



# **BV203: Comprehensive Case Study**

## **Course Manual**

BV203: Comprehensive Case Study

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## About This Course

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The International Institute of Business Valuers emphasizes that these course materials are not authoritative. They are intended to be used as a foundation for lectures and discussions, in conjunction with observations by the course instructors and students.

The valuation process and approaches presented in this course are:

- Not the only valuation process and approaches used by competent appraisers;
- Not the only way that individual valuation methods could or should be done; and
- Not to be taken as a “cookbook” process or approach that may be applied to any appraisal situation.

Appraisals must be based on full knowledge of the facts and circumstances of the Subject Company, its industry and the economic environment. A particular valuation process or approach that is relevant for one company at a particular point in time may not be appropriate for another company or a different point in time.

### **Purpose of iiBV203**

This is a capstone course which applies the theory learned in iiBV201 and iiBV202 to a set of three case studies involved in the international auto parts manufacturing industry (two minor cases and one major case study). The subject companies are to be analysed in a student group format. The lecture is only used to present each section of the particular case study. Groups of 4 to 6 students are responsible for deriving their own opinions of value.

The purpose of this course is to provide students with an opportunity to work through an actual set of case study materials that will follow all of the steps of a valuation engagement, from initial contact through the calculations and reconciled conclusion of value.

It is assumed that students have successfully completed iiBV201 and iiBV202 and are now ready to apply their knowledge to an actual case situation. The objective of iiBV203 is to assist students develop their situational awareness of the when and why to apply their valuation knowledge.

### **Overview of Case Studies and Chapter Contents**

As mentioned above, this course involves the valuation analysis of a set of three case studies involved in the international auto parts manufacturing industry (two minor cases and one major case study).

The two minor case studies are used to illustrate issues concerning assessing the engagement (chapter 1) and valuing the business based upon the market transaction method (chapter 6).

The major case study involves an Indian auto parts manufacturer and is used to form the basis of the economic and industry analyses (chapter 2). This case is then used to value the Subject Company both under the guideline public company method under the market approach (GPC method – chapter 5) and the discounted future earnings method under the income approach (DCF method – chapter 7). In addition this case study forms the basis for reconciling the results from the GPC market method and the DCF income method (chapter 8).

The ninth chapter of the course reviews the current status and structure of the International Valuation Standards.

Since the majority of valuation practitioners work for large firms in either transaction services, financial advisory services or IFRS, iiBV203 more appropriately mimics the types of analysis that Big 4 practitioners experience on an international basis.

It is important to note that the course is *introductory* in nature. The assumption is that although the student may have limited experience in valuation or in a related financial field, he/she has received no formal valuation training other than iiBV201 and iiBV202. This is not a course in advanced market analysis or cost of capital techniques.

### **Format of the Course**

The course is presented in nine chapters as briefly described above. Chapters 1–8 are composed of lecture material, informational exhibits (e.g., industry and company data), and a series of team exercises that will apply the valuation techniques discussed in the lecture material.

The lecture material in each chapter is a review of the material covered in iiBV201 and iiBV202. The student will note the extensive nature of the lecture material. This has been provided so that the full curriculum of the previous two courses is essentially complete, and therefore will provide a sufficient study guide for the exam at the end of the course without referring to the previous two courses texts.

Part of the lecture material is drawn from classic finance education, including capital markets theory, while some is based on valuation tools and techniques which comprise current best practices as of 2013. Some material is drawn from common practices in developing economies and is not supported by theoretical research or documented studies.

While the lecture materials are extensive, the instructor will only be summarizing it in relation to the case material. The objective of iiBV203 is to assist students to develop their situational awareness of the when and why to apply information provided in light of the lecture materials.

Ask questions if the discussion covers unfamiliar material. It is unlikely that you are the only one who has questions. More than the lecture courses, this course offers you the opportunity to learn from the experience of other practitioners. Students come from different practices and have varying experiences and viewpoints. It is probable that your viewpoint will enhance the understanding of another student.

**Exam**

On the last day of the course, you will take a multiple-choice exam, consisting of 100 questions, each worth one point. On the day before exam day, the last day of lecture and class participation, the instructors will conduct an exam review session that will highlight important areas of the course materials you need to understand for the exam. Instructors are also available to answer questions on a one-on-one basis before or after class and at class breaks.



# Chapter 1. Assessing the Engagement

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1. Five Steps to the Appraisal Process
  - A. Define the engagement
  - B. Gather the relevant data
  - C. Analyse the data
  - D. Assess the value
  - E. Write the report
2. Defining the Engagement
  - A. Determine the purpose of the valuation and the Valuation Date.
    - (1) Purpose – strategic planning, purchase price allocation, fair value assessment, sale/merger/acquisition pricing, estate/gift tax, shareholder litigation, business litigation, lost business value damages, etc.
      - (a) The purpose of the valuation may affect the premise, standard and level of value
    - (2) Valuation date – the date of the event which corresponds to the purpose of the valuation (can only use **information known or knowable** as of the valuation date)
    - (3) Language – the language the report will be written in (as well as relevant accounting principles or tax jurisdictions where applicable)
      - (a) Identify the type of business
        - ◆ Incorporated companies – publicly traded, privately owned, etc.
        - ◆ Other types of enterprises – sole proprietorships, partnerships, limited liability companies, etc.
      - (b) Define the “premise of value” – going concern versus liquidation
      - (c) Determine the “standard of value” (sometimes termed “basis of value”)
        - ◆ “Fair Market Value” often used – International Glossary of Business Valuation Terms:

**Fair Market Value** – The price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm’s length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.

- ◆ Other standards of value include fair value and value in use (financial reporting), fair value (shareholder litigation), investment value, intrinsic value, synergistic value, strategic value, etc.
- (d) Define the “level of value”
  - ◆ Level of value – control versus minority interest, senior debt rights, etc.
- (e) Define specific business interest to be valued
  - ◆ Business unit – subsidiary or division, single whole company, group of companies, operating assets, intangible assets, etc.
  - ◆ Type of financial capital – debt, convertible debt, preferred stock, common stock, warrants, options, etc.
  - ◆ Marketable or nonmarketable – state whether it is a marketable interest versus nonmarketable interest (privately held, closely held, etc.).
- (f) Ensure you have the knowledge, competence, and capacity to complete the engagement.
- (g) Ensure you are independent and free of conflicts of interest (if not, then the conflict of interest must be disclosed).

### 3. Preliminary Review

- A. Emphasis is on assessing the potential issues that may be encountered during the engagement
- B. Obtain a good understanding of the Subject Company
  - (1) History
  - (2) Operations
  - (3) Competitive environment

- (4) Customer profile
  - (5) Management profile
  - (6) Physical plant
  - (7) Thumbnail SWOT analysis
- C. Obtain a thorough understanding of the economy
- (1) Identify the current status and outlook of the business cycle
  - (2) Outlook for unemployment, consumer sentiment, discretionary income, etc.
  - (3) Level of inflation, interest rates and availability of credit
  - (4) Status and outlook for government fiscal and monetary policy
- D. Obtain a thorough understanding of the industry
- (1) Concentrated or fragmented
  - (2) Life stage – growth or maturity
  - (3) Level of competitive rivalry
  - (4) Exposure to general economic factors
- E. Quantitative financial performance analysis
- (1) Perform a preliminary analysis of the Subject Company on basis of:
  - (2) Growth
  - (3) Profitability
  - (4) Asset management (core and non-core assets)
  - (5) Capital employed (consider in relation to industry norms)
4. Engagement Letter Considerations
- A. Name/contact information of client
  - B. Name & location of company being appraised
  - C. Identify type of capital being valued (intangible assets, debt, equity, etc.)
  - D. Valuation date, level of value, standard and premise of value
-

- E. Intended users of, and use for, report
- F. Type of valuation services, delivery date(s), fees, cancellation/extension terms, etc.
- G. Management representations, information required they provide, list of employees and professional advisors to interview
- H. Valuer's assumptions/limitations/restrictions

5. Exercise 1-1 Review Preliminary Data

**Exhibits Provided:** Review and analyse the following information:

Exhibit 1A: Auto Parts Superior, Ltd.

Exhibit 1B: Auto Parts Superior's Balance Sheet

Exhibit 1C: Auto Parts Superior's Historical Statements of Income

**Exercise 1-1:** Based on the information contained in Exhibits 1A, 1B and 1C answer the following problems:

Problem 1-1.1: Key Observations (Company)

Problem 1-1.2: Key Observations (Balance Sheet)

Problem 1-1.3: Key Observations (Historical EBITDA)

Problem 1-1.4: Key Observations (Engagement)

Problem 1-1.5: Engagement Letter Considerations

**Problem 1-1.1:** Key Observations (Company)

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**Problem 1-1.2:** Key Observations (Balance Sheet)

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**Problem 1-1.3:** Key Observations (Historical EBITDA)

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**Problem 1-1.4:** Key Observations (Engagement)

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**Problem 1-1.5:** Engagement Letter Considerations

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## 6. Exhibit 1A: Auto Parts Superior, Ltd.

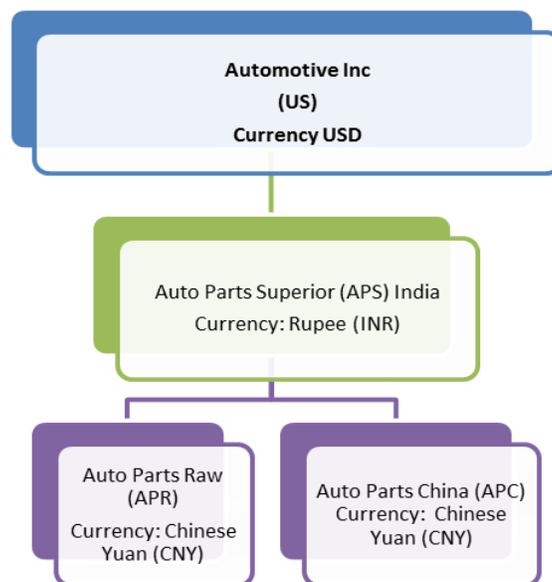
## A. Engagement Details.

- (1) Your firm, BV Consultants, is one of the largest European boutique advisory and valuation firms. The firm consists of 6 partners and 50 full time professional staff.
- (2) Due to the past experience your firm has gained in valuing companies involved in the automobile industry your firm has been approached to provide a historical valuation as follows:
  - What is to be valued – the fair market value of 100% the common shares of a major auto parts manufacturing company, the India based Auto Parts Superior, Ltd. (APS or the Company),
  - Purpose of the valuation - the purpose concerns a US Internal Revenue Service (IRS) tax dispute regarding a corporate transaction between APS and its US parent Automotive Inc. (AI), a multinational auto components manufacturing company. The US IRS is challenging a hybrid financing structure which occurred in midyear 2013 whereby the interest payable by APS to AI was in the form of shares of APS.
  - Valuation date – the hybrid financing transaction between APA and its US parent AI occurred on July 31, 2013, which is the valuation date.
- (3) Your valuation report is required as soon as possible and will be subject to careful scrutiny as it will be submitted to tax authorities in both US and Asia.
- (4) An engagement issue is that one of your firm's partner's relatives owns several WM dealerships.
- (5) This will be a significant assignment for your firm and will utilize the majority of the firm's resources for a period of 6 to 8 weeks. With a project of this size, your firm normally breaks up the research and analyses into teams – economic and industry analysis, business enterprise analysis, market approach, and income approach.

*Sometimes indicated values derived from the market approach team can differ significantly from values generated by the income approach team. **This situation generates lively discussions during value reconciliation.***

**B. Description of Auto Parts Superior, Ltd.**

- (1) Auto Parts Superior, Ltd. (APS) has been operating in auto parts manufacturing since 1995 and is a supplier of climate, electronics and interiors systems, modules and components to automotive OEM manufacturers including BMW, Chrysler, Daimler, Ford, General Motors, Honda, Hyundai, Kia, Nissan, PSA Peugeot Citroen, Renault, Toyota and Volkswagen.
- (2) While APS sells its products primarily to OEM vehicle manufacturers, it also sells to the worldwide aftermarket for replacement and vehicle appearance enhancement parts.
- (3) APS currently holds 20% local market share in India (market share has been stable for the past 3 years) and was successful in implementing new design processes in the production process which has provided material cost savings. APS' global market share is assessed at 7%.
- (4) Besides selling OEM auto parts to APS's international customers, APS also has two fully owned (100%) subsidiaries both located in China with which it does business; Auto Parts Raw (APR) is the main supplier of all raw materials and Auto Parts China (APC) which sells auto parts into the Chinese market. Purchases from APR are invoiced in Chinese Yuan.
- (5) The following is a partial organizational structure on or about the June 30, 2013 Valuation Date:



C. Further Details Concerning APS Operations and Market

- (1) APS sales into the Indian market (60%) are done through APS domestic distribution channels and are invoiced in Indian Rupee (INR).
- (2) Sales into the Chinese market (30%) are done through APC and are invoiced in Chinese Yuan (CNY).
- (3) The remainder is sold into the US market (10%) and are done through its parent Automotive Inc. being invoiced in USD.
- (4) APS currently holds 20% local market share in India (market share has been stable for the past 3 years) and was successful in implementing new design processes in the production process which has provided material cost savings. APS' global market share is assessed at 7%.
- (5) APS competes with well-known international brands that are already well positioned in both the domestic and global market. In addition, there are a large number of local auto parts manufacturers specializing on certain segments.
- (6) Demand has been slowly declining for the past 5 years due to weak demand from domestic OEMs, sluggish export volumes and slow replacement market sales. Over the medium term however, factors such as auto OEMs' growing thrust on localization, auto suppliers' efforts to expand business in new geographies, the strong upside potential to replacement market demand, should allow the Indian auto components industry to grow at a relatively faster pace 2013-2018.
- (7) APS realized that the market is rewarding companies that invest in R&D and design so the company is planning considerable investment in its New Delhi plan (modernization of current facility) in 2013. Investment will be completed in 2 years.
- (8) In 2013 APS-India plans considerable capital expenditures (CapEx) in New Delhi plant (modernization of current facility).
- (9) As of the valuation date the Company (APS) has 10.000 m2 of land close to New Delhi that is not being used. the land was bought for a new manufacturing facility but due to the slow-down in growth of the Indian market, management has decided to postpone that project and rather focus on renewing current facilities.
- (10)

