

ARCHE

Value Management

Focused on Performance Improvement and Value Creation

Economic Profit Based Investment Analysis

An Introduction

January 2014

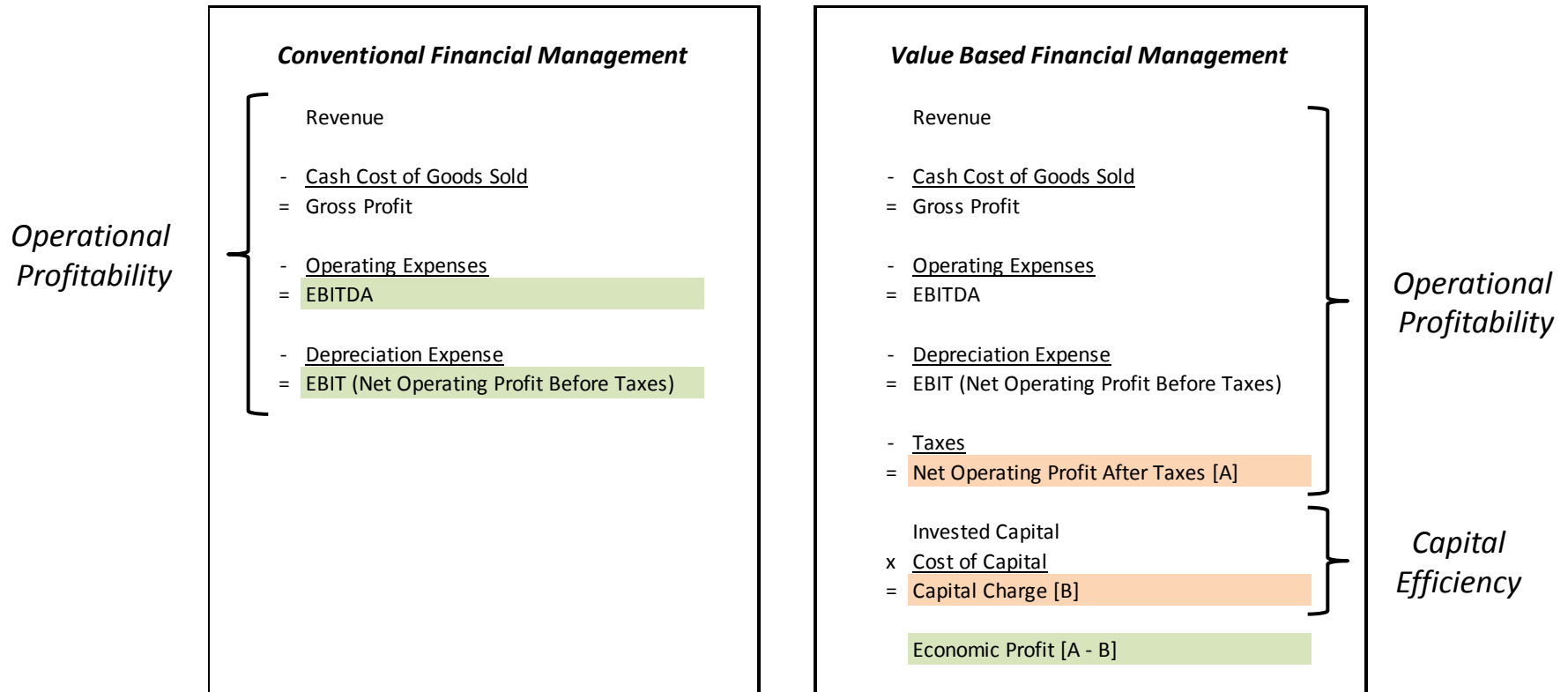


- **Introduction to Value Based Strategy and Management**

Pitfalls of Conventional Financial Management

- **Complexity and Fragmentation** in financial performance measurement and strategic financial management – too many metrics and inconsistent practices, with little integration and weak performance reporting and analysis
- **Imbalance** in financial management with excessive focus on Operating Profit, and insufficient focus on the cost of employed capital -- an imbalance that often increases at lower levels of the organization
- **Excessive Data Production / Insufficient Data Analysis** – a classic problem, which elevates the role of control and compliance and diminishes the effectiveness of strategic finance and performance management
- **Superficial Picture of Performance** - periodic performance analysis is often limited to high level (business unit) review with little if any review of the economic performance of lower level business units / product lines / customers
- **Excessive focus on budgeting** subjugating the role and importance of long-range strategic and financial planning. Target setting, planning and budgeting should be better integrated, simplified and focused on value creation
- **Heavy screening / weak accountability** - Over reliance on capital budgeting procedures to direct capital employment and management, ex ante, will not provide ex post accountability for earning the cost of capital on investment, as financial management reverts to Operating Profit and the cost of capital investment becomes at best opaque, and at worst irrelevant
- **Weak Linkage to Management Incentive Compensation** – Corporate performance and governance is weaker in situations where management incentive compensation lacks objectivity, transparency and a sound economic basis. Weak implementation simply compounds the problem

