Adjustments
<b>Receivables</b>	<b><i>Include the amount allocated to Allowance</i></b> Allowance portion of receivables are also assets to the company. Thus, allowance should be added back to the net value of receivables. If no allowance is reported on the financial statements, an adjustment of 5% net receivable will be used as allowance amount.
<b>Inventory</b>	<b><i>Adjust to FIFO Valuation</i></b> Inventory needs to be valued using FIFO. Since US GAAP allows LIFO reporting, adjustments need to be made to convert back to FIFO value.
<b>Present Value of Operating Leases</b>	<b><i>Include the Asset Value from Operating Leases</i></b> Operating Leases provides operating assets contributing to the earnings ability of a company, which needs to be capitalized and added back to asset.

<p><b>PPE and Intangibles</b></p>	<p><b><i>Adjust for Potential Depreciation or Appreciation</i></b></p> <p>Land: Appreciate over time, using adjustment factor of <math>(1 + \text{inflation } (3\%))^{\text{useful life (ex 15 years)}}</math>.</p> <p>Building: Appreciate over time, using adjustment factor of <math>(1 + \text{inflation } (3\%))^{\text{useful life (ex 10 years)}}</math>.</p> <p>Other Assets: Since there are various assets that are depreciative while some are appreciative, thus Other Assets are taken by its book value.</p>
<p><b>Hidden Value</b></p>	<p><b><i>Account for the Value of Hidden Asset</i></b></p> <p>Many of the times, a company's value is beyond the tangible assets it owns. The hidden value is derived from two sources: 1) Product Portfolio and 2) Customer Relations.</p> <p>Product Portfolio is essentially how much competitors will have to spend in R&amp;D to reproduce the company's existing product line. Knowing how much the company spends on R&amp;D annually over its sales, a multiple is used to estimate the hidden value of this asset. One should consider the importance of R&amp;D and the length product life cycle for the success of the business when assigning a multiple.</p> <p>Customer Relations is how much competitors will have to spend in advertising and customer relations to reproduce the same level of customer loyalty and client base of the company. Since customer relations is beyond advertising, valuation of this asset is based upon the proportion of <math>\frac{1}{2}</math> SG&amp;A over sales and corresponding multiplier. One should consider the importance of Customer Relations in generating sales for the business when assigning a multiple.</p>

As for liabilities, the model will do the following adjustments:

Liability Types	Adjustments
<p><b>Present Value of Operating Leases</b></p>	<p><b><i>Include the Liability Value of Operating Lease</i></b></p> <p>Since Operating Leases is added back to Assets, the financing for Operating Leases also needs to add back to is added to Liabilities since these leases are obligated payments.</p>

<b>Market(Fair) Value of Interest Bearing Debt (including Capital Leases)</b>	<p><b><i>Adjust to reflect current Debt Value</i></b></p> <p>The true cost of interest bearing liabilities is determined by the current cost of debt financing vs. the actual interest the company has incurred. If the current cost of debt is higher than the interest payments, the company's liabilities are of less value than recorded book value. Therefore, interest bearing debt needs to be adjusted to the current value of debt.</p>
<b>Employee Stock Options</b>	<p><b><i>Account for the Dilution from Stock Options</i></b></p> <p>In addition to liabilities, stock option holders also own part of the company's assets. Therefore, to find the value of equity, value of stock options needs to be subtracted from net assets. Stock options' value is determined using Black Scholes model.</p>
<b>Underfunded (Overfunded) Pension (A/T)</b>	<p><b><i>Account for the Liability owed to Employee's Pension</i></b></p> <p>Under Defined Benefit Pension Scheme, company is obligated to contribute more if the pension plan is underfunded. When it is overfunded, the company can enjoy a "Pension Holiday", which does not need to provide additional contribution for a period of time until undervalued. With tax benefits, the after-tax value of under or over funded pension needs to be adjusted.</p>

## Earnings Power Value (EPV)

While the NAV model is concerned with the balance sheet of the company, the EPV focuses its efforts on analyzing the company's income statement. The theory behind this calculation is that a normalized cash flow is generated and utilised to perpetuity. This is similar to a traditional Discounted Cash Flow (DCF) valuation technique, but with more conservative estimates of future cash flows and no consideration of growth.