## 7. Exhibit 1B: APS's Balance Sheet

Auto Parts Superior (APS) - INDIA							
Historical Balance Sheets For the fiscal year ended December 31							
	In Millions of Indian Rupee (INR)					5-Year Historical FY2008-FY2012	
	2008	2009	2010	2011	2012	Average	Median
<b>Current Assets</b>							
Cash at bank and in hand	20	22	25	28	30	25	25
Accounts receivable	380	405	445	500	545	455	445
Inventory	525	537	600	650	720	606	600
<b>Total current assets</b>	<b>925</b>	<b>964</b>	<b>1,070</b>	<b>1,178</b>	<b>1,295</b>	<b>1,086</b>	<b>1,070</b>
<b>Non-current assets</b>							
Gross property, plant & equipment	1,086	1,214	1,457	1,544	1,609	1,382	1,457
Less: accumulated depreciation	(524)	(594)	(684)	(794)	(929)	(705)	(684)
<b>Property, plant and equipment (net)</b>	<b>562</b>	<b>620</b>	<b>773</b>	<b>750</b>	<b>680</b>	<b>677</b>	<b>680</b>
Intangible assets	137	188	163	179	240	181	179
Deferred Tax Assets	0	0	15	20	25	12	15
<b>Total non-current assets</b>	<b>699</b>	<b>808</b>	<b>951</b>	<b>949</b>	<b>945</b>	<b>870</b>	<b>945</b>
<b>Total Assets</b>	<b>1,624</b>	<b>1,772</b>	<b>2,021</b>	<b>2,127</b>	<b>2,240</b>	<b>1,957</b>	<b>2,021</b>
<b>Current Liabilities</b>							
Short term interest bearing debt	605	648	718	632	578	636.2	632
Accounts Payable	450	440	494	475	482	468.2	475
<b>Total current liabilities</b>	<b>1,055</b>	<b>1,088</b>	<b>1,212</b>	<b>1,107</b>	<b>1,060</b>	<b>1,104</b>	<b>1,088</b>
<b>Non-current liabilities</b>							
Long term interest bearing debt	100	110	120	150	150	126	120
Deferred tax liabilities	15	20	17	18	15	17	17
<b>Total non-current liabilities</b>	<b>115</b>	<b>130</b>	<b>137</b>	<b>168</b>	<b>165</b>	<b>143</b>	<b>137</b>
Provisions for future liabilities	0	0	10	15	15	8	10
<b>Long-term Liab - Actual and Provisional</b>	<b>115</b>	<b>130</b>	<b>147</b>	<b>183</b>	<b>180</b>	<b>151</b>	<b>147</b>
<b>Total Liabilities</b>	<b>1,170</b>	<b>1,218</b>	<b>1,359</b>	<b>1,290</b>	<b>1,240</b>	<b>1,255</b>	<b>1,240</b>
<b>Stockholders' Equity</b>	<b>454</b>	<b>554</b>	<b>662</b>	<b>837</b>	<b>1,000</b>	<b>701</b>	<b>662</b>
<b>Total Liabilities &amp; Equity</b>	<b>1,624</b>	<b>1,772</b>	<b>2,021</b>	<b>2,127</b>	<b>2,240</b>	<b>1,957</b>	<b>2,021</b>
<i>Control</i>	0	0	0	0	0		
<b>Additional Calculations</b>							
Conventional working capital	(130)	(124)	(142)	71	235	-18	-124
Operating working capital (Invest. Cap.)	475	524	576	703	813	618	576
Depreciation and amortization	34	70	90	110	135	88	90
CAPEX net of disposed assets	63	179	218	103	126	138	126
CAPEX / Depr&Amort	185.3%	255.7%	242.2%	93.6%	93.3%	174.0%	185.3%
Interest-bearing Debt	705	758	838	782	728	762	758
Equity / Invested Capital	454	554	662	837	1,000	701	662
<b>Invested Capital</b>	<b>1,159</b>	<b>1,312</b>	<b>1,500</b>	<b>1,619</b>	<b>1,728</b>	<b>1,464</b>	<b>1,500</b>
Debt / Equity	1.6	1.4	1.3	0.9	0.7	1.2	1.3
Debt / Invested Capital	61%	58%	56%	48%	42%	53%	56%
Equity / Invested Capital	39%	42%	44%	52%	58%	47%	44%
<b>Notes</b>							
<i>Operating working capital = current asset minus non-interest bearing current liabilities</i>							
<i>Invested Capital = interest-bearing debt + equity</i>							
<i>We are assuming balance sheets are prepared on consolidated basis taking into account currency exchange differences.</i>							

## 8. Exhibit 1C: APS's Historical Statements of Income

<b>Auto Parts Superior (APS) - INDIA</b>							
<b>Historical Income Statements For the fiscal year ended December 31</b>							
	<i>In Millions of Indian Rupee (INR)</i>					<b>5-Year Historical FY2008-FY2012</b>	
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>Average</b>	<b>Median</b>
<b>Revenue</b>	<b>2,101</b>	<b>2,320</b>	<b>2,558</b>	<b>2,865</b>	<b>3,209</b>	<b>2,611</b>	<b>2,558</b>
Cost of revenue	(1,429)	(1,589)	(1,727)	(1,928)	(2,153)	(1,765)	(1,727)
<b>Gross Profit</b>	<b>672</b>	<b>731</b>	<b>831</b>	<b>937</b>	<b>1,056</b>	<b>845</b>	<b>831</b>
Selling expenses	(120)	(90)	(110)	(130)	(145)	(119)	(120)
Personal expenses	(250)	(245)	(252)	(265)	(285)	(259)	(252)
Administrative expenses	(95)	(100)	(110)	(115)	(120)	(108)	(110)
Depreciation and amortization	(34)	(70)	(90)	(110)	(135)	(88)	(90)
Write offs	-	(12)	(13)	(29)	(32)	(17)	(13)
Other operating expenses	(32)	(35)	(38)	(43)	(32)	(36)	(35)
<b>Total operating expenses</b>	<b>(531)</b>	<b>(551)</b>	<b>(613)</b>	<b>(692)</b>	<b>(749)</b>	<b>(627)</b>	<b>(613)</b>
<b>Operating profit (EBIT)</b>	<b>142</b>	<b>179</b>	<b>218</b>	<b>245</b>	<b>307</b>	<b>218</b>	<b>218</b>
Finance income	-	-	-	-	-	0	0
Finance costs	(35)	(40)	(65)	(70)	(80)	(58)	(65)
<b>Profit before tax (EBT)</b>	<b>107</b>	<b>139</b>	<b>153</b>	<b>175</b>	<b>227</b>	<b>160</b>	<b>153</b>
Tax	-	(39)	(46)	-	(63)	(30)	(39)
<b>Profit from continuing operations</b>	<b>107</b>	<b>100</b>	<b>107</b>	<b>175</b>	<b>163</b>	<b>131</b>	<b>107</b>
Discontinued operations	-	-	-	-	-	0	0
<b>Profit for the year</b>	<b>107</b>	<b>100</b>	<b>107</b>	<b>175</b>	<b>163</b>	<b>131</b>	<b>107</b>
<b>Additional Calculations</b>							
Effective Tax rate (% Pre-tax)	0.0%	28.0%	30.0%	0.0%	28.0%	17.2%	28.0%
EBITDA	176	249	308	355	442	306	308
EBIT	142	179	218	245	307	218	218
<b>NOPAT = EBIT x (1-t)</b>	<b>142</b>	<b>129</b>	<b>153</b>	<b>245</b>	<b>221</b>	<b>178</b>	<b>153</b>

# Chapter 2. Industry & Economic Analysis

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## Section A. Introduction

1. Analyzing and understanding the general economic and industry environment is fundamental in assessing the Subject Company's investment **risk ("k")** and potential **growth ("g")**. Analysis of external valuation factors can be assisted through using analytical constructs such as Porter's Competitive Rivalry model (discussed later) or a SWOT model, which can serve as a starting point of analysis.
  - A. **S**trengths of the Subject Company that provide a competitive advantage
  - B. **W**eaknesses of the Subject Company that hinder competitive success
  - C. **O**pportunities provided by the external environment
  - D. **T**hreats provided by the external environment
2. External factors affecting the subject of valuation can be best observed by a thorough economic and industry analysis. Each business is an integral part of global/regional/local economy and operates in line with characteristics of the corresponding industry. As such, the economic and industry analysis represents an important part of each valuation assignment.
  - A. Purpose of industry analysis – understand the industry, understand the position of the Subject Company within the industry, identify external opportunities and threats, assess risks, and evaluate the company's business strategy.
  - B. Purpose of economic analysis – understand the general economic environment and its impact on the Subject Company's industry, especially in regards to understanding the cyclicity of the economic environment and its potential implications on forecasting **growth** and assessing **risk**.
3. Economic and industry environments are not independent of each other and should be analyzed simultaneously. The valuer should get an understanding of the current economic cycle and expected developments and how this might affect projections. The level of the maturity of the industry and the positioning of the industry in relation to overall economic activity.
  - A. Some industries are more affected by current economic conditions than others. The "Automotive industry" is disposed to movements in economic cycle (high inventory, high business leverage, high sensitivity of demand to the phase of economic cycle) as opposed to "Utilities industry" that is relatively noncyclical.

**QUESTION: What types of industries are strongly affected by the business cycle?**

**What types of industries are relatively immune to such cycles?**

4. Businesses operate on global and/or regional/local levels, hence the global/regional/local view on economic and industry analysis must be taken into consideration.
  - A. Global view – understanding firm opportunities and challenges that result from globalization.
    - (1) For example access to new markets, foreign regulation or indirect barriers; access to a larger variety of goods at potentially lower prices, access to new resources such a labor, technology, knowledge; need to understand country specific risks
  - B. Local and Regional view – understanding regional and local opportunities and limitations that affect the macroeconomic outlook and or specific industry.
    - (1) For example local environmental regulations, availability/limitation of skilled labor, any limitation on land development and use, limitation on available facilities, etc.
5. Company valuation is usually done as of a specific date (“valuation date”), taking into consideration all the facts **known or knowable** as at valuation date including industry and economy related information.
  - A. What is the “cut-off date”? A “purist” might say that the data should be produced and available **on or before** the valuation date, including:
    - (1) Company financial statements
    - (2) Guideline or guideline public company financial data
    - (3) Economic and industry analysis
    - (4) Benchmarking financial performance data
    - (5) Data used to develop discount rates
  - B. A more practical position – having accurate data as of the valuation date is the most important consideration, acknowledging that there are varying time delays in how quickly the data is produced and distributed.

- C. Potential distortion of information as of the “valuation date” would include understanding the relationship between economic and the capital market cycle.
  - (1) Sector indexes within recessions have been shown to vary considerably among different industries (cyclicality of capital markets). In the period beginning 2007 to middle 2009 differences between industries amounted to 20 or even 40 percentage points, which in turn affects valuations under the market approach and also under the income approach.
  - (2) Valuers should therefore have at least basic understanding of economic, capital market and lead indicator cycle movements.
- 6. How to approach economic and industry analysis:
  - A. Economic and industry analysis should be considered as the building blocks or foundation for the Subject Company valuation.
  - B. Use of third-party economic and industry analysis is permissible, but only if the valuer interprets the data in light of its effects on the Subject Company’s risk and growth profile, and ultimately the effect on its business value.
  - C. Valuer should pay attention which economies to analyze. Some companies have their shares domiciled in one country but headquarters in another. Sometimes valuers look to where the cash flows are generated. However it is also important to consider the legal rights of investing in shares domiciled in a country regardless of where the cash flows are earned.
  - D. The valuer should take into consideration the purpose of the valuation assignment, the specifics of the Subject Company and how the selected valuation methods influence economic and industry analysis. Valuer should tailor economic and industry analyses based on the selection of valuation methods for certain valuation assignments.
    - (1) *Market and Income approaches* – Would concentrate on industry growth trends, industry margins, benchmark analysis, factors impacting market capitalization multiples or discount rates such as risk-free rate, country-specific risk, inflation expectations, etc.
    - (2) *Asset approach* – Has to do with valuing a liquidation vs. a going concern, and in some cases an asset intensive company such as a REIT or financial institution. Focus could be on what effect the economy has on selling the assets and liabilities of the company.
      - (a) Depending on classes of assets analysed the valuer might have to be more heavily focused on actual sales of and market for those types of assets – e.g., real estate markets, machinery and equipment markets, etc.

- E. Depending on the specifics of the company, the appraiser may have to more heavily focus on certain relevant facts of the economic and industry analysis.
- (1) International companies with operations in multiple countries would require separate economic and political analysis for each country (country ratings, YTM for local bonds, political risk, and bank related credit availability).
  - (2) Companies with subsidiaries in different industries would require separate industry analysis for each industry.
  - (3) International companies with operations in multiple countries and multiple industries can be complex to analyze there will be “portfolio” effects).

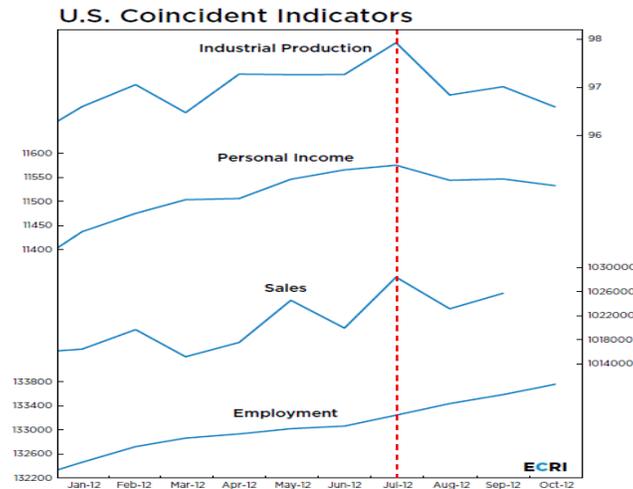
### Section B. General Economic Analysis

1. Analyzing and understanding the economic environment in which a business operates is fundamental to assessing **risk (“k”)** and **growth (“g”)**, and their impact on value.
  - A. Economic analysis should be focused on establishing sensitivity of the industry and Subject Company to changing economic conditions. Hence the valuer should focus on economic indicators that are relevant to the industry and the Subject Company rather than analyzing generic set of indicators.
  - B. Based on characteristics of the Subject Company, the valuer should define the relevant geographic scope of economic analysis.