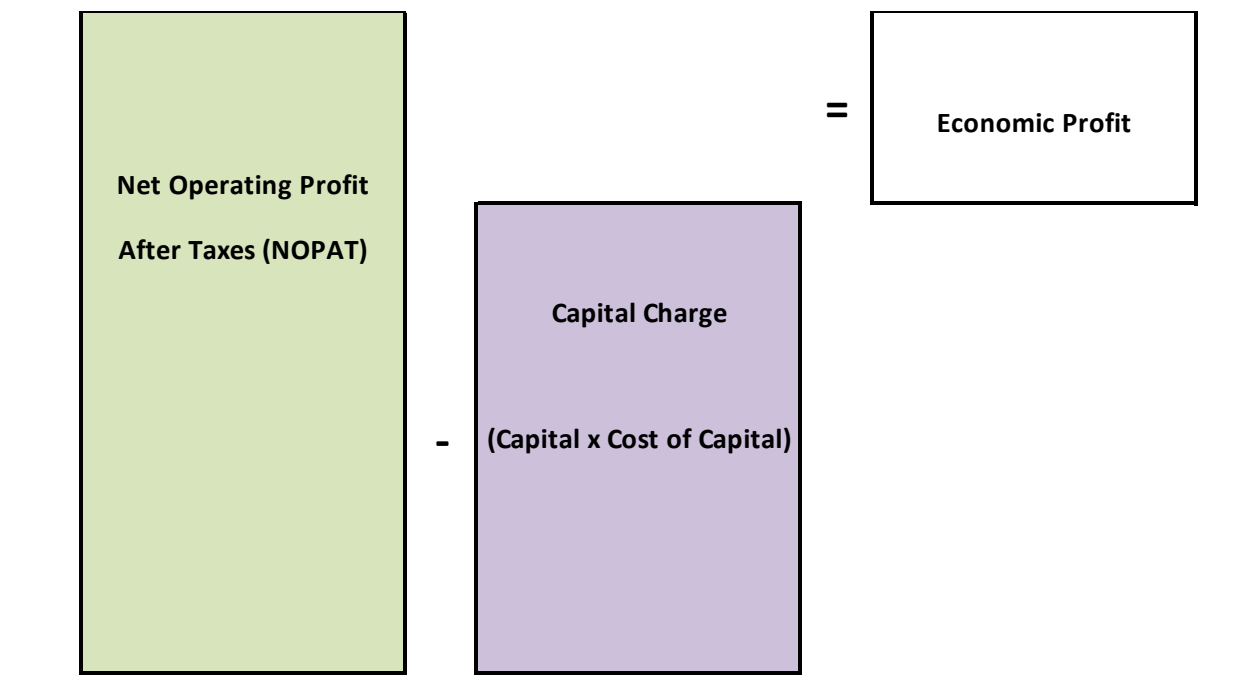
Conventional versus Value Based Financial Management



- Conventional financial management is distortive, as the generation of Operating Profit becomes the primary focus. Capital is not explicitly managed through the operational financial management system
- Value based financial management provides better balance by systematically recognizing and seeking balance between the generation of Operating Profit and the management of invested Capital

Economic Profit

The Measurement of Value Creation



- Economic Profit is a period performance measurement of the residual profitability available after all costs of a business have been covered, specifically the all operational and capital investment related costs
- Economic Profit is effectively normalized Free Cash Flow, where the one-time (cash based) investment costs of a Free Cash Flow model are converted into a series of periodic Capital Charges
- ***Significantly, the Net Present Value of Economic Profit will yield the same valuation as the Net Present Value of Free Cash Flow. Economic Profit, however, has the joint benefit of being both a performance measurement and valuation tool***

Economic Profit

Performance Measurement Outline – An Example

Operating Approach

Net Operating Profit After Tax (NOPAT) [A]	150
Capital	1,000
x <u>Capital Charge [B]</u>	<u>10%</u>
= Capital	100