In order to normalize cash flows, the model will adjust for cyclicalities of business cycle and one time expenditures or revenues from the company's operating profit, achieving the normalized EBIT. Taking normalized EBIT after tax, this model then adjusts for non-cash related expenditures and growth related expenditures, such as depreciation, amortization of goodwill and zero growth capital expenditure. This model also accounts for non-operating related cash flows (net of tax), including after-tax discontinued operations and after-tax non-consolidated subsidiary adjustments. As a result, the model will calculate the Zero Growth Cash Flows.

After determining the Zero-Growth Cash Flows, the Earnings Power Value of company is generated by dividing the Zero-Growth Cash Flows by the cost of capital (WACC). To find the equity value, adjustments will need to be made, including less all liabilities and add back the value of excess assets that contributes additional cash flows. The value of liabilities and excess assets need to be adjusted for the fair value, similar to the NAV approach above.

## Intrinsic Value and Entry Price

Under Value Investing Methodology, a firm's intrinsic value is determined based on the lower of NAV or EPV. The difference between NAV and EPV valuation occurs as a result of company's operating efficiency and sustainable competitive advantage against its competitors. When  $NAV > EPV$ , this indicates that the company is generating smaller cash flows compared to the investments from equity holders. This means that the company's management has not been utilizing the firms efficiently or the overall industry is over capacity. As a result, the cost of funding these assets (WACC) is greater than the return on investment (ROIC). Therefore, when  $NAV > EPV$ , the company must also have  $WACC > ROIC$  (replacement value). When  $NAV > EPV$ , it indicates that the firm is destroying value through its expansions and should consider shrinking the business. In these situations, Value Investors would calculate the intrinsic value based on EPV. The difference between NAV and EPV is known as the catalyst value. The investor will determine the probability of the catalyst being realized, which means what is the likelihood for company to unlock the unrealized value of its assets and increase earnings from operations.

Investors should consider the following when determining the probability of catalyst:

Factors Contributing to the Probability of Catalyst
<ul style="list-style-type: none"><li>• <b>Changes in Management</b><ul style="list-style-type: none"><li>○ Potential takeover by competitor who can unlock the value?</li><li>○ New management team?</li></ul></li></ul>
<ul style="list-style-type: none"><li>• <b>Spin offs</b><ul style="list-style-type: none"><li>○ Potential spin off of unprofitable divisions?</li></ul></li></ul>
<ul style="list-style-type: none"><li>• <b>Redistribution of Excess Assets or Liquidation</b><ul style="list-style-type: none"><li>○ Distributing cash back to investors?</li><li>○ Bankruptcy – Fully distributing the value of assets back to investors?</li></ul></li></ul>

On the other hand, when  $NAV < EPV$ , the company has been successful in generating greater return for the investments equity holders have made. The company should then have  $WACC < ROIC$  (replacement value). Value investor would use NAV as the basis of the intrinsic value. The difference between NAV and EPV, in this case, is the franchise value. With  $NAV < EPV$ , this is a sign of superior management and operating efficiency. However, it is important to note that this efficiency or the franchise value may not be sustainable. Similar to the catalyst value, investor needs to determine the probability of sustaining this franchise value.

Factors to consider when evaluating the sustainability of franchise value:

Factors Contributing to the Probability of Catalyst
<ul style="list-style-type: none"><li>• <b>Barrier of Entry</b><ul style="list-style-type: none"><li>○ Patents and exclusive rights?</li><li>○ Capital intensive industry?</li><li>○ Well established position in the market?</li></ul></li></ul>
<ul style="list-style-type: none"><li>• <b>Demand Advantage</b><ul style="list-style-type: none"><li>○ High search and switching costs for customers?</li><li>○ High frequency of purchases?</li></ul></li></ul>
<ul style="list-style-type: none"><li>• <b>Cost Advantage</b><ul style="list-style-type: none"><li>○ Economies of scales advantage?</li></ul></li></ul>
<ul style="list-style-type: none"><li>• <b>Management Sustainability</b></li></ul>



- Do they meet profitability targets?
- Any misleading reporting?
- Are they experienced and highly knowledgeable about industry in order to identify the right strategic direction for the company?
- Are most management internally promoted?
- Do management have a track record of past success?