**QUESTION: What will be the potential effect on value of a geographic scope of operations for company with suppliers, manufacturing plants and/or customers in North America, Europe and Asia?**

2. History has proven that economic environment is cyclical, which is the fact often overlooked while preparing financial forecasts. Cyclicity effects growth of sales, profitability, working capital levels and CAPEX. Valuation models we use do not have built in function for cyclicity. If valuer is not aware of the effects that cyclical environment can have on selected company he/she risks over or under projecting performance of the Subject Company.
3. Thorough economic analysis therefore requires also a basic understanding of economic business cycles (expansion and recession) and capital market cycles (bull and bear markets) and their implications on subject industry/company.
  - A. Economic business cycle – “The natural fluctuation of the economy between periods of expansion (growth) and contraction (recession)”.

- (1) It is generally considered that there are four key parameters whose direction of motion determines future economic changes (sales, production, employment and consumption). When all four of them change together and start to move in the same direction (clear and strong trend) a turn of the economic cycle is indicated.



- (2) Therefore an understanding of the economic business cycle is crucial for financial forecasting due to:
- (a) Different effects on different industry groups
  - (b) Effect on size and availability of sales and cash flows
    - ◆ In growth stage, consumption is increasing, driving increases in inventory – manufacturers project that growth will continue. When faced with contraction, consumption/sales decrease faster than production, which in turn results in building up inventory.
    - ◆ In phases of contraction/recession businesses reduce purchases and use available inventory (due to lower sales also lower receivables) which results in short term positive cash flow effects.
    - ◆ When faced with economic turnover and growth, companies are forced to invest heavily in working capital (building back inventory levels) and capital expenditures that was probably sacrificed in times of contraction, which results in higher cash out flows. Valuer should be particularly alert if companies used additional financial leverage for weathering contraction/recession phase.

- (3) Economic indicators – Leading indicators are indicators that usually change before the economy as a whole changes. They show the current state of the economic cycle and point out future expected developments. As such they are helpful in forecasting sales, costs, working capital needs, capital expenditures etc. There are leading, coincident and lagging indicators which are helpful in assessing in what stage the business cycle is operating.
  - (a) A good source for information on economic activity is ECRI – Economic Cycle Research Institute

### Section C. Conducting Economic Analysis

1. There is no general rule or model of how to study the economic environment. Usually the following elements will be an integral part of such an analysis (focus on historical and expected information):
  - (1) GDP (size and growth, also GDP per capita)
  - (2) Inflation
  - (3) Unemployment rate (employment laws)
  - (4) Consumer spending and confidence
  - (5) Government spending and debt as % of GDP
  - (6) Business investments and inventories
  - (7) Trade deficit
  - (8) Equity and debt markets
  - (9) Banking sector and credit availability
  - B. For example, in the European credit markets in certain countries, banks have been under pressure to restructure due to high non-performing loan (NPL) percentage which leads to an undercapitalization situation. As a consequence they are unable to support business with new loan offerings.
  - C. Economic analysis is done best when focused on elements that are specific to the country/economy and industry involved with Subject Company.
2. Regulatory Environment – The laws, rules, and regulations put into place by national, regional, and local government entities and civilian organizations to control the behavior and actions of business activities.
  - (1) Taxation

- (2) Commerce, employment, financial, environmental, health, etc.
    - (3) Industry regulation (e.g., ISO standards, business valuation standards, etc.)
    - (4) Trade barriers/protection
  - B. Regulatory Risk – The risk that a change in laws and regulations will materially impact a security, business, sector or market. A change in laws or regulations made by the government or a regulatory body can increase the costs of operating a business, reduce the attractiveness of investment and/or change the competitive landscape.
3. International Risk – If the appraiser is valuing a company that has global/international exposure, the following additional factors will also need to be considered for economic analysis:
- A. Sovereign credit risk – The risk that a country won't be able to honor its financial commitments. It applies to stocks, bonds, mutual funds, options and futures that are issued within a particular country. It has lately been seen in most European countries as a consequence of financial recession and risks related to banking sector.
  - B. Exchange rate risk – Also known as “currency risk” refers to relative changes in currency exchange rates between the Subject Company’s “home” currency and the currency for which the company buys from or sells into.
  - C. Political risk – Represents the financial risk that a country's government will suddenly and unpredictably change its policies. It has major impact on foreign investments – foreign investors are reluctant to invest in unstable and unpredictable environment. Some examples are:
    - (1) Certain countries requiring a regulated percentage of the investment that must be owned by a domestic company or physical person (e.g., China) will decrease the foreign owner’s control and therefore increase investment risk.
    - (2) A government offering considerable subsidies for a particular industry that are subsequently removed upon a change in policy. This happened in Australia which had provided substantial subsidies to “green” electricity, that were unexpectedly removed when the law was changed, forcing the companies to materially change their mode of operations.
4. Sources for economic analysis – Valuation analysts generally do not have a problem finding external economic and industry information. In fact, the problem is usually too much information (“TMI” or “information overload”). However, a few good sources of general economic and industry information are:

- A. Government agencies
- B. Standard and Poor's
- C. Bloomberg
- D. Capital IQ
- E. European Commission (EUROPA, Eurostat)
- F. Euromonitor
- G. Key Note
- H. Datamonitor
- I. Economist Intelligence Unit
- J. Thomson Reuters
- K. DataStream
- L. Economic Cycle Research Institute

### Section D. Conducting Industry Analysis

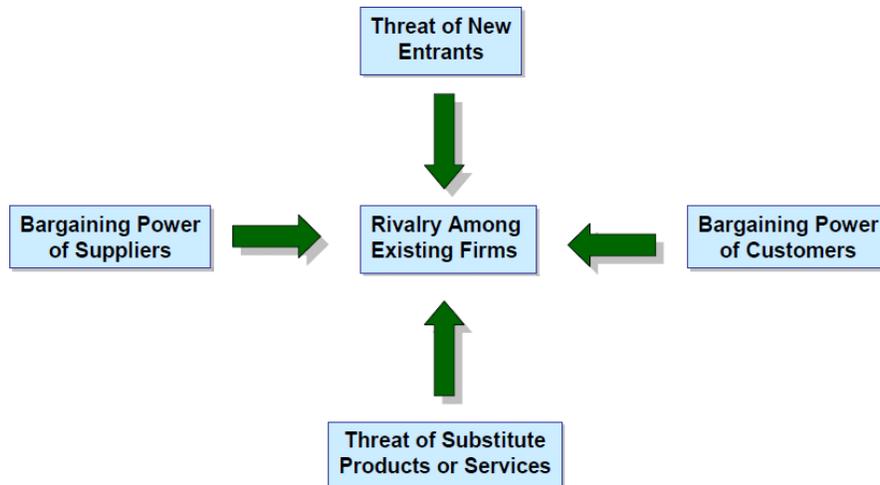
1. Industry analysis – Every company operates within an industry. Understanding the industry is extremely important to making value-based decisions regarding **risk (“k”)** or potential **growth (“g”)** thereby allowing the analyst to place a value on a particular company within the context of that enterprise's industry.
  - A. Just as businesses, industries have their life cycles. Understanding the life cycle stage of subject industry is important in assessing such matters as the level of competition, profitability and growth outlook. These industry life cycles have the following stages:
    - (1) pioneering phase
    - (2) growth phase
    - (3) mature growth
    - (4) maturity/stabilization phase and
    - (5) decline/deceleration phase.
  - B. To effectively analyze an industry, it is recommended that the valuer use a structured analytical process (model) to ensure that no material factors affecting the Subject Company are overlooked.

- (1) Michael Porter Five Forces Model – One structure for analyzing an industry was outlined by Michael Porter in his book “Competitive Strategy” (1980) and refers to “Five Forces Model”. In this section we will focus on analyzing industry with “Five Forces Model”. Application of alternative/supportive models is however encouraged.
2. How to approach industry analysis:
- A. Defining the industry for the Subject Company the valuer should try to list what might be additional possible categories or industry descriptions. The analyst should also understand and use the different industry classification standards:
    - (1) US: Standard Industrial Classification (SIC) codes and North American Industry Classification System (NAICS) codes
    - (2) Global Industry Classification Standard (GICS) – developed by MSCI and Standard and Poor's (S&P) for use by the global financial community. Consists of 10 sectors, 24 industry groups, 68 industries and 154 sub-industries into which S&P has categorized all major public companies. The system is similar to ICB (Industry Classification Benchmark), a classification structure maintained by Dow Jones Indexes and FTSE Group.
    - (3) Other: Different industry classifications are used within Bloomberg, Capital IQ, and InFinancials databases.
  - B. Due to the fact that benchmark analysis is integral part of industry analysis the valuer might be in a position to search for comparable (benchmark) companies within different industry groups.
  - C. Establish the phase of subject industry cycle (e.g., auto industry is in a mature phase).
    - (1) Understand implications of economic (and other related) cycles to movements of the specific industry. Each industry reacts differently to changes in the economic environment. As a consequence, the valuer should have a basic understanding of the subject industry characteristics relative to the stages of the economic cycle.
  - D. Industry factors to consider – The goal of industry analysis is to get understanding of:
    - (1) Size of the market and distribution of market shares,
    - (2) Historic growth trends and growth expectations,

- (3) Profit levels, stability of profits and any factors that might impact profit levels in the future,
- (4) The nature and intensity of competition including benchmark analysis of key competitors,
- (5) Level of barriers to enter the industry,
- (6) Strategies employed by different competitors,
- (7) Emerging profit opportunities or threats.
- (8) Any industry specific legal requirements. For example the valuer might consider that exit costs for extractive industries which vary considerably from state to state within EU and can be very expensive.
- (9) Any special practices used in selected industry. For example the analyst might consider that the European car manufacturing industry was recently heavily subsidized by local governments which would need to be considered in benchmark analysis if comparing financials statements of Canadian or US based companies to EU based companies.

### Section E. Using Porter's Five Forces Model for Industry Analysis

1. Porter's five-force framework is a qualitative tool that applies to investment analysis. The framework helps analyze a firm's competitive stance in its industry.
  - A. Porter's forces examine industry-specific conditions and help investors determine how well a corporation is positioned to adapt to changes in its target market.
  - B. Michael Porter's analysis serves as an industry specific alternative to Albert Humphrey's more common SWOT model (strengths, weaknesses, opportunities, threats).
  - C. Using Porter's five-forces framework requires a solid understanding of the general industry/market, corporate business model and an appreciation for how the business can adapt to changes in market conditions.
  - D. Basically, investors must analyze how a company can respond to the underlying threats. For example, it's common for a company to rank high in terms of competitive resistance on four forces and fail horribly on the fifth. Inevitably, determining how such a scenario would affect an investment's appeal is up to the investor (studying the market involves more than just reading financial statements).



2. Threat of new entrants – when it is easy to enter an industry, those companies already in the industry will see their margins reduced and experience a subsequent decline in value as competition forces the convergence to “normal” profit levels.
- A. Profitable markets that yield high returns will attract new competitors. Factors affecting the profitability of a market include:
- (1) Economies of scale
  - (2) Product differentiation
  - (3) Capital requirements
  - (4) Switching costs to buyers
  - (5) Access to distribution channels
  - (6) Government policies
- B. Barriers to entry are characteristics that reduce the rate of entry of new firms. Essentially, new entrants into a market will have to overcome multiple barriers if they are to compete with the already established companies. Barriers to entry are low when:
- (1) There are considerable economies of scale
  - (2) There is little or no brand awareness
  - (3) There is low regulation
  - (4) There is good access to distribution channels

- C. Barriers to exit are similar to barriers to entry. They limit the ability of the company to exit the industry and can exacerbate competitive rivalry, forcing the company to compete. An example of an exit barrier might be the tear-down, removal and clean-up costs associated with closing a utility plant.
3. Threat of substitute products or services – the threat of substitute products or services arises when customers can easily switch to alternative products (not necessarily alternative brands).
- A. For example, in a society that experiences drastic population growth, people might begin substituting their method of primary transportation from motor vehicles to either bicycles or public transit. Such changes in behavioral patterns would hinder the performance of the automobile industry for instance.
- B. The threat of substitute products depends on:
- (1) Relative price of substitutes (threat is high when price of substitute product is low).
  - (2) Relative quality and level of differentiation of substitutes (threat is high when substitutes function interchangeably).
  - (3) Switching costs to customers (threat is high when customers can easily switch between products).
4. The bargaining power of customers – refers to ability of customers to put a company under competitive pressure.
- A. Customers can influence prices of products/services, quality of deliverables, collection periods (e.g., pressure on longer payment by playing competitors against each other).
- B. Also, very large customers can dominate fragmented supplier markets. For example, if large retailer is a company's customer, they can exert a substantial amount of buying power. Many businesses are dependent on large department/retail stores to continue purchasing from them – therefore buyers can negotiate favorable price contracts and minimize the revenue potential of their suppliers. This threat is the opposite of the bargaining-power-of-suppliers concern.
- C. Market conditions affecting the impact of customer bargaining power:
- (1) Number of customers relative to suppliers – customers have more bargaining power when they are relatively fewer in number
  - (2) Product differentiation – there is more customer bargaining power if products in the industry are poorly differentiated