Economic Profit [A - B]	\$50
-------------------------	------

Financing Approach

Net Operating Profit After Tax	150
÷ <u>Capital</u>	<u>1,000</u>
= Return on Capital, R	15%
- <u>Cost of Capital</u>	<u>10%</u>
= (R - C) Spread	5%
x Capital	1,000

Economic Profit	\$50
-----------------	------

- Economic Profit is a measurement of the true residual profit or value creation
- Economic Profit measures true profit as it reflects all sources of Revenue and all sources of Cost incurred by a business, i.e. both the full Operating and Capital cost structures
- Economic Profit can be readily computed from an Operating or Financing Approach, with the same end result
- While positive Economic Profit is the goal, the objective, period to period, should be to focus on the continuous improvement in Economic Profit, regardless of whether the absolute level is positive or negative

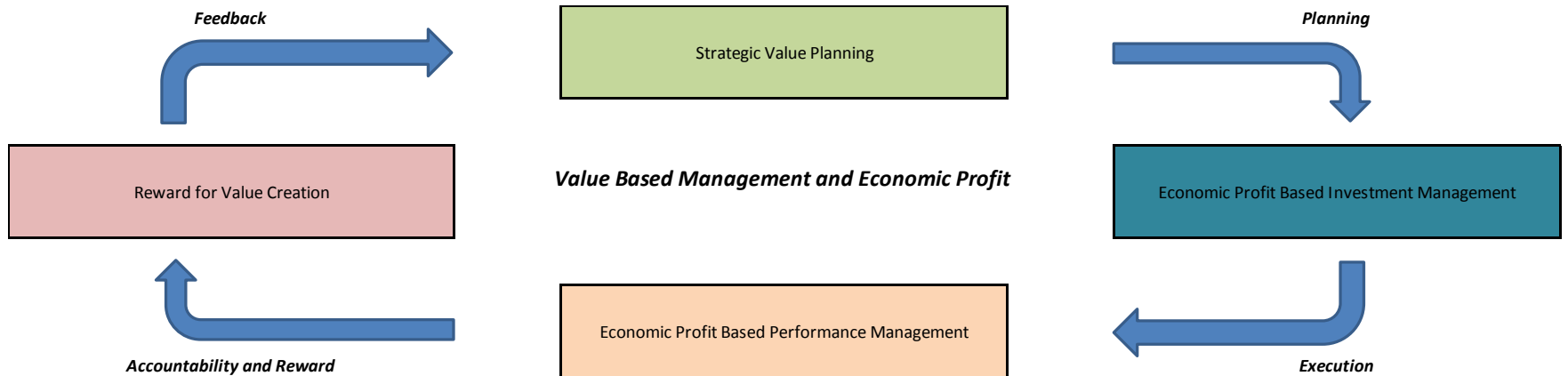
Economic Profit

Generalized Industrial Company Application

<i>NOPAT Calculation</i>		<i>Capital and Capital Charge Calculation</i>		<i>Economic Profit Calculation</i>	
Revenue	800	Current Assets	250	NOPAT	150
- <u>Cost of Goods Sold</u>	<u>500</u>	- <u>Non-Interest Bearing Current Liabilities</u>	<u>150</u>	- <u>Capital Charge</u>	<u>100</u>
= Gross Profit	300	= Net Working Capital [A]	100	= Economic Profit	\$50
- <u>Selling, General & Administrative Expenses</u>	<u>100</u>	+ Property, Plant & Equipment	500		
= Net Operating Profit Before Tax	200	+ Long-term Investments	200		
		+ <u>Intangible Assets</u>	<u>200</u>		
- Economic Taxes @ 25%	50	= Long-term Assets [B]	900		
= Net Operating Profit After Tax	\$150	Capital [A + B]	\$1,000		
		x <u>Cost of Capital</u>	<u>10%</u>		
		= Capital Charge	\$100		

- **Economic Profit** is composed of the following components:
 - ✓ **Net Operating Profit After Tax** – after-tax measurement of operating Revenue minus total operating expenses (definition of operating is critical, here)
 - ✓ **Capital** – can be viewed equivalently as the sources of Capital that finance a business i.e. Debt and Equity, or the uses of Capital that drive a business, i.e. Net Working Capital, Property, Plant & Equipment and Other Long-term Assets
 - ✓ **Cost of Capital** – cost factor reflecting the (investment Capital) weighted average cost of debt and equity capital