The following is a guideline for probability of catalyst or franchise value, which should be adjusted based on investor's intuition:

Likelihood of Realizing Catalyst/Franchise Value	Probability
Highly Likely	20%
Likely	50%
Not Likely	80%

Thus, the intrinsic value is determined by:

Intrinsic Value
<b>Lower of NAV or EPV + Catalyst/Franchise Value * Probability of Catalyst/Franchise Value</b>

When determining the entry price, Value Investors would apply a margin of safety on top of the intrinsic value to compensate for all the assumptions made during the valuations. This is a personal preference depending on the investor's risk-profile. Therefore, entry price is determined by:

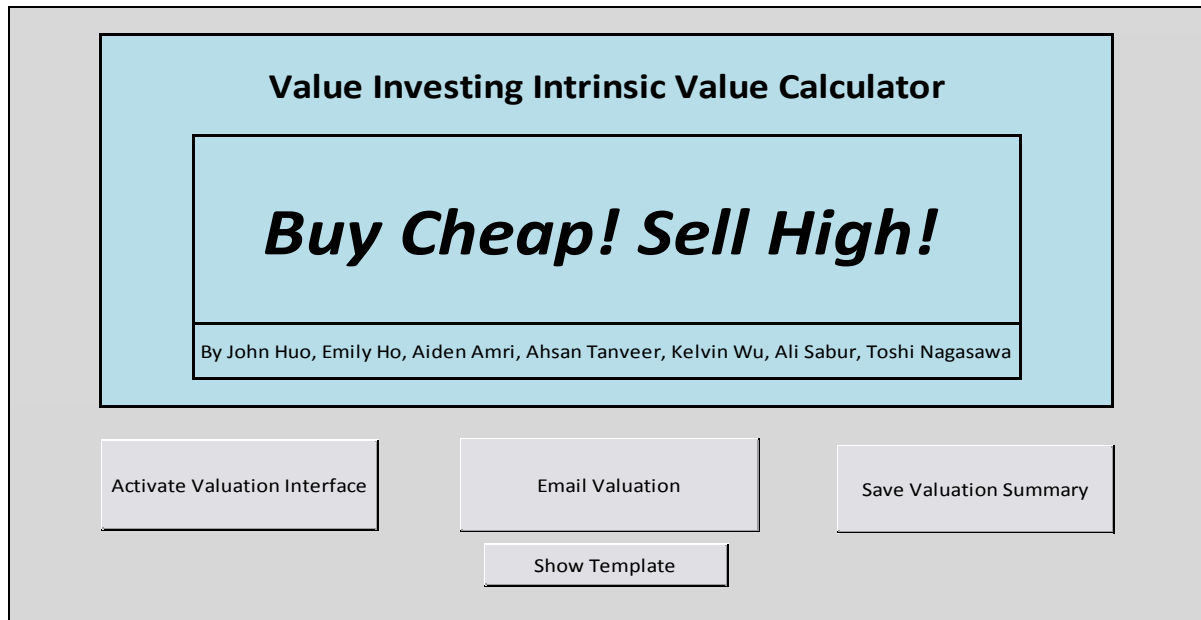
Entry Price
<b>Intrinsic Value * (1 – Margin of Safety)</b>

After determining the entry price, Value Investors would compare the entry price with the current trading price. If Entry Price > Trading Price, the company is a Value Buy. If Entry Price < Trading Price, the company is Not a Value Buy.

Decisions
<b>Entry Price &gt; Trading Price</b> <b>Decision: Value Buy</b>
<b>Entry Price &lt; Trading Price</b> <b>Decision: Not a Value Buy</b>

## Use of Interface – Instructions

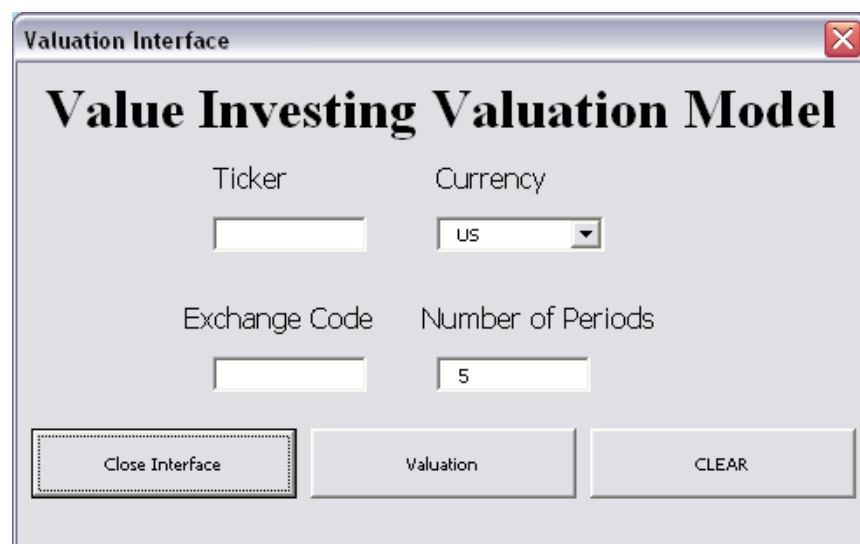
To start this model, user will first select “Active Valuation Interface”.