- (3) Switching costs to use other product – relatively lower switching costs increase customer bargaining power
  - (4) Customer's profit margins – if customers have tight margins and low profitability they will be price sensitive – less willing to adjust
  - (5) Customer's use of multiple sources – they have considerable bargaining power if they use more sources – can play competition
  - (6) Customer's threat of backward and forward integration – they have considerable bargain power if they possess credible backward integration threat
  - (7) Importance of product to customer – if products are important to customers they will be less price sensitive – more willing to adjust
  - (8) Customer's volume – if they purchase significant proportion of output they have high bargaining power
5. The bargaining power of suppliers – refers to ability of suppliers to pressure a company to pay more for their products or services.
- A. The threat of disproportionate supplier bargaining power is typically a problem for smaller companies that are exclusively dependent on the inputs provided by one seller. For example, if a restaurant that specializes in unique dishes is only able to purchase the ingredients from a single provider, that supplier can easily increase the prices it charges. This will either decrease margins for the restaurant, or the restaurant will have to pass the additional costs of the ingredients on to its customers.
  - B. Market conditions affecting the impact of supplier bargaining power are:
    - (1) Supplier forward integration – suppliers are powerful if they possess credible forward integration threat (e.g., a manufacturer of hospital supplies purchasing the supply distribution company)
    - (2) Availability of substitute products – suppliers are powerful if there are few substitute products
    - (3) Importance of supplier's input to buyer – suppliers have more power when level of supply is material for buyers
    - (4) Supplier's product differentiation – suppliers are powerful if their products are more differentiated and not near commodities

- (5) Importance of industry to suppliers – if industry is not an important customer for the supplier he will be less ready to adjust resulting in higher bargaining power
  - (6) Customer's switching costs to other input – the higher are the costs to switch the more power will be on the side of suppliers as customers will be avert to changes
  - (7) Customer's threat of backward integration
6. Competitive rivalry – Within an industry competitive rivalry results in battles for position, pressuring companies to use different strategies.
- A. There is strong competition in the industry if:
- (1) There is large number of competitors with no major players holding important market shares (i.e., industry is fragmented).
  - (2) All competitors in the industry are roughly the same size.
  - (3) Industry is mature and growth is slow.
  - (4) Fixed costs are high.
  - (5) Products are poorly differentiated or even near commodities.
  - (6) Customers have very low switching costs – puts pressure on suppliers to retain customer base.
  - (7) Competitors are diverse in strategy, values, and desired returns.
  - (8) Barriers to exit are high which places high cost on abandoning the industry (special assets, additional exit costs, etc.)
  - (9) Strategic stakes are high – this might force some players to sacrifices profitability (entering new markets, establishing technical credibility)
7. Porter provides three basic generic business strategies to combat competitive rivalry:
- A. Cost leadership (focus on low costs),
  - B. Differentiation (focus on product uniqueness in terms of brand image, technological leadership, product/service features, and strong dealer network)
  - C. Focus on particular target group
  - D. Each of the three generic strategies (cost leadership, differentiation and focus) have attributes that serve to defend against competitive forces, thus reducing

competitive rivalry. The following table compares some of the characteristics of the three generic strategies in the context of the five forces:

	<b>Cost Leadership</b>	<b>Differentiation</b>	<b>Focus</b>
<b>Entry Barriers</b>	Ability to cut price in retaliation deters potential entrants.	Customer loyalty can discourage potential entrants.	Focusing develops core competencies that can act as an entry barrier.
<b>Customer Power</b>	Ability to offer lower price to powerful buyers.	Large customers have less power to negotiate because of few close alternatives.	Large customers have less power to negotiate because of few alternatives.
<b>Supplier Power</b>	Better insulated from powerful suppliers.	Better able to pass on supplier price increases to customers.	Suppliers have power because of low volumes, but a differentiation-focused firm is better able to pass on supplier price increases.
<b>Threat of Substitutes</b>	Can use low price to defend against substitutes.	Customers become attached to differentiating attributes, reducing threat of substitutes.	Specialized products and core competency protect against substitutes.
<b>Rivalry</b>	Better able to compete on price.	Brand loyalty to keep customers from rivals.	Rivals cannot meet differentiation-focused customer needs.

8. Porter's models are a basis to start the valuation analysis. The qualitative measures introduced by Michael Porter in his framework allow valuers to draw conclusions about a company that are not immediately apparent in the financial statements, but will have a material impact on future financial performance.
- A. Sources of information for industry analysis – Sources for industry analysis can be qualitative or quantitative
- (1) Qualitative sources:
    - (a) Internet-based news websites

- (b) The Economist, industry associations
  - (c) Information about trade shows
  - (d) Annual reports
  - (e) Broker research reports
  - (f) Specialist consulting firms (e.g., Gartner for IT industry, Horwath for hotels industry)
- (2) Quantitative sources:
- (a) Online providers:
    - ◆ Reuters
    - ◆ Bloomberg
    - ◆ Capital IQ
    - ◆ Standard and Poor's
    - ◆ Key Note
    - ◆ Datamonitor
    - ◆ Economist Intelligence Unit
    - ◆ DataStream
  - (b) Country or region specific:
    - ◆ North America sources:
      - ⇒ Statistics Canada
      - ⇒ Industry Canada
      - ⇒ US Bureau of the Census, Commerce Dept.
      - ⇒ US Labour Dept.
    - ◆ Europe:
      - ⇒ Eurostat (European Commission)
  - (c) Above provided lists of sources are illustrative. There are many more sources, both free and at a varying cost.

**Exercise 2-1: Review & Analyse General Economic Conditions**

**Exhibits Provided:** Review and analyse the following information about the Subject Company (APS-India) and the condition of the general economy:

**Exhibit 2A:** Auto Parts Superior (APS-India) Case Study Information

**Exhibit 2B:** US – The Budget and Economic Outlook, Fiscal years 2013-2023 (by CBO, dated February 2013)

**Exhibit 2C:** Europe Outlook 2013: Cautious Optimism (by www.economy.com)

**Exhibit 2D:** Economic Outlook for Asia and Pacific (by IMF, World Economic and Financial Survey, April 2013)

**Exercise 2-1:** Based on your understanding of the Subject Company and the general economy, discuss the following three questions and fill in the answer sheets on the following pages.

**Problem 2-1.1:** What is a general state of economic activity in the US, European countries and Asia (reference this to economic, capital market cycle)?

**Problem 2-1.2:** How is the auto parts manufacturing industry sensitive to general economic conditions in each region, and what are the factors that should be analysed?

**Problem 2-1.3:** List any additional economic information that might be relevant for the valuation of Auto Parts Superior (APS-India)?

**Problem 2-1.1:** What is a general state of economic activity in US, European countries and Asia (reference this to economic, capital market cycle)?

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**Problem 2-1.2:** How is auto parts manufacturing industry sensitive to general economic conditions in each region, what are the factors that should be analysed?

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**Problem 2-1.3:** List any additional economic information that might be relevant for the valuation of Auto Parts Superior (APS-India)?

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## 9. Exercise 2-2: Analyse the Industry

**Exhibits Provided:** Review and analyse the following information about the Subject Company (APS-India) and the condition of the auto parts manufacturing industry:

Exhibit 2E: US Automobile Parts Manufacturing Industry Report (from First Research, Quarterly update 8/5/2013)

Exhibit 2F: A Picture of EU Car Industry (from Library of European Parliament, February 2013)

Exhibit 2G: Auto Component Business in India (from Indian Market Research Bureau, January 2009 &

India Brand Equity Foundation, August 2013)

**Exercise 2-2:** Based on your understanding of the Subject Company and the auto parts manufacturing industry, discuss the following six questions and fill in the answer sheets on the following pages.

Problem 2-2.1: Based on assigned industry readings from First Research, what is the life cycle stage of the auto parts manufacturing industry?

Problem 2-2.2: Point out the main characteristics of this industry.

Problem 2-2.3: Using Porter's Five Forces model, discuss each component (see Exhibit 2E, Exhibit 2F and Exhibit 2G):

- A. Threat of new entrants
- B. Bargaining power of customers
- C. Bargaining power of suppliers
- D. Threat of substitutes
- E. Competitive rivalry among existing firms

Problem 2-2.4: Based on assigned reading about the EU car industry (see Exhibit 2E), can you make any estimation about status and outlook for the EU auto parts industry (stage, growth prospects, industry outlook, competition, etc.)?

Problem 2-2.5: Based on assigned reading about the India auto component industry (see Exhibit 2G), can you make any estimation about status and outlook for that industry (stage, growth prospects, industry outlook, competition, etc.)?

Problem 2-2.6:           What other industry related information might be relevant for this valuation?



**Problem 2-2.3:** Using Porter’s Five Forces model, discuss each component:

Threat of new entrants:

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Bargaining power of customers:

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Bargaining power of suppliers:

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Threat of substitutes:

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Competitive rivalry among existing firms:

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**Problem 2-2.4:** Based on assigned reading about the EU car industry (see Exhibit 2E), can you make any estimation about status and outlook for the EU auto parts industry (stage, growth prospects, industry outlook, competition, etc.)?

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**Problem 2-2.5:** Based on assigned reading about the India auto component industry (see Exhibit 2G), can you make any estimation about status and outlook for that industry (stage, growth prospects, industry outlook, competition, etc.)?

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**Problem 2-2.5:** What other industry related information might be relevant for this valuation?

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## Auto Parts Superior (APS-India) Case Study Information

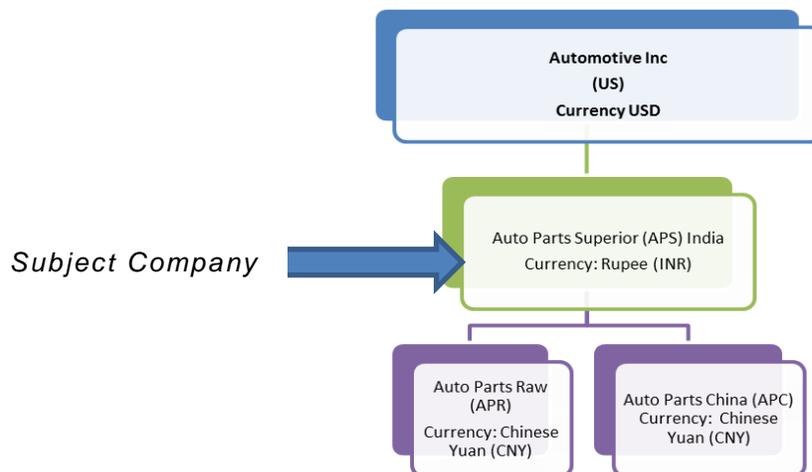
*Based on this information and additional reading provided under Exercise 2-1 and Exercise 2-2 be prepared to present an economic and industry analysis for discussion with your Client.*

### Summary Business Description

You have been asked to value an enterprise majority stake (100%) of the company **Auto Parts Superior (APS or The Company)**, an India based supplier of automotive climate, electronics and interior systems to original equipment manufacturers (OEM) worldwide. APS is a 100% owned subsidiary of Automotive Inc. (AI), a US based multinational auto components manufacturing company.

The purpose of the valuation concerns a US Internal Revenue Service (IRS) tax dispute regarding a corporate transaction between APS and its US parent Automotive Inc. (AI). The US IRS is challenging a hybrid financing structure which occurred in midyear 2013 whereby the interest payable by APS to AI was in the form of shares of APS. The valuation date is as of January 31, 2016, the date the financing transaction closed.

APS has two fully owned (100%) subsidiaries both located in China. Auto Parts Raw (APR) is main supplier of all raw materials and Auto Parts China (APC) which is selling auto parts on Chinese market.



### Products, Suppliers & Customer Base

APS has been operating in auto parts manufacturing since 1995 and is a supplier of climate, electronics and interiors systems, modules and components to automotive OEM manufacturers including BMW, Chrysler, Daimler, Ford, General Motors, Honda, Hyundai, Kia, Nissan, PSA Peugeot Citroen, Renault, Toyota and Volkswagen.

A majority of the Company's suppliers come from Asian markets, particularly from China. APS is purchasing material on local markets and also from APR (invoiced in Chinese Yuan).

The Company sells its products primarily to OEM vehicle manufacturers, and also sells to the worldwide aftermarket for replacement and vehicle appearance enhancement parts.

- APS sales into the Indian market (60%) are done through APS domestic distribution channels and are invoiced in Indian Rupee (INR).
- Sales into the Chinese market (30%) are done through APC and are invoiced in Chinese Yuan (CNY).
- The remainder is sold into the US market (10%) and are done through its parent Automotive Inc. being invoiced in USD.

APS currently holds 20% local market share in India (market share has been stable for the past 3 years) and was successful in implementing new design processes in the production process which has provided material cost savings. APS' global market share is assessed at 7%.

### **Market Demand and Profitability**

Demand has been slowly declining for the past 5 years (weak demand from domestic OEMs, sluggish export volumes and slow replacement market sales). Over near term, weak revenue growth is expected (absence of immediate demand triggers for end users across the domestic automotive segments and uncertain international market). Over the medium term however, factors such as auto OEMs' growing thrust on localization, auto suppliers' efforts to expand business in new geographies, the strong upside potential to replacement market demand, should allow the Indian auto components industry to grow at a relatively faster pace.

Despite declining revenues, profitability margins across industry remained relatively stable. Manufacturers that were able to implement several new designs and value analysis measures exhibited increased profitability, which is the case with APS-India.

### **Competition**

APS competes with well-known international brands that are already well positioned in both the domestic and global market. In addition, there are a large number of local auto parts manufacturers specializing on certain segments (e.g., wind shills, tires, electric parts, etc.) that use mostly a low cost pricing strategy. APS plans to retain its 20% market share by focusing on higher quality, well designed products. In the short term this will allow APS to retain current margins. In the medium run, profit margins however are expected to suffer due to increased pricing competition.

### **R&D and Investment Issues**

APS realized that the market is rewarding companies that invest in R&D and design so the company is planning considerable investment in its New Delhi plan (modernization of current facility) in 2013. Investment will be completed in 2 years.

The company bought land 2 years ago in order to build new plant. The plan was however stopped and the company invested in modernization of the current plant instead.

As of the valuation date the Company (APS) has 10.000 m<sup>2</sup> of land close to New Delhi that is not being used. Based on information provided by CFO the land was bought for a new manufacturing facility but due to the slow-down in growth of the Indian market, management has decided to postpone that project and rather focus on renewing current facilities. The land was bought in 2010 for 3 million EUR.

In 2013 APS-India plans considerable capital expenditures (CapEx) in New Delhi plant (modernization of current facility). Investment will be completed in 2 years. Due to that, CapEx in years 2015, 2016 and 2017 will be lower and normalized levels of CapEx are therefore expected only at 2018-2019. The average investment cycle is estimated to be 8 years.