Value Based Strategy and Management

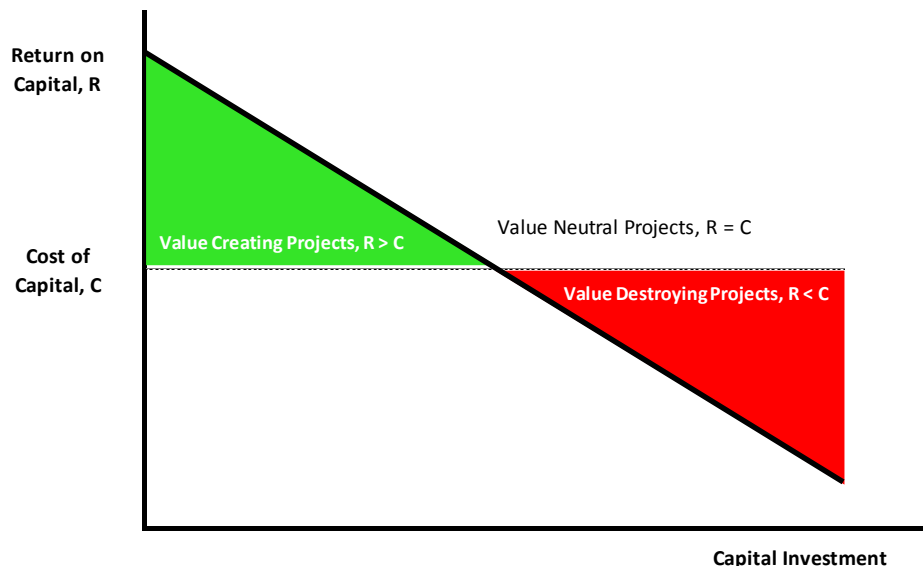


- Introducing Economic Profit as the basis of strategic planning, investment analysis, performance management, and incentive compensation is key to focusing management on the goal of value creation, and ultimately in ensuring its delivery
- *Value Based Strategy and Management will align the goals, metrics and methods, and rewards of employees and investors, and thereby strengthen corporate capability, governance, performance, and ultimately valuation*

-
- **Economic Profit Based Investment Analysis**

Value Based Strategy and Management

The Foundation



Value is created when $R > C$

Value is destroyed when $R < C$

Economic Profit = $(R - C) \times \text{Capital}$

- The foundation of value based strategy and management (and business economics in general) suggests:
 - ✓ invest when the average Return on Capital is expected to exceed the Cost of Capital, over the economic life of a project. This includes situations where the average expected return for the project is below the average return of the company, but above the Cost of Capital
 - ✓ proactively harvest and recycle Capital when the average expected Return on Capital is below the Cost of Capital, for and investment's remaining economic life. Delaying these actions will result in further value destruction
- Value based strategy and management is built upon this fundamental investment decision rule

Free Cash Flow and Economic Profit

Equivalent Approaches

Free Cash Flow Model

Revenue
- <u>Operating Expenses</u>
= Net Operating Profit Before Taxes
- Taxes on Operating Profit
= Net Operating Profit After Taxes (NOPAT)
- Net Investment (Change in Capital)
= Free Cash Flow

Economic Profit Model

Revenue
- <u>Operating Expenses</u>
= Net Operating Profit Before Taxes
- Taxes on Operating Profit
= Net Operating Profit After Taxes (NOPAT)
- Capital Charge (Capital x Cost of Capital)
= Economic Profit

- **Cash is King**, as the old business saying goes. Ultimately net cash inflow over time, i.e. cash inflow in minus cash outflow, determines enterprise value. This is the basis of the Free Cash Flow model – the simple reflection of business as a cash box
- While Cash flow is a sound basis for valuation, it should not be used for performance management, as cash flow can increase or decrease for a variety of non-performance related issues
- Economic Profit is an excellent basis for a financial management system given the equivalence between Free Cash Flow and Economic Profit over time, i.e. **Net Present Value of Free Cash Flow equals the Net Present Value of Economic Profit**, and the fact that Economic Profit is a period measurement of performance, i.e. Total Revenue minus Total Cost of the period

-
- **Example Investment Opportunity**

Example Investment Opportunity

Outline

- The following example provides illustration of both the Economic Profit and Free Cash Flow based models of investment analysis
- Please do recognize that the example is a simplified illustration of a prescribed methodology, and that the underlying financial information is simply illustrative
- Assumptions of the example include:
 - Taxes computed at a flat rate of 25% for all years (see NOPAT calculation)
 - Cost of Capital fixed at 11% for all years (see Economic Profit calculation)
 - 2013 Debt and Liabilities assumed to be \$15,000 (see Valuation Analysis)
 - 2013 Shares outstanding assumed to be 25,000 (see Valuation Analysis)
- The example investment analysis includes:
 - Net Operating Profit After Tax Calculation
 - Capital Calculation
 - Economic Profit Calculation (Operating and Financing Approaches)
 - Net Present Value Calculation, both Economic Profit and Free Cash Flow Models
 - Economic Profit Based Valuation Analysis