## Active Valuation Interface

Once selected, user can enter in the Ticker, Currency, and Stock Exchange Code into the dialog box. Stock Exchange Code is, for example, TSE (Toronto Stock Exchange), NYSE (New York Stock Exchange) and NASDAQ (NASDAQ Stock Exchange). As for Number of Periods, the model has it defaulted at 5 years, which is the historical average length of one business cycle.

User can select “Clear” to reset all the parameters. User can also select “Close Interface” to exit. Once selected all the parameters, user can select “Valuation” to run the model.



Once “Valuation” is selected, the model will first retrieve the past 5 years’ financial reports for the chosen company, based on the current date. The financial reports will be displayed as a new

worksheet. Afterwards, the model will automatically generate another worksheet which includes all the inputs and display the various valuation process of Value Investing. In order to calculate the intrinsic value and derive the recommendation, the model requires highly level of user's intuition and assumptions. Thus, under the input section, the model needs user to provide a list of different inputs. These inputs either require user's assumptions or data from the notes section of the company's annual reports. The following section will discuss the details of the inputs required from users.

Upon receiving all the appropriate inputs, the model will automatically re-calculate the different valuations, including: 1) WACC, 2) ROIC (First Pass), 3) NAV, 4) EPV, 5) ROIC (Second Pass – Replacement Value), 6) Comparison between ROIC vs. WACC and NAV vs. EPV, and 7) Intrinsic Value and Recommendation.

## Email Valuation and Save Valuation Summary

This model can also export the valuation via email or save the valuation summary. These functions have been developed on the preliminary level, and will be available for next upgraded version of the model.

## Inputs Required from Users

In order to begin the valuation, investors will have to provide the following inputs:

### 1. Ticker Symbol

User must input the ticker symbol of the company he/she wishes to value. Please note that the investing approach utilised in this model is proven in North American capital markets only.

### 2. Valuation Date

The user must input the year in which the company is to be valued from (note that if the year is 2009, only 2008 annual reports will be available at the time). If user does not indicate the valuation date, the program will default as the current date. As mentioned earlier, Value Investing is to evaluate the worth of a company over its business cycle. Thus, Value Investors normally look into historical performance that is relevant to the current and foreseeable future business model of the company. This program will default to value 5 years of historical data.

## WACC Inputs

WACC calculation is one of those that require high level of interruption and intuition from investors. The inputs used for WACC form the basis for other valuations. Therefore, the model requires the following inputs from user:

### 3. Cost of Debt

Based on the leverage position and credit rating of the company, user will determine the appropriate current cost of debt for the company, which is current risk free + appropriate bond spread given the company's risk profile. Therefore, the user will have to provide the appropriate cost of debt for the company.

### 4. Tax Rate

User will need to provide the statutory tax rate (federal plus state/provincial) for the firm in the most current year, which is indicated in the notes regarding Income Taxes.

### **5. Long-Term Debt and Short-Term Debt**

In calculating the WACC, the targeted debt to capital structure is critical. Thus, users will enter in the target long-term and short-term interest bearing debt. Value investors usually look into historical averages of debt to determine the future capital structure.

### **6. Equity**

Equity is the second part of the capital structure. Thus, user needs to provide the targeted equity amount, which is based upon historical book value of Total Equity.

### **7. Operating Leases Payment Schedule**

As discussed above, operating leases are considered a liability to a firm. Therefore, the model needs to incorporate the impact of operating leases to the company's capital structure. User will enter in the payment schedule of operating leases, located in the notes. The model will automatically determine the present value of the operating leases and the adjusted capital structure.

### **8. Business Risk**

The Value Investing approach of determining cost of equity is different from traditional valuation. Instead of regressing for the beta, Value Investors use the equity risk premium approach. To determine the appropriate equity risk premium, user needs to indicate which level of business risk the company has (High, Medium or Low). The model will then determine the corresponding financial risk, equity risk premium and credit rating.