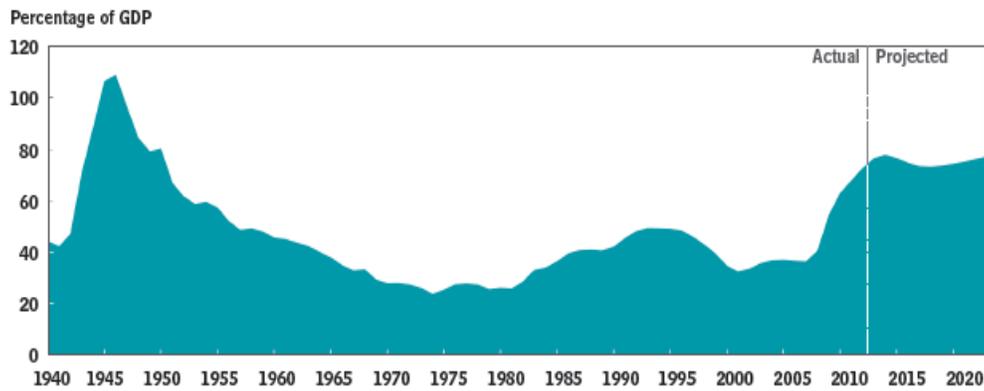
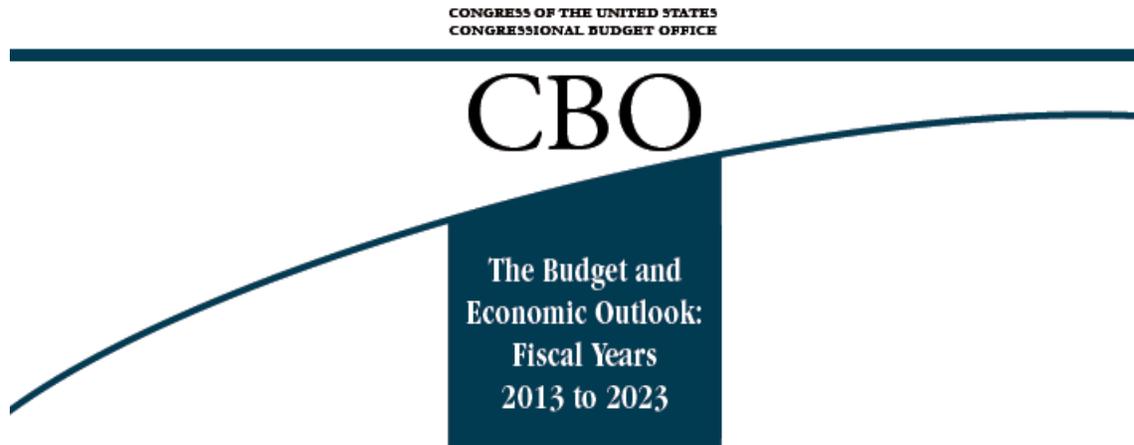
### **Presentation of Financial Statements**

The Exhibits 3A-3C in Chapter 3 contain the financial statements of APS-India for the five fiscal years ending December 31, 2008-2012 as well as presentation of the Company's financial performance ratios for the same five-year period. These financial statements are presented first (Exhibit 3A) in the Company's "functional currency" the Indian Rupee (INR) and have also been translated into APS-India's parent's "presentation currency" the US Dollar (USD) – see Exhibit 3C.

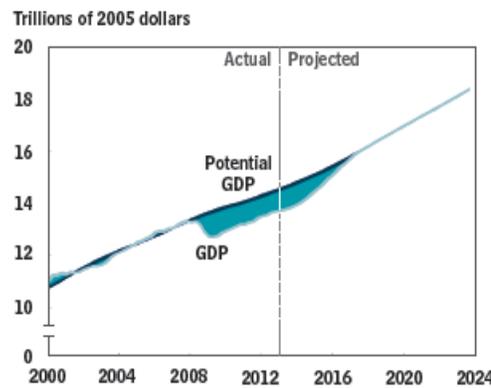
In addition, Exhibit 7C contains APS-India's financial statements for the past eight years 2005-2012, and Exhibit 7B provides certain macro-economic forecasts for China and India.

The Company's corporate statutory tax rate for India is 34% and for China 25%

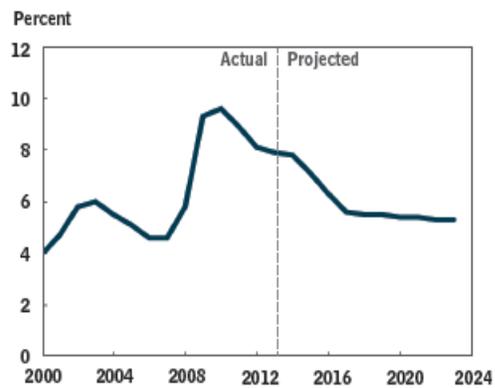
Exhibit 2B: US – The Budget and Economic Outlook



Federal Debt Held by the Public



GDP and Potential GDP



Unemployment Rate

FEBRUARY 2013



## Summary

**E**conomic growth will remain slow this year, the Congressional Budget Office (CBO) anticipates, as gradual improvement in many of the forces that drive the economy is offset by the effects of budgetary changes that are scheduled to occur under current law. After this year, economic growth will speed up, CBO projects, causing the unemployment rate to decline and inflation and interest rates to eventually rise from their current low levels. Nevertheless, the unemployment rate is expected to remain above 7½ percent through next year; if that happens, 2014 will be the sixth consecutive year with unemployment exceeding 7½ percent of the labor force—the longest such period in the past 70 years.

If the current laws that govern federal taxes and spending do not change, the budget deficit will shrink this year to \$845 billion, or 5.3 percent of gross domestic product (GDP), its smallest size since 2008. In CBO's baseline projections, deficits continue to shrink over the next few years, falling to 2.4 percent of GDP by 2015. Deficits are projected to increase later in the coming decade, however, because of the pressures of an aging population, rising health care costs, an expansion of federal subsidies for health insurance, and growing interest payments on federal debt. As a result, federal debt held by the public is projected to remain historically high relative to the size of the economy for the next decade. By 2023, if current laws remain in place, debt will equal 77 percent of GDP and be on an upward path, CBO projects (see Summary Figure 1).

Such high and rising debt would have serious negative consequences: When interest rates rose to more normal levels, federal spending on interest payments would increase substantially. Moreover, because federal borrowing reduces national saving, the capital stock would be smaller and total wages would be lower than they would be if the debt was reduced. In addition, lawmakers would have less flexibility than they might ordinarily to use tax

and spending policies to respond to unexpected challenges. Finally, such a large debt would increase the risk of a fiscal crisis, during which investors would lose so much confidence in the government's ability to manage its budget that the government would be unable to borrow at affordable rates.

### Under Current Law, Federal Debt Will Stay at Historically High Levels Relative to GDP

The federal budget deficit, which shrank as a percentage of GDP for the third year in a row in 2012, will fall again in 2013, if current laws remain the same. At an estimated \$845 billion, the 2013 imbalance would be the first deficit in five years below \$1 trillion; and at 5.3 percent of GDP, it would be only about half as large, relative to the size of the economy, as the deficit was in 2009. Nevertheless, if the laws that govern taxes and spending do not change, federal debt held by the public will reach 76 percent of GDP by the end of this fiscal year, the largest percentage since 1950.

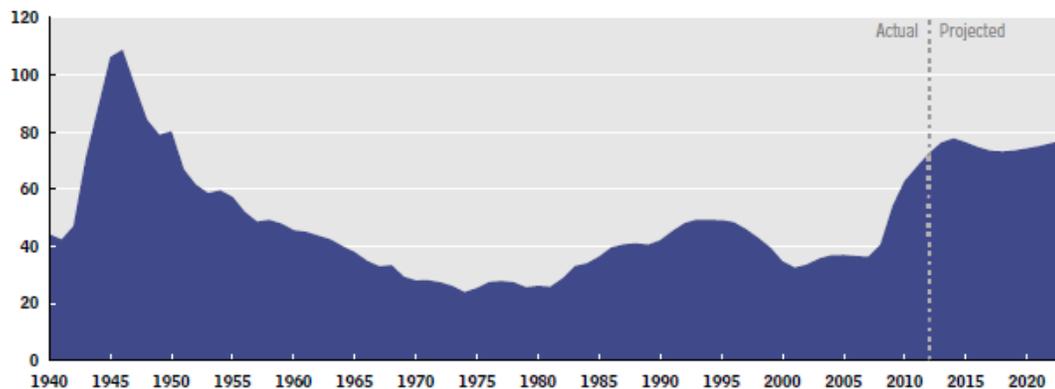
With revenues expected to rise more rapidly than spending in the next few years under current law, the deficit is projected to dip as low as 2.4 percent of GDP by 2015 (see Summary Table 1). In later years, however, projected deficits rise steadily, reaching almost 4 percent of GDP in 2023. For the 2014–2023 period, deficits in CBO's baseline projections total \$7.0 trillion. With such deficits, federal debt would remain above 73 percent of GDP—far higher than the 39 percent average seen over the past four decades. (As recently as the end of 2007, federal debt equaled just 36 percent of GDP.) Moreover, debt would be increasing relative to the size of the economy in the second half of the decade.

Those projections are not CBO's predictions of future outcomes. As specified in law, CBO's baseline projections

CBO

**Summary Figure 1.****Federal Debt Held by the Public**

(Percentage of gross domestic product)



Source: Congressional Budget Office.

are constructed under the assumption that current laws generally remain unchanged, so that they can serve as a benchmark against which potential changes in law can be measured.

**Revenues**

Federal revenues will increase by roughly 25 percent between 2013 and 2015 under current law, CBO projects. That increase is expected to result from a rise in income because of the growing economy, from policy changes that are scheduled to take effect during that period, and from policy changes that have already taken effect but whose full impact on revenues will not be felt until after this year (such as the recent increase in tax rates on income above certain thresholds).

As a result of those factors, revenues are projected to grow from 15.8 percent of GDP in 2012 to 19.1 percent of GDP in 2015—compared with an average of 17.9 percent of GDP over the past 40 years. Under current law, revenues will remain at roughly 19 percent of GDP from 2015 through 2023, CBO estimates.

**Outlays**

In CBO's baseline projections, federal spending rises over the next few years in dollar terms but falls relative to the size of the economy. During those years, the growth of spending will be restrained both by the strengthening economy (as spending for programs such as unemploy-

ment compensation drops) and by provisions of the Budget Control Act of 2011 (Public Law 112-25). Although outlays are projected to decline from 22.8 percent of GDP in 2012 to 21.5 percent by 2017, they will still exceed their 40-year average of 21.0 percent. (Outlays peaked at 25.2 percent of GDP in 2009 but have fallen relative to GDP in the past few years.)

After 2017, if current laws remain in place, outlays will start growing again as a percentage of GDP. The aging of the population, increasing health care costs, and a significant expansion of eligibility for federal subsidies for health insurance will substantially boost spending for Social Security and for major health care programs relative to the size of the economy. At the same time, rising interest rates will significantly increase the government's debt-service costs. In CBO's baseline, outlays reach about 23 percent of GDP in 2023 and are on an upward trajectory.

**Changes from CBO's Previous Projections**

The deficits projected in CBO's current baseline are significantly larger than the ones in CBO's baseline of August 2012. At that time, CBO projected deficits totaling \$2.3 trillion for the 2013–2022 period; in the current baseline, the total deficit for that period has risen by \$4.6 trillion. That increase stems chiefly from the enactment of the American Taxpayer Relief Act of 2012 (P.L. 112-240), which made changes to tax and spending

**Summary Table 1.****CBO's Baseline Budget Projections**

	Actual,											Total		
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2014-2018	2014-2023
<b>In Billions of Dollars</b>														
Revenues	2,449	2,708	3,003	3,373	3,591	3,765	3,937	4,101	4,279	4,496	4,734	4,961	17,669	40,241
Outlays	3,538	3,553	3,618	3,803	4,067	4,300	4,542	4,811	5,078	5,350	5,691	5,939	20,330	47,199
<b>Deficit (-) or Surplus</b>	<b>-1,089</b>	<b>-845</b>	<b>-616</b>	<b>-430</b>	<b>-476</b>	<b>-535</b>	<b>-605</b>	<b>-710</b>	<b>-798</b>	<b>-854</b>	<b>-957</b>	<b>-978</b>	<b>-2,661</b>	<b>-6,958</b>
On-budget	-1,151	-872	-630	-433	-476	-533	-598	-693	-763	-799	-878	-872	-2,670	-6,675
Off-budget <sup>a</sup>	62	27	14	3	*	-2	-6	-17	-35	-55	-79	-106	9	-283
Debt Held by the Public at the End of the Year	11,280	12,229	12,937	13,462	14,025	14,642	15,316	16,092	16,957	17,876	18,902	19,944	n.a.	n.a.
<b>As a Percentage of Gross Domestic Product</b>														
Revenues	15.8	16.9	18.0	19.1	19.1	18.9	18.8	18.7	18.7	18.9	19.0	19.1	18.8	18.9
Outlays	22.8	22.2	21.7	21.6	21.6	21.5	21.7	22.0	22.2	22.4	22.9	22.9	21.6	22.1
<b>Deficit</b>	<b>-7.0</b>	<b>-5.3</b>	<b>-3.7</b>	<b>-2.4</b>	<b>-2.5</b>	<b>-2.7</b>	<b>-2.9</b>	<b>-3.2</b>	<b>-3.5</b>	<b>-3.6</b>	<b>-3.8</b>	<b>-3.8</b>	<b>-2.8</b>	<b>-3.3</b>
Debt Held by the Public at the End of the Year	72.5	76.3	77.7	76.3	74.6	73.4	73.1	73.5	74.2	75.0	76.0	77.0	n.a.	n.a.

Source: Congressional Budget Office.

Note: \* = between -\$500 million and zero; n.a. = not applicable.

a. Off-budget surpluses or deficits comprise surpluses or deficits in the Social Security trust funds and the net cash flow of the Postal Service.

laws that will boost deficits by a total of \$4.0 trillion (excluding debt-service costs) between 2013 and 2022, according to estimates by CBO and the staff of the Joint Committee on Taxation. CBO's updated baseline also takes into account other legislative actions since August, as well as a new economic forecast and some technical revisions to its projections.