Example Investment Opportunity

Net Operating Profit After Taxes (NOPAT) Calculation

	F2014	F2015	F2016	F2017	F2018	F2019	F2020	F2021	F2022	F2023
NOPAT Calculation										
Revenue	25,000	26,250	27,563	28,941	30,388	31,907	33,502	35,178	36,936	38,783
Cost of Goods Sold	12,500	13,125	13,781	14,470	15,194	15,954	16,751	17,589	18,468	19,392
<u>Depreciation Expense</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>
Gross Profit	7,500	8,125	8,781	9,470	10,194	10,954	11,751	12,589	13,468	14,392
<i>Gross Profit Margin</i>	30.0%	31.0%	31.9%	32.7%	33.5%	34.3%	35.1%	35.8%	36.5%	37.1%
Selling and Marketing Expenses	3,000	3,150	3,308	3,473	3,647	3,829	4,020	4,221	4,432	4,654
Administrative Expenses	125	131	138	145	152	160	168	176	185	194
<u>Other (Income) Expense</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net Operating Profit Before Taxes (NOPBT)	4,375	4,844	5,336	5,853	6,395	6,965	7,563	8,192	8,851	9,544
<i>NOPBT Margin</i>	17.5%	18.5%	19.4%	20.2%	21.0%	21.8%	22.6%	23.3%	24.0%	24.6%
Operating Taxes	1,094	1,211	1,334	1,463	1,599	1,741	1,891	2,048	2,213	2,386
<i>Country Marginal Tax Rate</i>	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Net Operating Profit After Taxes (NOPAT)	3,281	3,633	4,002	4,390	4,797	5,224	5,673	6,144	6,638	7,158
<i>NOPAT Margin</i>	13.1%	13.8%	14.5%	15.2%	15.8%	16.4%	16.9%	17.5%	18.0%	18.5%

- Calculation of forecast Net Operating Profit After Taxes (NOPAT) for the example investment opportunity
- NOPAT is derived from Income Statement information

Example Investment Opportunity

Capital Calculation

	2013	F2014	F2015	F2016	F2017	F2018	F2019	F2020	F2021	F2022	F2023
Capital Calculation											
Operating Cash	440	500	525	551	579	608	638	670	704	739	776
Accounts Receivable	2,110	2,397	2,517	2,643	2,775	2,914	3,060	3,213	3,373	3,542	3,719
Inventory	2,411	2,740	2,877	3,021	3,172	3,330	3,497	3,671	3,855	4,048	4,250
<u>Other Current Assets</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Current Assets	4,961	5,637	5,919	6,215	6,526	6,852	7,194	11,506	22,925	34,852	47,314
Accounts Payable	2,110	2,397	2,517	2,643	2,775	2,914	3,060	3,213	3,373	3,542	3,719
Accrued Expenses	1,507	1,712	1,798	1,888	1,982	2,081	2,185	2,295	2,409	2,530	2,656
<u>Other Current Assets</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Non-Interest Bearing Current Liabilities	3,616	4,110	4,315	4,531	4,757	4,995	5,245	5,507	5,783	6,072	6,375
Net Working Capital	1,344	1,527	1,604	1,684	1,768	1,857	1,949	5,998	17,142	28,781	40,938
Net Property, Plant & Equipment	50,000	45,000	40,000	35,000	30,000	35,000	30,000	25,000	20,000	15,000	10,000
Intangible Assets	0	0	0	0	0	0	0	0	0	0	0
Associated Investments	0	0	0	0	0	0	0	0	0	0	0
<u>Other Long-term Assets</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total Long-term Assets	50,000	45,000	40,000	35,000	30,000	35,000	30,000	25,000	20,000	15,000	10,000
Net Assets	51,344	46,527	41,604	36,684	31,768	36,857	31,949	30,998	37,142	43,781	50,938
Capital	51,344	46,527	41,604	36,684	31,768	36,857	31,949	30,998	37,142	43,781	50,938
<i>Net Investment</i>	<i>51,344</i>	<i>(4,817)</i>	<i>(4,924)</i>	<i>(4,920)</i>	<i>(4,916)</i>	<i>5,088</i>	<i>(4,907)</i>	<i>(951)</i>	<i>6,144</i>	<i>6,638</i>	<i>7,158</i>