## **ROIC (First Pass) Inputs**

ROIC requires calculations for NOPLATPA and Invested Capital, which requires the following inputs from user:

### **9. Goodwill, Net**

Goodwill, net of impairment if after 2002 and amortization if before 2002 is considered invested capital. Due to lack of specification from database use for retrieving financial reports, user will have to manually provide the value for goodwill-net for the most recent year of valuation.

### **10. Amortization of Goodwill**

Similar to Goodwill, net, user will have to key in the amortization expense for goodwill for most recent year. However, since 2001, goodwill is not amortized. Therefore, user will have to enter \$0.00 for valuation after 2001. User should carefully consider the potential impairment, which is provided in the notes regarding Goodwill or Acquisitions.

## **NAV Inputs**

As noted above, NAV requires high level of intuitions and assumptions required from user, including:

### **11. Receivable Allowance**

User needs to provide the reported allowance for receivables, which is located in the notes or balance sheet. Otherwise, the model will apply a default rate of 5% to determine the appropriate allowance for the company's receivables.

### **12. Inventory – FIFO Adjustment**

Inventory is reported in LIFO for accounting purposes under US GAAP. However, Value Investors view the value of inventory using FIFO method. Thus, an adjustment is needed if inventory is reported in LIFO.

Companies would indicate the FIFO adjustments in the notes or would have a reserve account for FIFO adjustment on the balance sheet. Therefore, user will need to clarify the FIFO adjustment for the model. When valuing a company using Canadian GAAP, user needs no adjustment and, therefore, puts zero.

### 13. PPE's Years of Adjustment

In determining the replacement value of PPE, user needs to determine the appropriate adjustment factors for each type of assets. The following is a guideline (user should make adjustments according to own analysis and assumptions):

PPE – Years of Adjustment	
Land	15 years
Building	10 years
Machinery	Less technologically advanced: 0.8 Technologically advanced: 0.5

### 14. Product Portfolio – Multiplier

To estimate the hidden value of product portfolio, the multiplier used should reflect the life cycle of the product. Therefore, user needs to provide the approximate years of product cycle. However, user should also adjust according to the size of expenditure made towards R&D.

### 15. Customer Relations – Multiplier

Customer relations are based on the degree of customer loyalty, brand establishment, and sustainable demand. Therefore, user will have to determine the multiplier used base on these criteria. The following is a guideline to identify the appropriate multiplier (which is also at users discretions):

Customer Relations Multiplier	
High Degree (Strong and sustainable customer base)	3
Medium Degree	2
Low Degree (Weak loyalty and low switching cost for customers)	1

### 16. Excess Assets

Beyond the cash flows from operations, equity holders also benefit from the non-operating assets, such as Excess Assets. These assets are currently unused assets that can generate cash flows by selling them in the current market. Therefore, user will need to provide the estimated market value (or fair value) for these excess assets, which should be indicated in the notes or balance sheet of the financial statements.

### 17. Non-Operating Assets – Investment & Advancement Assets

In addition to excess assets, investments made to other companies are also cash flows to equity holders. Thus, user will have to enter in the market value (fair value) of the investments made by the company to other companies.

### 18. Stock Option Inputs

Given that stock options are dilutive to common equity, it is necessary to determine the value of these options. The model uses Black Scholes to determine the value of options. Therefore, user needs to provide the following:

Stock Option Inputs	
•	Spot Price

- **Strike Price**
- **Risk Free**
- **Volatility**
- **Expected Maturity of Options (years)**
- **Dividend**
- **Call or Put indicator**
- **Number of Options**

## 19. Market Value of Pension Plan Assets and Pension Benefit Obligation Liabilities

Defined Benefit Pension Plans are very common amongst today's corporations. Due to the nature of this pension plan, companies are required to generate enough cash flows from the invested pool of pension assets and are obligated to add in additional capital to fund the plan when the obligated cash outflow is greater than the cash inflows from investments. Therefore, the underfunded or overfunded portion of the pension plan (after tax) will decrease or increase the value of equity. Thus, user will need to provide the current Market Value of Pension Plan Assets and Pension Benefit Obligation Liabilities, which are located in the Pension Plan Notes of the annual report.

## EPV Inputs

EPV is to determine the normalized zero growth cash flows that the company will generate till infinity, less the value owed to non-common equity shareholders. Thus, the following inputs are required from users:

## 20. One Time Adjustments

To calculate the normalized Operating Profit, one time expenditures or income from operations also need to be normalized. In order to do so, users will have to key in the different One Time Adjustments he/she would want to normalize. It assumed that these adjustments are reported after EBIT. In some cases, each adjustment involves a series of cash flows over a few years or only one cash flow in one specific year. Each row of the input represents 1 adjustment, with the first row display the years as headings. The user will key in the cash flows per adjustment in each corresponding year. Expenses are negative values and cash inflows are positive values. If no cash flow occurred for specific years, \$0.00 will be entered.