### Looming Policy Decisions May Have a Substantial Effect on the Budget Outlook

Current law leaves many key budget issues unresolved, and this year, lawmakers will face three significant budgetary deadlines:

- Automatic reductions in spending are scheduled to be implemented at the beginning of March; when that happens, funding for many government activities will be reduced by 5 percent or more.
- The continuing resolution that currently provides operational funding for much of the government will

expire in late March. If no additional appropriations are provided by then, nonessential functions of the government will have to cease operations.

- A statutory limit on federal debt, which was temporarily removed, will take effect again in mid-May. The Treasury will be able to continue borrowing for a short time after that by using what are known as extraordinary measures. But to avoid a default on the government's obligations, the debt limit will need to be adjusted before those measures are exhausted later in the year.

Budgetary outcomes will also be affected by decisions about whether to continue certain policies that have been in effect in recent years. Such policies could be continued, for example, by extending some tax provisions that are scheduled to expire (and that have routinely been extended in the past) or by preventing the 25 percent cut in Medicare's payment rates for physicians that is due to occur in 2014. If, for instance, lawmakers eliminated the automatic spending cuts scheduled to take effect in March (but left in place the original caps on discretionary

funding set by the Budget Control Act), prevented the sharp reduction in Medicare's payment rates for physicians, and extended the tax provisions that are scheduled to expire at the end of calendar year 2013 (or, in some cases, in later years), budget deficits would be substantially larger over the coming decade than in CBO's baseline projections. With those changes, and no offsetting reductions in deficits, debt held by the public would rise to 87 percent of GDP by the end of 2023 rather than to 77 percent.

In addition to those decisions, lawmakers will continue to face the longer-term budgetary issues posed by the substantial federal debt and by the implications of rising health care costs and the aging of the population.

### Economic Growth Is Likely to Be Slow in 2013 and Pick Up in Later Years

The U.S. economy expanded modestly in calendar year 2012, continuing the slow recovery seen since the recession ended in mid-2009. Although economic growth is expected to remain slow again this year, CBO anticipates that underlying factors in the economy will spur a more rapid expansion beginning next year.

Even so, under the fiscal policies embodied in current law, output is expected to remain below its potential (or maximum sustainable) level until 2017. By CBO's estimates, in the fourth quarter of 2012, real (inflation-adjusted) GDP was about 5½ percent below its potential level. That gap was only modestly smaller than the gap between actual and potential GDP that existed at the end of the recession (see Summary Figure 2) because the growth of output since then has been only slightly greater than the growth of potential output. With such a large gap between actual and potential GDP persisting for so long, CBO projects that the total loss of output, relative to the economy's potential, between 2007 and 2017 will be equivalent to nearly half of the output that the United States produced last year.

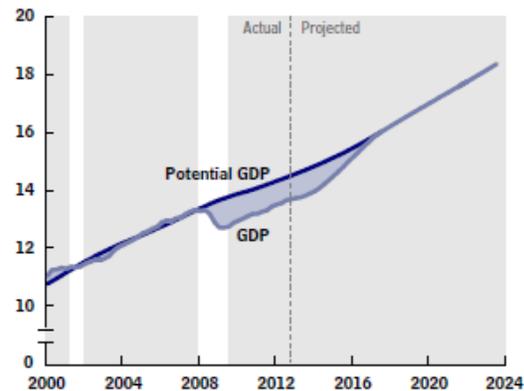
#### The Economic Outlook for 2013

CBO expects that economic activity will expand slowly this year, with real GDP growing by just 1.4 percent (see Summary Table 2). That slow growth reflects a combination of ongoing improvement in underlying economic factors and fiscal tightening that has already begun

### Summary Figure 2.

#### GDP and Potential GDP

(Trillions of 2005 dollars)



Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis.

Notes: Potential gross domestic product (GDP) is CBO's estimate of the maximum sustainable level of output of the economy. Data are quarterly. Actual data are plotted through the third quarter of 2012. Projections are plotted through the fourth quarter of 2023.

or is scheduled to occur—including the expiration of a 2 percentage-point cut in the Social Security payroll tax, an increase in tax rates on income above certain thresholds, and scheduled automatic reductions in federal spending. That subdued economic growth will limit businesses' need to hire additional workers, thereby causing the unemployment rate to stay near 8 percent this year, CBO projects. The rate of inflation and interest rates are projected to remain low.

#### The Economic Outlook for 2014 to 2018

After the economy adjusts this year to the fiscal tightening inherent in current law, underlying economic factors will lead to more rapid growth, CBO projects—3.4 percent in 2014 and an average of 3.6 percent a year from 2015 through 2018. In particular, CBO expects that the effects of the housing and financial crisis will continue to fade and that an upswing in housing construction (though from a very low level), rising real estate and stock prices, and increasing availability of credit will help to spur a virtuous cycle of faster growth in employment, income, consumer spending, and business investment over the next few years.

**Summary Table 2.****CBO's Economic Projections for Calendar Years 2012 to 2023**

	Estimated, 2012	Forecast		Projected Annual Average	
		2013	2014	2015–2018	2019–2023
		Fourth Quarter to Fourth Quarter (Percentage change)			
Real Gross Domestic Product	1.9	1.4	3.4	3.6	2.2
Inflation					
PCE price index	1.5	1.3	1.8	1.9	2.0
Core PCE price index <sup>a</sup>	1.5	1.5	1.9	2.0	2.0
Consumer price index <sup>b</sup>	1.9 <sup>c</sup>	1.5	2.0	2.2	2.3
Core consumer price index <sup>a</sup>	1.9 <sup>c</sup>	1.8	2.0	2.2	2.3
		Fourth Quarter Level (Percent)			
Unemployment Rate	7.8 <sup>c</sup>	8.0	7.6	5.5 <sup>d</sup>	5.2 <sup>e</sup>
		Calendar Year Average (Percent)			
Interest Rates					
Three-month Treasury bills	0.1 <sup>c</sup>	0.1	0.2	2.2	4.0
Ten-year Treasury notes	1.8 <sup>c</sup>	2.1	2.7	4.5	5.2

Source: Congressional Budget Office. (Actual values for 2012 are from Department of Labor, Bureau of Labor Statistics; Federal Reserve.)

Notes: Economic projections for each year from 2012 to 2023 appear in Appendix B.

The numbers shown here do not reflect the values for GDP and related series released by the Commerce Department's Bureau of Economic Analysis on January 30.

PCE = personal consumption expenditures.

- a. Excludes prices for food and energy.
- b. The consumer price index for all urban consumers.
- c. Actual value for 2012.
- d. Value for 2018.
- e. Value for 2023.

Nevertheless, under current law, CBO expects the unemployment rate to remain high—above 7½ percent through 2014—before falling to 5½ percent at the end of 2017. The rate of inflation is projected to rise slowly after this year: CBO estimates that the annual increase in the price index for personal consumption expenditures will reach about 2 percent in 2015. The interest rate on 3-month Treasury bills—which has hovered near zero for the past several years—is expected to climb to 4 percent by the end of 2017, and the rate on 10-year Treasury notes is projected to rise from 2.1 percent in 2013 to 5.2 percent in 2017.

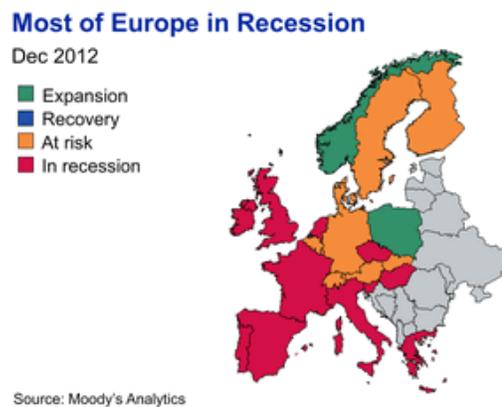
**The Economic Outlook for 2019 to 2023**

For the second half of the coming decade, CBO does not attempt to predict the cyclical ups and downs of the economy; rather, CBO assumes that GDP will stay at its maximum sustainable level. On that basis, CBO projects that both actual and potential real GDP will grow at an average rate of 2¼ percent a year between 2019 and 2023. That pace is much slower than the average growth rate of potential GDP since 1950. The main reason is that the growth of the labor force will slow down because of the retirement of the baby boomers and an end to the long-standing increase in women's participation in the labor force. CBO also projects that the unemployment rate will fall to 5.2 percent by 2023 and that inflation and interest rates will stay at about their 2018 levels throughout the 2019–2023 period.

## 10. Exhibit 2C: Europe Outlook 2013: Cautious Optimism

The euro zone's sovereign debt crisis continues to determine the outlook for Europe. While the euro area is in recession and likely to stagnate through most of 2013, reasons for cautious optimism are emerging. Policymakers from the European Union and European Central Bank have committed themselves to keeping the currency union together. A rough political consensus is growing that fiscal consolidation requires that austerity be imposed more gradually over time.

Despite recent progress, key short-term risks still include a Greek exit from the single-currency area and further deterioration in Spain's fiscal position. Coming elections in Italy and Germany will show whether the current crisis strategy has popular support.



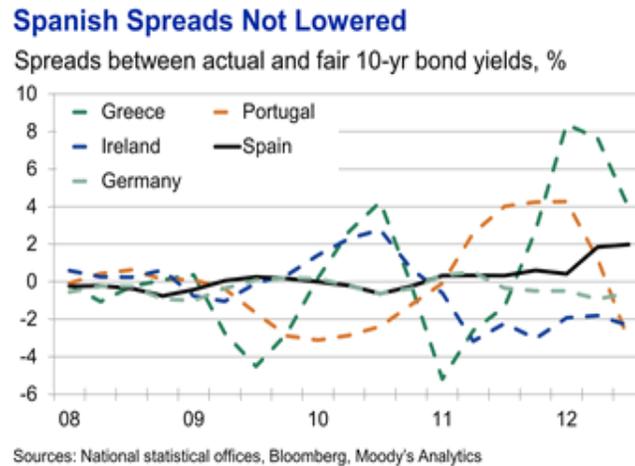
Elsewhere, the U.K. economy should benefit in 2013 from the Bank of England's growth-oriented stance. Growth in the smaller countries of Central and Eastern Europe will be largely determined by the pace in the euro zone, although domestic demand will boost Poland. Russia and Norway will grow faster than the European core, but their pace will be negatively affected by falling oil prices. Fiscally solid countries in Scandinavia will experience healthy growth but face the potential risk of a housing bubble.

### The ECB is all in

Over the past year, the ECB has become the euro zone's committed guardian. The central bank's willingness to buy government bonds on the open market, which it calls "outright monetary transactions," are the long-promised bazooka in the ECB's arsenal. Just the possibility of such purchases has eased pressure on governments and reduced their borrowing costs, although these remain elevated for many countries.

Yields for those countries whose securities are considered safe havens are below levels implied by fundamentals such as nominal GDP, monetary policy and fiscal position. The opposite is true for fiscally troubled countries, except for Portugal, where the market now underestimates the

level of risk. The spread between market interest rates and the estimated fair rate is particularly high in Spain.



National policymakers also appear increasingly committed to addressing the region's crisis. Most euro zone governments have increased tax revenues and cut spending to put their fiscal houses in order. Yet austerity has reduced output more than was expected, pushing debt-to-GDP ratios up in a number of countries instead of down as planned.

**Debt Still Rising in Most Countries**

	Debt-to-GDP ratio, %		Deficit-to-GDP ratio, %	
	2012	2013	2012	2013
Germany	83.0	81.5	0.4	0.4
U.K.	88.7	93.3	8.2	7.3
France	90.0	92.1	4.7	3.5
Ireland	117.7	119.3	8.6	7.5
Spain	90.7	96.9	7.0	5.7
Portugal	119.1	123.7	5.0	4.5
Italy	126.3	127.8	2.7	1.8
Greece	170.7	181.8	7.5	4.7

Sources: IMF, Moody's Analytics

On the plus side, austerity and reform has given some countries additional fiscal space —room for debt to rise before it reaches levels that require drastic changes in fiscal policy. Countries

such as Greece and Italy ran out of fiscal space some time ago, but Ireland, which began fiscal tightening early, has recently had its fiscal space turn positive.

**Positive Fiscal Space in Ireland**

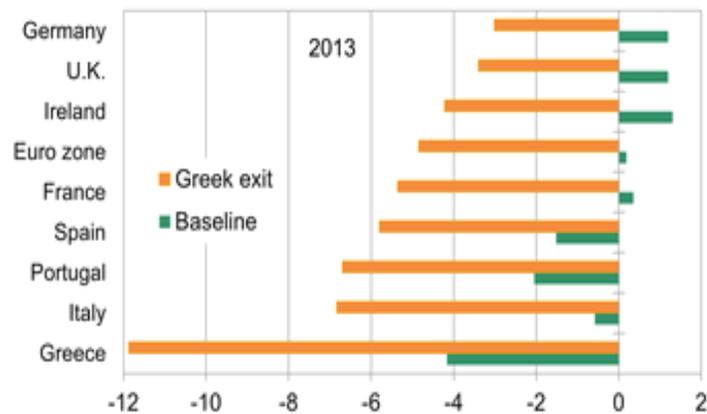
	Fiscal space, ppts	
	Sep-12	Dec-12
Germany	154.5	161.7
U.K.	138.1	135.5
France	115.4	122.5
Ireland	0.0	58.2
Spain	0.0	0.0
Portugal	0.0	0.0
Italy	0.0	0.0
Greece	0.0	0.0

Sources: IMF, Moody's Analytics

The growing official consensus reduces but does not eliminate the danger that Greece will be forced to leave the euro zone as its population resists additional austerity. Such an exit would have a dramatic effect on euro zone growth, causing GDP in the currency region to fall 5% in 2013.