- Calculation of forecast employed Capital of the example investment opportunity
- Capital is derived from Balance Sheet information

Example Investment Opportunity

Economic Profit Calculation

	F2014	F2015	F2016	F2017	F2018	F2019	F2020	F2021	F2022	F2023
Economic Profit Calculation - Operating Approach										
NOPAT	3,281	3,633	4,002	4,390	4,797	5,224	5,673	6,144	6,638	7,158
Beginning Capital	51,344	46,527	41,604	36,684	31,768	36,857	31,949	30,998	37,142	43,781
Cost of Capital, C	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>
Capital Charge	5,648	5,118	4,576	4,035	3,494	4,054	3,514	3,410	4,086	4,816
Economic Profit	(2,367)	(1,485)	(574)	354	1,302	1,170	2,158	2,734	2,553	2,342
<i>Economic Profit Margin</i>	-9.5%	-5.7%	-2.1%	1.2%	4.3%	3.7%	6.4%	7.8%	6.9%	6.0%

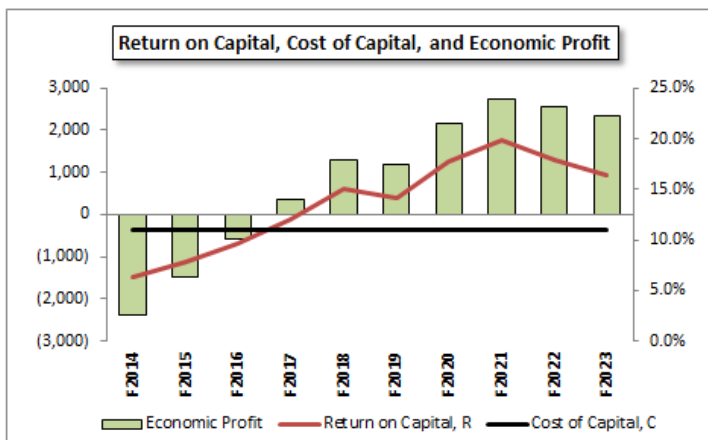
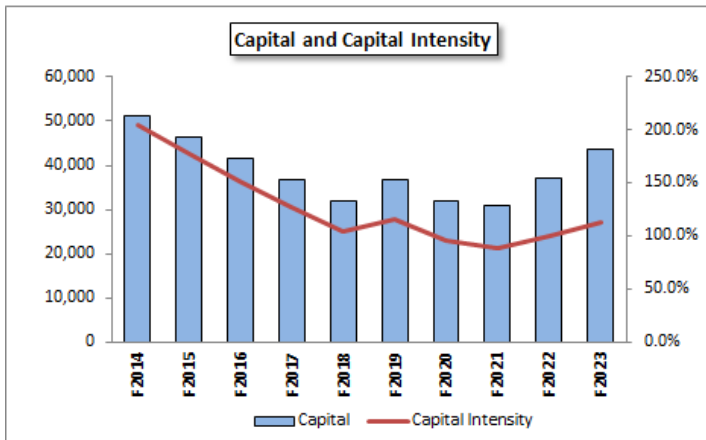
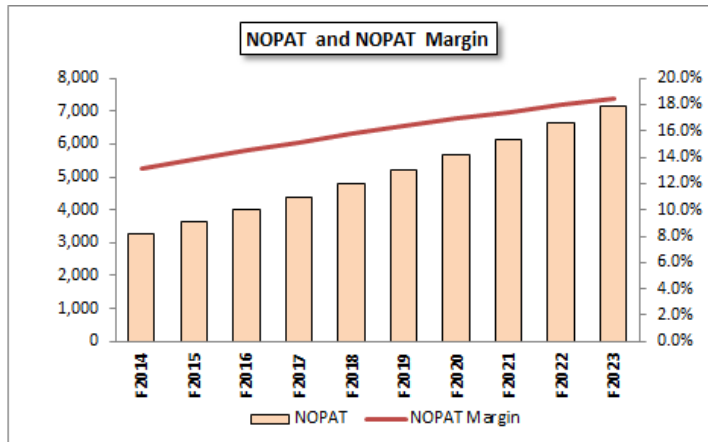
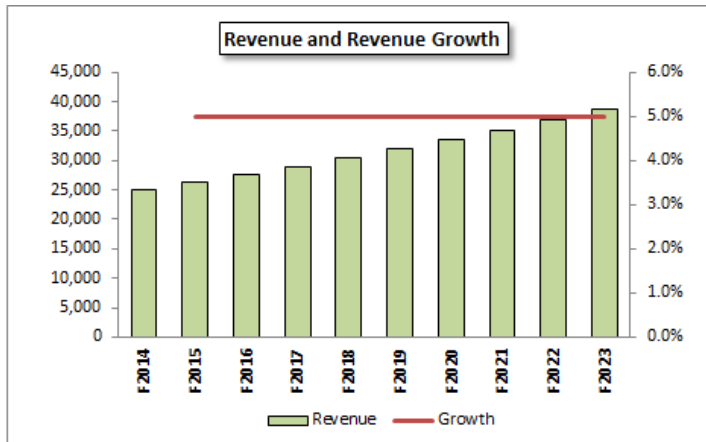
Economic Profit Calculation - Financing Approach