For example – One Time Adjustments

Valuation Date: 12/31/2008

01/12/2008	01/12/2007	01/12/2006	01/12/2005	01/12/2004	Before (input: 0) or After (input: 1) EBIT
\$0.00	\$0.00	-\$26.42	\$0.00	\$0.00	1.00
\$0.00	\$1.28	-\$6.25	\$1.30	-\$34.78	1.00

The user entered in two adjustments:

- 1) Adjustment 1 : \$26.42 M expense in 2006
- 2) Adjustment 2: \$34.78 M expense in 2008, \$1.30 M revenue in 2007, \$6.25 M expense in 2006 and \$1.28 M revenue in 2005

## 21. Stock Compensation Expenses

Since 2004, North American companies are required to record an expense for its stock option compensation. However, since stock options do not require actual cash outflow, these expenses should be added back to the normalized Operating Profit. The user will have to enter in the stock compensation

expense, located in Cash Flow Statement, for the past 5 years from the date of valuation. Values entered will all be in absolute terms (positive values). If no expenses were recorded, user will enter in \$0.00.

For example – Stock Compensation Expenses:

Valuation Date: 12/31/2008

01/12/2008	01/12/2007	01/12/2006	01/12/2005	01/12/2004
\$8.79	\$7.79	\$1.17	\$1.72	\$0.85

## **22. Before Tax Discontinued Operations and Before Tax Non-Operating Income**

User will also manually provide any income (before tax) regarding discontinued operations that incurred in the current year of financial reporting. Non-operating income (before tax) is also needed, which are related to investments the company has made.

## **23. Intangibles (Excluding Goodwill)**

To determine the Zero-Growth Capital Expenditure, the model will need the value of PPE and Intangibles that are not to expansion. Since goodwill is associated to acquisition expansions, therefore, user will need to provide the value of intangibles excluding goodwill. With valuation based on five years of historical data, user will need to provide values of intangibles excluding goodwill for the past five years starting from the specified valuation date. User will need to enter in \$0.00 for years with no intangibles excluding goodwill.

For example – Intangibles (Excluding Goodwill)

Valuation Date: 12/31/2008

01/12/2008	01/12/2007	01/12/2006	01/12/2005	01/12/2004
\$0.00	\$0.00	\$0.00	\$0.60	\$0.78

## **Intrinsic Value Input**

User's intuition plays a critical role in determining the intrinsic value and entry price. As discussed above, intrinsic value is driven by two parts: 1) lower of NAV or EPV and 2) the expected realization value of catalyst or franchise value.

## **24. Probability of Catalyst or Franchise Value**

Through analysis, user will determine the efficiency of the company's operations and its potentials moving forward. Thus, the user will need to provide the probability of realizing the catalyst or franchise value.

## **25. Margin of Safety**

To find the entry price, Value Investors would apply what they believe is a safe buffer – marginal of safety. Therefore, user will have to enter in the percentage of marginal of safety he/she wishes. This model will apply a margin of safety of 30% if user does not indicate his/her preference.

## **26. Current Trading Price**

To determine if the company is a value buy or not, the entry price needs to be compared against the current trading price. Thus, the user needs to provide the current trading price in order to make the investment decision.

## Outputs of Model

Once retrieved all the necessary inputs from users, the model will automatically re-calculate all valuations and display the following:

### Financial Report

Once the model is executed, it will first execute the data retrieval function and extract the 5 years financial data from the specified ticker. When achieved, the model will print the set of statements in a new worksheet, named "Financial\_Data". Within the worksheet, the model is formatted to display five sections of information: 1) General Information, 2) Income Statement, 3) Balance Sheet, 4) Statement of Cash Flows, and 5) Misc Financial Data and Ratios. These statements and information will form the basis of the various valuations involved with value investing. User should also be alert that the completeness of these financial information depends on the information provided by the database.

Using the information from the financial statements and from user's inputs, the model will calculate and generate a new worksheet to display the outputs for all the different valuations. The model will display the breakdown of each calculation that is easy to understand and interpret by user.

The following is an example of the output of the model:

(Note: This example is only to demonstrate the layout of the model's output. The numbers used are artificial.)