### Euro Zone Exit Would Be Costly for Greece

Real GDP, % change yr ago



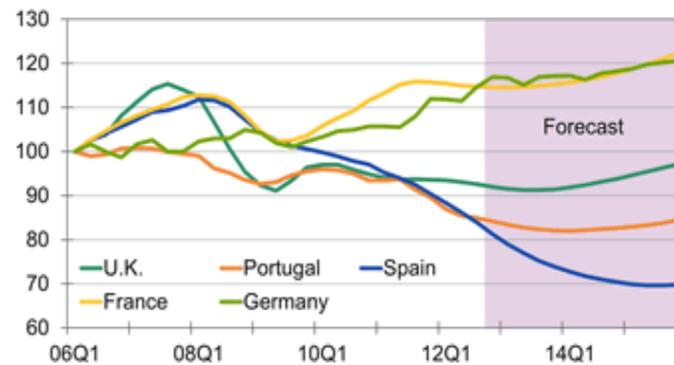
Sources: National statistical offices, Moody's Analytics

The situation in Spain is the other leading risk for the region. Spanish bank portfolios still hold large volumes of nonperforming loans related to real estate, and house prices continue to fall. The European Commission recently approved a direct injection of €37 billion from Europe's

bailout funds to recapitalize four main Spanish banks. Still uncertain, however, is whether Spain's government will seek its own bailout, a move that would force it to adopt new austerity measures but would also clear the way for the ECB to buy Spanish bonds under the outright monetary transactions program.

### Spanish House Prices Fall Sharply

House prices, 2006Q1=100

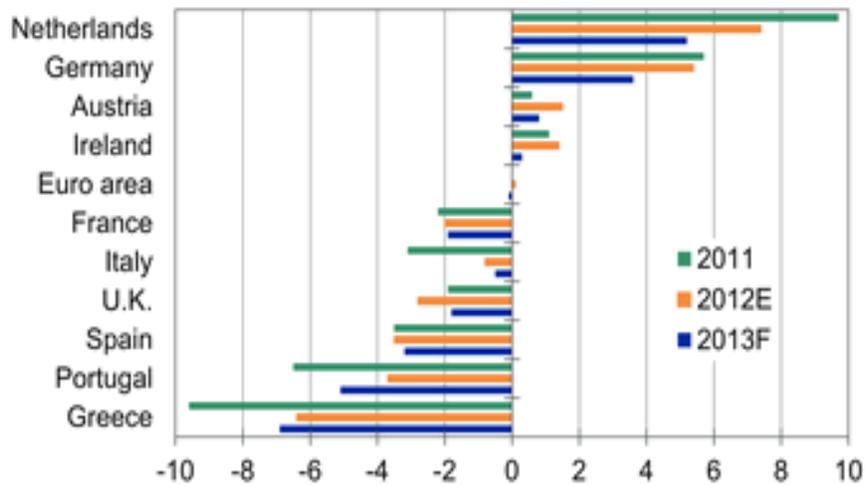


Sources: National statistics offices, Moody's Analytics

The unemployment rate in the euro zone is 11.7%; in Spain it is 25%. However, structural reforms across the euro zone have begun to lower labor costs in peripheral countries, while greater domestic demand and wage growth has risen in core economies, especially Germany. The combination has helped reduce current account imbalances across the region.

## Competitiveness Improves on the Periphery

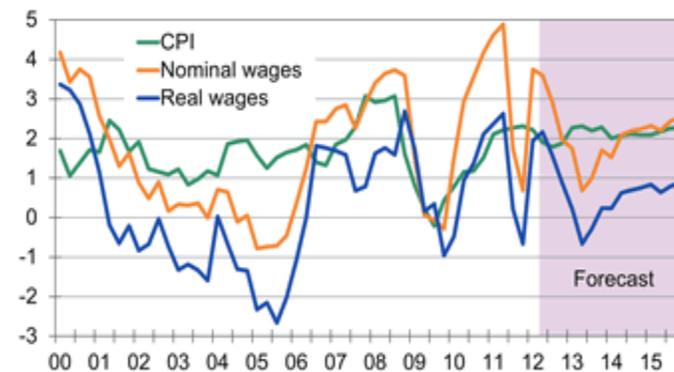
Current account, % of GDP



Sources: IMF, Moody's Analytics

## Wages in Germany Edging Up Temporarily

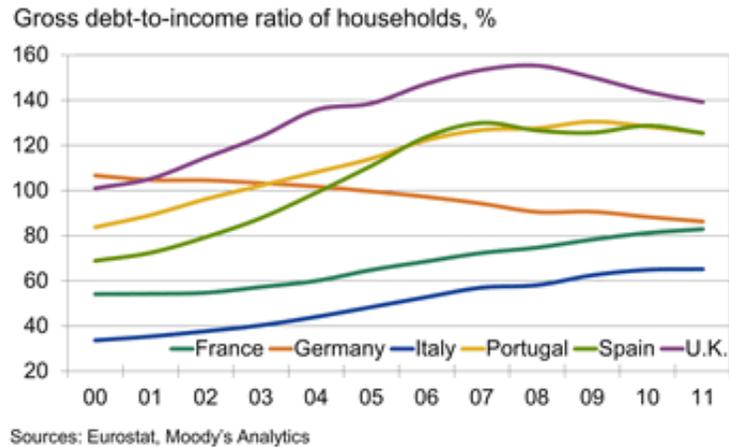
% change yr ago



Sources: Bundesbank, Moody's Analytics

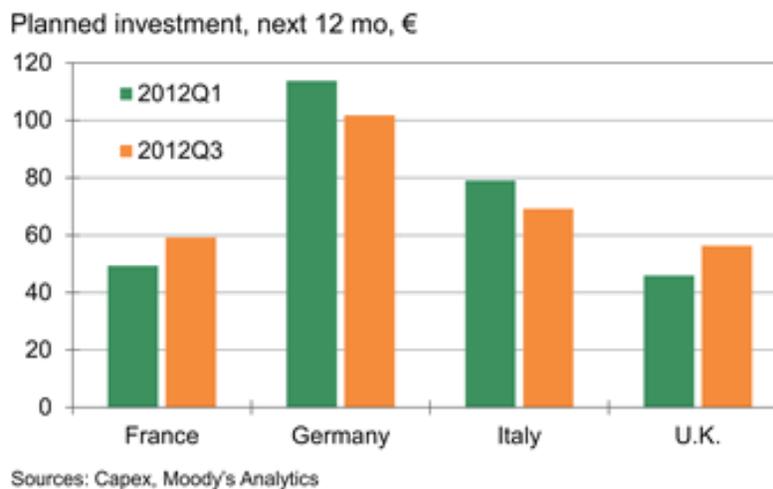
Elections in Italy and Germany during 2013 should show if policymakers' recent initiatives have sufficient popular support to go forward. If German voters show they approve of how Chancellor Angela Merkel has handled the euro area's troubles, German officials might be willing to support proposals for a regional banking union, involving common deposit insurance, bank supervision, and resolution authority.

### Households' Debt High in the U.K., Low in Italy



The U.K. is highly vulnerable to problems in the euro zone, where Britain sends around 47% of its exports. The U.K. economy will also be affected in 2013 by new austerity measures, such as the benefit cuts and upper-income tax hikes announced recently by the chancellor of the Exchequer. Domestic consumption will be further weighed down as British households pare their debts back from levels that, relative to income, are above those of Spain and Portugal. Fiscal austerity and a slowdown in consumption should be mitigated by rising investment.

### French and British Planned Investment Grows



The surprise choice of Bank of Canada chief Mark Carney to head the Bank of England is unlikely to alter the direction of British monetary policy, which we expect to remain expansionary through late 2014. The BoE's asset-purchase program remained unchanged at £375 billion in

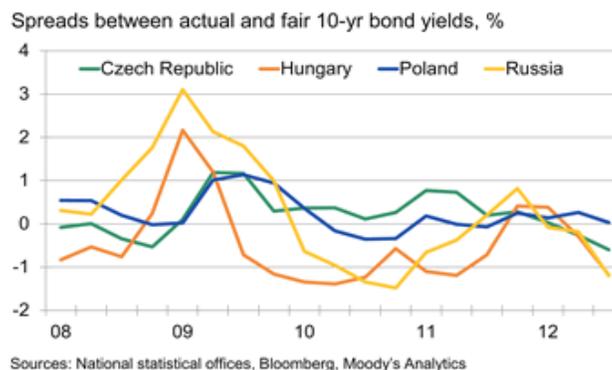
November, while its “funding for lending” scheme is beginning to unblock credit channels, as secured lending shows signs of pickup. As a result, house prices have started rising in most U.K. metro areas, with London posting the largest increases.

### Credit Conditions Set to Improve in the U.K.



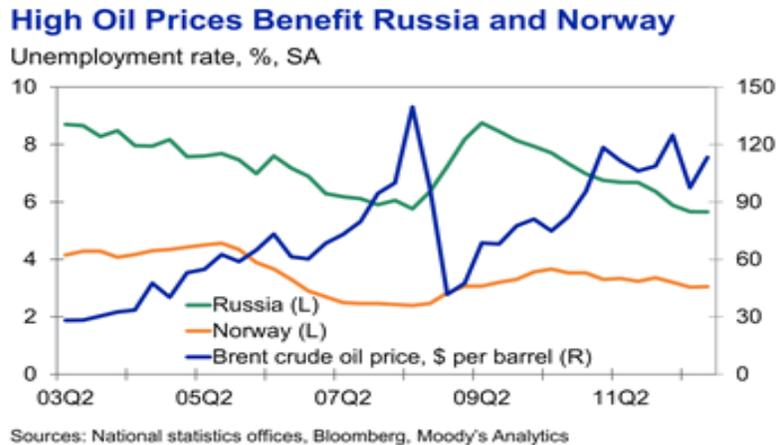
A weakening Central and Eastern Europe economy has forced monetary policymakers there to cut interest rates. But easier monetary policy is being outweighed by restrictive fiscal policy. The impact can be seen in the gap between market bond yields and their fundamental or fair values. Spreads above fair rates are narrowing in Hungary, the Czech Republic, Poland, and Russia, and they are negative in the latter three countries, showing that investors now perceive them as safe havens.

### CEE Is Viewed as Safe Haven



Although recently elevated global oil prices have hurt European economies, Russia's crude oil output, already the world's largest, has reached record levels. Russia's central bank has therefore hiked its key interest rates to anchor rising medium-term inflation expectations.

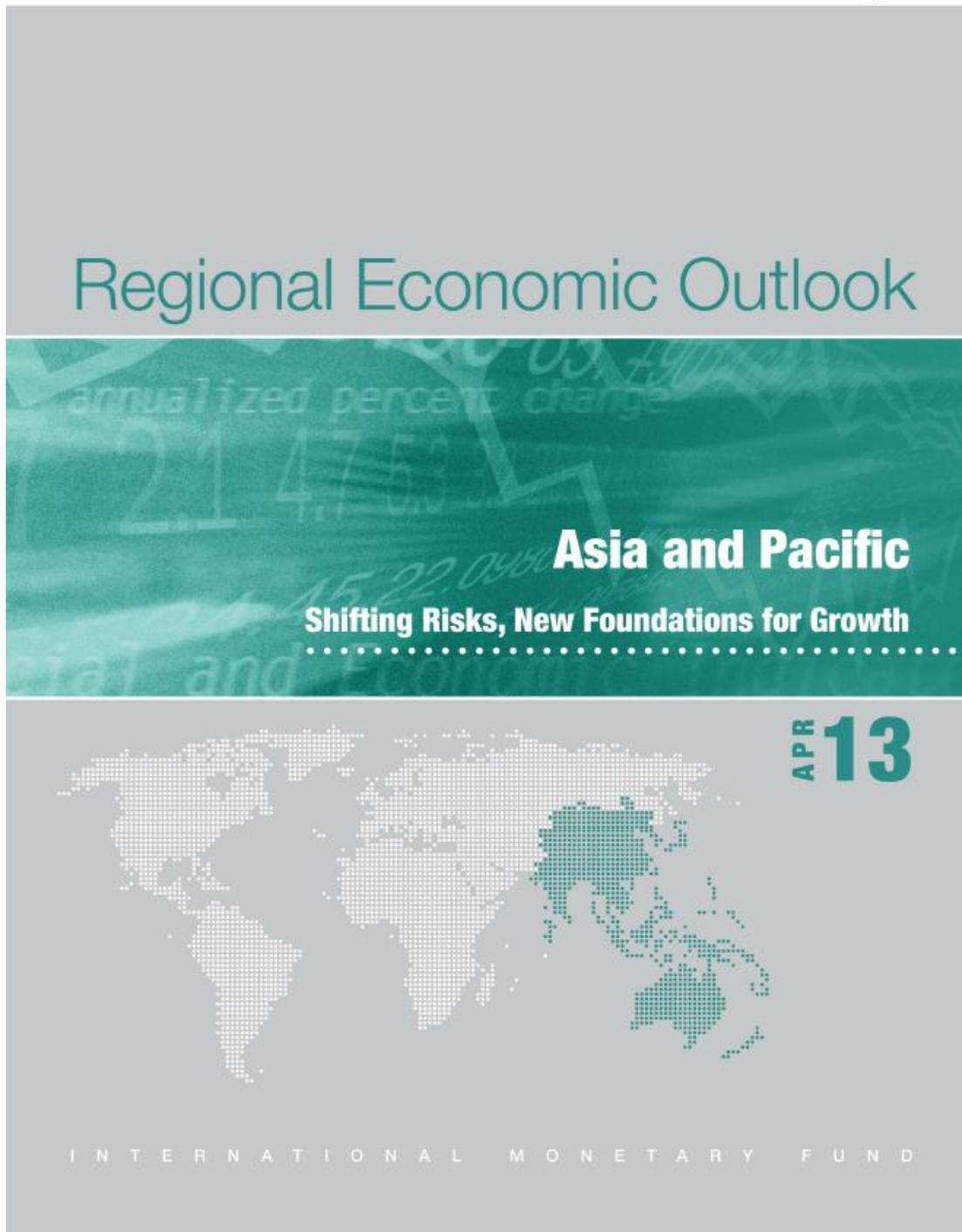
Russian public finances are in reasonable shape, mainly because of high oil revenues; without these, Russia would be running a fiscal deficit. The government intends to boost investment in public infrastructure to offset a deceleration in private-sector investment.