NOPAT	3,281	3,633	4,002	4,390	4,797	5,224	5,673	6,144	6,638	7,158
Beginning Capital	<u>51,344</u>	<u>46,527</u>	<u>41,604</u>	<u>36,684</u>	<u>31,768</u>	<u>36,857</u>	<u>31,949</u>	<u>30,998</u>	<u>37,142</u>	<u>43,781</u>
Return on Capital, R	6.4%	7.8%	9.6%	12.0%	15.1%	14.2%	17.8%	19.8%	17.9%	16.3%
Cost of Capital, C	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>
Spread, R - C	-4.6%	-3.2%	-1.4%	1.0%	4.1%	3.2%	6.8%	8.8%	6.9%	5.3%
Beginning Capital	51,344	46,527	41,604	36,684	31,768	36,857	31,949	30,998	37,142	43,781
Economic Profit	(2,367)	(1,485)	(574)	354	1,302	1,170	2,158	2,734	2,553	2,342
<i>Change in Economic Profit</i>	(2,367)	881	911	929	948	(132)	988	576	(181)	(211)

- Calculation of Economic Profit using the Operating and Financing Approaches. Note that both approaches produce equivalent Economic Profit results

Example Investment Opportunity

Economic Profit Based Performance Summary



- Economic Profit based graphical performance summary of the example investment opportunity

Example Investment Opportunity

Net Present Value Calculation

	2013	F2014	F2015	F2016	F2017	F2018	F2019	F2020	F2021	F2022	F2023	Terminal
Net Present Value of Free Cash Flow Calculation												
NOPAT		3,281	3,633	4,002	4,390	4,797	5,224	5,673	6,144	6,638	7,158	7,158
- Net Investment	51,344	(4,817)	(4,924)	(4,920)	(4,916)	5,088	(4,907)	(951)	6,144	6,638	7,158	0
- Free Cash Flow	(51,344)	8,098	8,556	8,922	9,305	(292)	10,131	6,623	0	(0)	0	65,071
x Present Value Factor	1.000	0.901	0.812	0.731	0.659	0.593	0.535	0.482	0.434	0.391	0.352	0.352
= Present Value of Free Cash Flow	(51,344)	7,295	6,945	6,524	6,130	(173)	5,416	3,190	0	(0)	0	22,917
Net Present Value of Free Cash Flow		6,900										
Net Present Value of Economic Profit Calculation												
NOPAT [A]		3,281	3,633	4,002	4,390	4,797	5,224	5,673	6,144	6,638	7,158	7,158
Beginning Capital	51,344	46,527	41,604	36,684	31,768	36,857	31,949	30,998	37,142	43,781	50,938	50,938
x Cost of Capital, C	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
= Capital Charge [B]	5,648	5,118	4,576	4,035	3,494	4,054	3,514	3,410	4,086	4,816	5,603	5,603
Economic Profit [A - B]		(2,367)	(1,485)	(574)	354	1,302	1,170	2,158	2,734	2,553	2,342	14,132
x Present Value Factor		0.901	0.812	0.731	0.659	0.593	0.535	0.482	0.434	0.391	0.352	0.352
= Present Value of Economic Profit		(2,132)	(1,205)	(420)	233	773	625	1,039	1,186	998	825	4,977
Net Present Value of Economic Profit		6,900										

- Net Present Value of Free Cash Flow and Economic Profit computed for the example investment opportunity
- Note that the Net Present Value of Economic Profit equals the Net Present Value of Free Cash Flow