### Weighted Average Cost of Capital (WACC )

WACC is to determine the cost of capital the company is demanded for to fund its operations.

WACC CALCULATION		
WACC		
Cost of Debt		12.00%
Tax Rate		39.00%
Cost of Debt After Tax		7.32%
Business Risk	Medium	
Financial Risk	High	
Corresponding Credit Rating	BBB to B	
Equity Risk Premium		5.90%
Cost of Equity		17.90%
Debt		\$154,196.00
+ PV Operating Lease		\$0.00
Total Debt		\$154,196.00
+ Equity		-\$17,311.00
Total Capital		\$136,885.00
Debt to Capital (%)		112.65%
Equity to Capital (%)		-12.65%
WACC		5.98%



## Return on Invested Capital (ROIC) – First Pass

ROIC First Pass is calculated by taking the Net Operating Profits Less Adjusted Taxes Plus Amortization for Goodwill (NOPLATPA) by the average Invested Capital (book value). For the purpose of this program, Invested Capital is calculated based on most recent year of financial reporting, and NOT an average. ROIC First Pass, in most cases, will be greater than ROIC Second Pass since the hidden value of assets is not considered in the Invested Capital of ROIC First Pass.

ROIC PASS 1			
ROIC (First Pass)			
NOPLATPA	01/12/2008		
Operating Profit After Depreciation			-\$4,130.00
- Adjustment for Operating Lease Expense			\$0.00
Net EBIT			-\$4,130.00
- Tax			-\$1,610.70
+ Amortization of Goodwill			\$0.00
NOPLATPA			-\$2,519.30
Invested Capital	01/12/2008		
Current Assets			\$147,635.00
- Excess Cash			\$22,049.00
- Marketable Securities			\$17,411.00
Net Current Assets			\$108,175.00
Current Liabilities			\$110,829.00
- ST Debt			\$63,662.00
Net Current Liabilities			\$47,167.00
Working Capital			\$61,008.00
+ Net Operating Fixed Asset (including Operating Lease, Net PPE and Goodwill)			\$28,780.17
Invested Capital			\$89,788.17
ROIC (First Pass)			-2.81%

## NAV

NAV is calculated by adjusting both assets and liabilities to reflect the replacement value of the company. The value of equity is the net of the adjusted assets and liabilities, over the total undiluted shares.

NAV ASSETS		NAV LIABILITIES	
Cash & Equivalents	\$22,049.00	Accounts Payable	\$14,772.00
Marketable Securities	\$17,411.00	Notes Payable	\$0.00
Accounts Receivable	\$98,158.20	Short Term Debt	\$63,662.00
Loans Receivable	\$0.00	Accrued Expenses	\$0.00
Other Receivables	\$6,073.00	Accrued Liabilities	\$28,728.00
LIFO Adjustment	\$1.00	Unearned Revenue	\$3,667.00
Inventory	\$8,619.00	Current Deferred Tax Liabilities	\$0.00
Prepaid Expenses	\$0.00	Other Current Liabilities	\$110,829.00
Current Deferred Tax Assets	\$0.00	Total Current Liabilities	\$221,658.00
Other Current Assets	\$0.00	Long Term Debt	\$86,975.00
Total Current Assets	\$152,311.20	Capital Lease Obligations	\$0.00
PPE - Land	\$902.06	Noncurrent Deferred Tax Liabilities	\$2,035.00
PPE - Building	\$16,879.59	Other Noncurrent Liabilities	\$31,046.00
PPE - Machinery	\$34,906.40	Minority Interest	\$1,195.00
Excess Land	\$0.00	Preferred Stock	\$0.00
Construction in Progress	\$1,355.00	Employee Stock Options	\$0.00
Operating Leases	\$0.00	Over (Under) Funded Pension	-\$61.00
Other Fixed Assets	\$28,565.00	Operating Leases	\$0.00
Total Fixed Assets	\$82,608.05	Total Noncurrent Liabilities	\$121,190.00
Intangible Assets	\$0.00	Total Liabilities	\$342,848.00
Goodwill	\$215.17	Outstanding Shares	2,412.00
Subsidiaries	\$0.00	NAV/Share	-\$18.25
Noncurrent Deferred Tax Assets	\$3,108.00		
Product Portfolio	\$0.00		
Customer Relations	\$23,157.81		
Licenses	\$0.00		
Other Noncurrent Assets	\$37,427.00		
Total Noncurrent Assets	\$63,907.98		
Total Assets	\$298,827.24		

## EPV

EPV is derived from the perpetuity of Zero Growth Cash Flows, less liabilities and add excess assets.