Example Investment Opportunity

Economic Profit Based Valuation Analysis

	2013	F2014	F2015	F2016	F2017	F2018	F2019	F2020	F2021	F2022	F2023	Terminal
NOPAT [A]		3,281	3,633	4,002	4,390	4,797	5,224	5,673	6,144	6,638	7,158	7,158
Beginning Capital		51,344	46,527	41,604	36,684	31,768	36,857	31,949	30,998	37,142	43,781	50,938
x <u>Cost of Capital, C</u>		<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>	<u>11.0%</u>
= Capital Charge [B]		5,648	5,118	4,576	4,035	3,494	4,054	3,514	3,410	4,086	4,816	5,603
Economic Profit [A - B]		(2,367)	(1,485)	(574)	354	1,302	1,170	2,158	2,734	2,553	2,342	14,132
x <u>Present Value Factor</u>		<u>0.901</u>	<u>0.812</u>	<u>0.731</u>	<u>0.659</u>	<u>0.593</u>	<u>0.535</u>	<u>0.482</u>	<u>0.434</u>	<u>0.391</u>	<u>0.352</u>	<u>0.352</u>
= Present Value of Economic Profit		(2,132)	(1,205)	(420)	233	773	625	1,039	1,186	998	825	4,977
Net Present Value of Economic Profit		6,900										
+ <u>Beginning Capital</u>		<u>51,344</u>										
= Enterprise Value		58,244										
- <u>Debt and Liabilities</u>		<u>15,000</u>										
= Market Value of Equity		43,244										
÷ <u>Shares Outstanding</u>		<u>25,000</u>										
Intrinsic Share Price		\$1.73										

- Valuation of Enterprise Value and the intrinsic share price for the example investment opportunity, which could, for instance, represent an acquisition opportunity

Benefits of Economic Profit and Value Based Management

- ***Streamlined financial management focused on value creation*** More focus and less clutter in the financial management system, with a clear focus on value creation
- ***Integrative measurement and management of growth, profitability and capital efficiency*** through the introduction of an Economic Profit based performance measurement model
- ***Better portfolio review and performance*** as Economic Profit based performance measurement and management is introduced from the consolidated company, to the business unit, to the product / customer level
- ***Integration of Performance Management with Strategic Finance*** as Economic Profit is effectively normalized Free Cash Flow, it integrates all strategic and financial management processes around the concept of value creation
- ***Improved Capital management*** and ex-post accountability for generating returns that exceed the cost of capital through the systematic introduction of a charge for invested Capital
- ***Enhanced business literacy and managerial capability*** through the introduction of Economic Profit based measurement, management, decision tools and training
- ***Better alignment*** of the goals, objectives and rewards of those who manage the business with those who own the business
- ***Greater Enterprise Value*** as the delivery of value (Economic Profit) builds into shareholder wealth (Enterprise Value and Share Price) over time

Arche Value Management

Focused on Performance Improvement and Value Creation

- The mission of Arche Value Management (AVM) is to support client companies in their drive to improve performance and valuation through the effective implementation of advanced, value focused strategic, financial management and governance practices
- AVM is a Canadian (Toronto based) company with expertise in the design and implementation of advanced financial and strategic management technology, with the effectiveness of this technology being enabled through well designed and implemented management incentive compensation and corporate governance practices
- AVM is led by Mack Ferguson, a leading practitioner in the field of applied corporate finance and value based management technology. Mack was formerly President of the Americas Consulting Division of Stern Stewart & Co. (Canada, Caribbean, Central & Latin America, US), a pioneering firm in the field of applied corporate finance and the developer of EVA[®] (Economic Value Added)
- Customized consultancy services and solutions are provided in the following areas:
 - ✓ *Business Diagnostics and Capabilities Assessment*
 - ✓ *Business Portfolio Strategy, Valuation and Management*
 - ✓ *Organizational Strategy and Design*
 - ✓ *Value Based Financial and Performance Measurement*
 - ✓ *Financial Strategy, Policy Definition and the Cost of Capital*
 - ✓ *Value Based Business Planning and Target Setting*
 - ✓ *Managerial Incentive Compensation*
 - ✓ *Operations based Financial Management*
 - ✓ *Pre- and Post-Merger and Acquisition Advisory*
 - ✓ *Managerial Capabilities Building, Training and Education*

ARCHE

Value Management 

Focused on Performance Improvement and Value Creation

Please contact Arche Value Management at the following address for more information:

Mack Ferguson
Managing Partner

Arche Value Management
116 Madison Avenue, 2nd Floor
Toronto, Ontario M5R 2S5

Tel: 416 848 7794
Email: mferguson@archevaluemanagement.com
website: www.archevaluemanagement.com