EPV CALCULATION	
Valuation as of 01/12/2008	
Adjusted Operating Profit	\$2,146.52
+ Adjusted Other Income and Expenses (net)	\$0.00
+ Adjustment for Operating Leases	\$0.00
(Normalized) EBIT	\$2,146.52
- Taxes on EBIT	\$837.14
+ A/T Adjusted Income from Discounted Operations	\$0.00
(Normalized) NOPLAT	\$1,309.38
+ Amortization of Goodwill (Merger Related)	\$0.00
(Normalized) NOPLATPA	\$1,309.38
+ Depreciation and Amortization of Other Intangibles	\$12,925.00
Gross Cash Flows	\$14,234.38
- Replacement Investment (0 Growth CapEx)	\$12,925.00
(Normalized) Zero Growth Free Cash Flows from operations	\$1,309.38
+ Non-Operating Cash Flows (Only A/T Income from Investee Companies)	\$0.00
(Normalized) Zero Growth Free Cash Flows	\$1,309.38
Cost of Capital	5.98%
EPV	\$21,888.62
+ Cash	\$22,049.00
+ Excess Real Estates/Assets	\$0.00
+ Non Operating Assets	\$0.00
+ Pension Fund Over (Under) Funded A/T	-\$61.00
- Total Debt	\$86,975.00
- PV Operating Leases	\$0.00
- Preferred Stocks	\$0.00
- Minority Interest	\$1,195.00
- Stock Options	\$0.00
Value of Equity	-\$44,293.38
Shares Outstanding	2,412.00
Price per Share	-\$18.36

## Return on Invested Capital (ROIC) – Second Pass

After calculating the replacement value of net assets (NAV) and normalized earnings (EPV), ROIC Second Pass (Replacement Value) is then determined.

ROIC PASS 2	
ROIC (Second Pass)	
NOPLATPA - Normalized Value	01/12/2008
Normalized EBIT	\$2,146.52
- Tax	\$837.14
+ Amortization of Goodwill	\$0.00
Normalized NOPLATPA	\$1,309.38
Invested Capital - Replacement Value	
01/12/2008	
Current Assets	\$152,311.20
- Excess Cash and Marketable Securities	\$39,460.00
Net Current Assets	\$112,851.20
Current Liabilities	\$221,658.00
- ST Debt	\$63,662.00
Net Current Liabilities	\$157,996.00
Working Capital	-\$45,144.80
+ Net Operating Fixed Asset (including Operating Lease, PPE and Goodwill, Hidden Asset)	\$76,061.04
Invested Capital	\$30,916.24
ROIC (Second Pass)	4.24%

## Consistency between ROIC (Replacement Value) vs. WACC and EPV vs. NAV

With all the components calculated, the model will compare ROIC (replacement value) with WACC, and determine if the difference (ROIC < or > WACC) is consistent with the difference between EPV and NAV (EPV < or > NAV). If ROIC > WACC, then EPV > NAV. If ROIC < WACC, then EPV < NAV. If these two arguments are not consistent, user needs to revisit the calculations above.

ROIC VS WACC	
ROIC (Replacement) vs. WACC	
ROIC (Replacement)	4.24%
WACC	5.98%
Is ROIC (Replacement) > or < WACC?	ROIC (Replacement) < WACC
NAV	-\$18.25
EPV	-\$18.36
Is NAV < or > then EPV?	NAV > EPV
Is ROIC vs. WACC consistent with NAV vs. EPV?	Yes

## Intrinsic Value and Recommendation

Finally, the intrinsic value is determined by taking 1) the lower of EPV or NAV, and 2) expected value of catalyst or franchise value. Once intrinsic value is calculated, determined margin of safety is applied to find the entry price, which is then compared against the current trading price in order to determine if the company is a value buy.

INTRINSIC VALUE SUMMARY	
Intrinsic Value	Valuation as of 01/12/2008
EPV	-\$18.36
NAV	-\$18.25
Is it a Catalyst or Franchise Value?	Catalyst
Intrinsic Value Calculation - EPV	-\$18.36
Catalyst	11.31%
Probability of Catalyst	50.00%
Intrinsic Value	-\$18.31
Margin Of Safety	33.00%
Entry Price	-\$12.27
Current Trading Price	\$20.00
Decision	Not a Value Buy