Moody's Analytics forecasts the euro zone will only grow 0.2% in 2013, with the unemployment rate peaking above 12% in the middle of the year. Germany, with expected GDP growth of 1.2% and average unemployment of 7.1%, will be the main driver of euro zone growth. Spain's economy will contract 1.5%, while Greece shrinks 4.2%, with both countries posting unemployment rates above 25%. Modest growth in the euro zone is likely to resume by the end of 2013. Outside the euro area, Poland will grow 2.7% with inflation reaching 2.9%, and Russian output will increase 3.7%. Smaller countries' performance will follow that of the euro zone.

11. Exhibit 2D: Economic Outlook for Asia and Pacific:

World Economic and Financial Surveys



## 1. Managing Shifting Risks

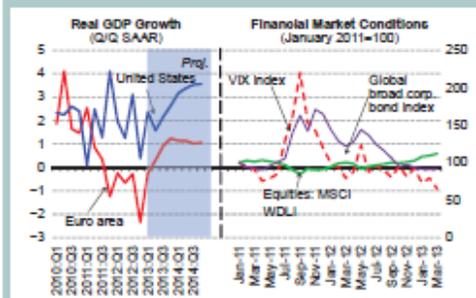
### Signs of Pickup amid Receding Tail Risks

The global economy entered 2013 with receding tail risks as the U.S. fiscal cliff and an escalation of the euro area crisis had been averted. In the United States, activity, balance sheets, house prices, and credit were improving while major emerging economies were also seeing strengthening activity. In the euro area, however, economic prospects remain fragile, with weak activity extending to core countries. Meanwhile, financial conditions are ameliorating across the board, with equity prices rising to multiyear highs, volatilities declining, and credit spreads compressing (Figure 1.1). While downside risks remain significant, risks are now more balanced than they were at the time of the October 2012 *Asia and Pacific Regional Economic Outlook Update* (IMF, 2012d).

With global financial conditions easing markedly since mid-2012 amid further loosening in monetary stances in major advanced economies, risk capital began to return to emerging Asia (Figure 1.2). In particular, net portfolio flows gained strength since the third quarter of 2012, when they turned positive. Mutual funds data at the beginning of 2013 suggest weekly flows were comparable to the strong levels seen before the global financial crisis, although capital inflows moderated more recently. The turnaround has been led by ASEAN economies where, in 2012:Q3, the swing in net portfolio flows amounted to about 3¼ percent of GDP. At the same time, the impact of European bank deleveraging on Asian financial systems continued to be relatively small and measured, with cross-border lending from euro area banks declining at a pace of less than ¼ percent of emerging Asia

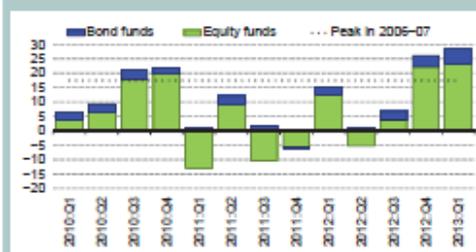
Note: The main authors of this chapter are Kevin C. Cheng and Olaf Unteroberdoerster, with contributions from Kum Hwa Oh. Sidra Rehman and Dulani Seneviratne provided research assistance.

Figure 1.1  
GDP Growth and Financial Market Conditions



Sources: IMF, *World Economic Outlook*; and Bloomberg L.P.

Figure 1.2  
Selected Asia: Equity and Bond Funds—  
Quarterly Net Flows during 2010–13<sup>1</sup>  
(In billions of U.S. dollars)



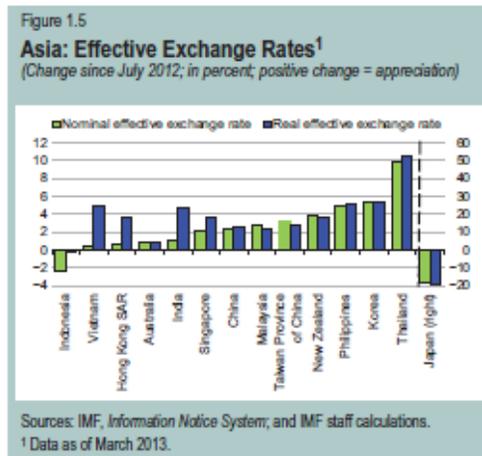
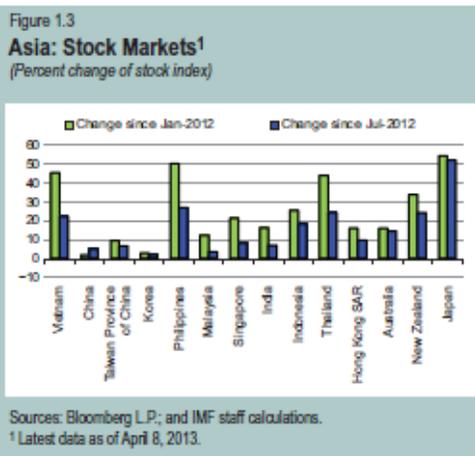
Source: Haver Analytics.

<sup>1</sup> Includes exchange traded fund flows and mutual fund flows for Emerging Asia, Hong Kong SAR, Taiwan Province of China, Korea, and Singapore.

GDP in the third quarter of 2012 and regional banks, notably from Japan, taking up the slack.

As a result, Asian financial markets have been buoyant, and indicators of financial stress have fallen sharply. Most stock markets have risen by more than 10 percent since early 2012, and gains have exceeded 20 percent in a number of cases (Figure 1.3). Since their peak in mid-2012, spreads on sovereign credit default swaps (CDS) have fallen by some 100 basis points on average and stabilized at their lowest levels since 2010. Bank CDS spreads indicate a

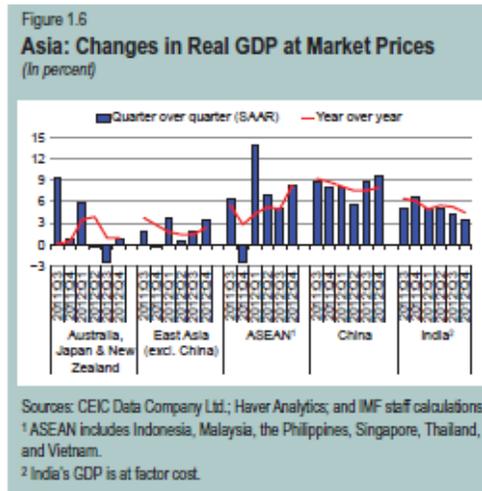
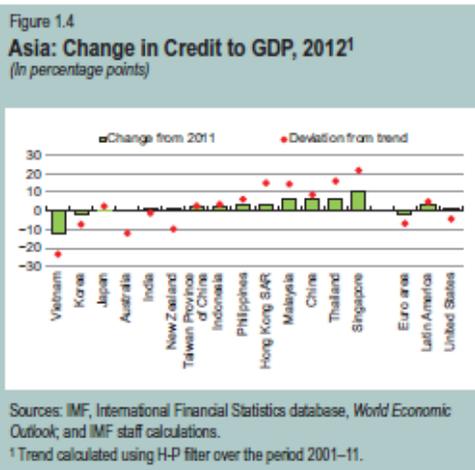
REGIONAL ECONOMIC OUTLOOK: ASIA AND PACIFIC



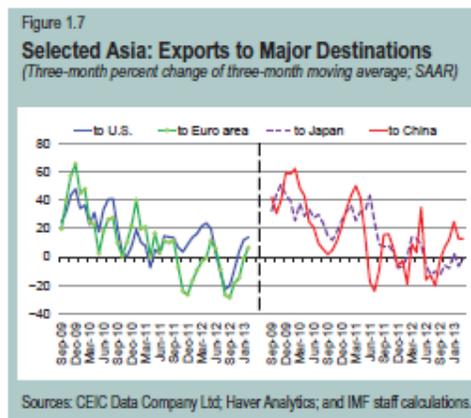
similar improvement of risk perceptions for Asian banks. Easy financial conditions have contributed to robust credit growth in the region (Figure 1.4), while corporate bond issuance has accelerated. At the same time, the currencies of most economies have appreciated since mid-2012, both in nominal and real effective terms—in several cases (including Korea and Thailand) by more than 5 percent. Japan and, to a lesser extent, Indonesia are two notable exceptions to this trend, with the yen depreciating by more than 18 percent in real effective terms since July 2012 (Figure 1.5). While the yen depreciation

reflected a confluence of factors including further monetary easing, a widening trade deficit, and reduced safe-haven effects amid improving global risk appetite, foreign investor sentiment against the rupiah weakened amid a deteriorating current account deficit.

Against the backdrop of easier financial conditions and stabilizing external demand, economic activity gained momentum during 2013:Q1, after a broad-based weakening of exports growth across the region through most of 2012 (Figure 1.6). Led by China, export

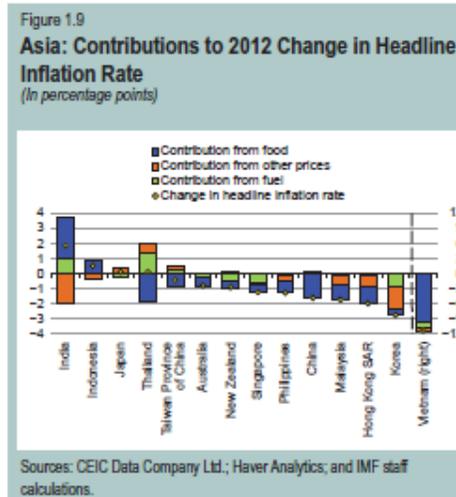
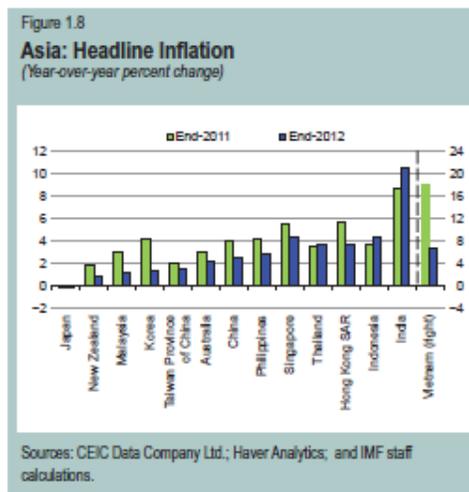


## 1. MANAGING SHIFTING RISKS



growth has begun to pick up. In part, the rise reflects a combination of supply-chain links and firming demand across Asia and from advanced economies, notably the United States (Figure 1.7). In addition, purchasing managers indexes for manufacturing have improved across the region and reentered expansionary territory in recent months, although they remain below their averages before the global financial crisis. At the same time, notably in China and, to a lesser extent, leading ASEAN economies, private domestic demand has remained robust with relatively favorable financial and labor market conditions supporting stable consumer confidence, buoyant investment, and robust retail sales.

Across much of Asia, headline inflation slowed markedly through 2012, in many cases by some 2 percentage points; the notable exceptions were India, Indonesia, and, to a lesser extent, Thailand (Figure 1.8). Declines were generally driven by moderating food and commodity prices, although in several cases, second-round effects from weaker activity also contributed (Figure 1.9). Core inflation in early 2013 was low and stable, at or below 2 percent in a number of economies, including China, Korea, and Malaysia. At the same time, deflation persisted in Japan, where headline and core inflation fell to a negative 0.1 percent and negative 0.2 percent, respectively, at end-2012.

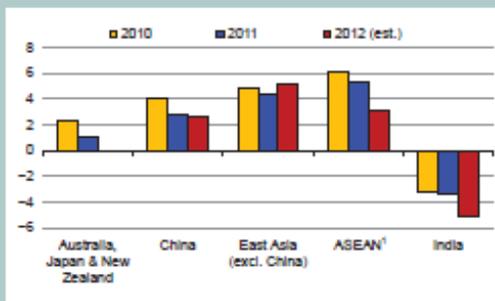


Consistent with weak external demand and relatively strong domestic conditions, the region's trade and current account balances continued to shrink substantially in 2012. While China has played a prominent role in this decline, balances have also declined substantially in Japan, leading ASEAN economies, and India (Figure 1.10).

Against the broad regional trends, the dynamics and composition of growth have varied significantly across Asia in 2012 and early 2013.

## REGIONAL ECONOMIC OUTLOOK: ASIA AND PACIFIC

Figure 1.10  
**Asia: Current Account Balances**  
 (In percent of GDP)



Source: IMF, *World Economic Outlook*.

<sup>1</sup> ASEAN includes Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

- Activity in Japan entered a short-lived recession after the middle of 2012 as consumption was hit by the expiration of eco-friendly car subsidies, and exports decreased in conjunction with weakening external demand. However, signs of a turnaround emerged in early 2013 due to rising business sentiment and gradually improving industrial production. Growth in Australia was around its trend pace in 2012, after peaking at 4 percent in the first half of 2012, although some non-mining sectors remained under pressure from the strong currency, partly driven by the heightened appetite of international investors for Australia's government debt. In New Zealand, a modest recovery from the 2012 earthquake, fuelled by reconstruction spending, was held back by high household debt and sluggish private consumption.
- In East Asia, the Chinese government's effort to achieve a soft landing has been confirmed with a moderate pickup of growth in the fourth quarter of 2012, led in part by more credit-financed infrastructure investment and a recovery of exports. In Korea, exports that led the sharp slowdown in 2012 have stabilized, but consumption remained subdued notwithstanding a cut in policy rates of 50 basis points and the adoption of two modest fiscal packages.
- In South Asia, a drop of private investment over rising policy uncertainty exacerbated supply bottlenecks in India, which contributed

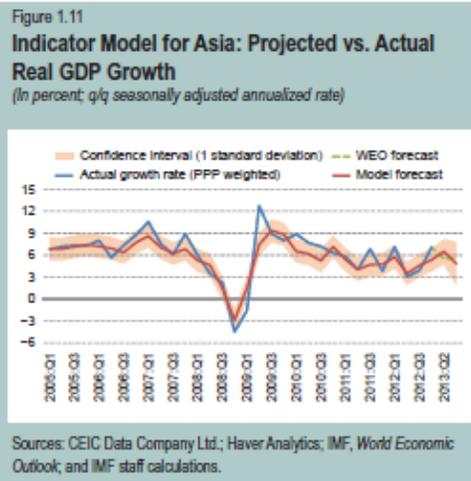
to headline inflation that was high compared with that of most other Asian economies, despite a sharp growth slowdown during 2012. In Sri Lanka, tighter policies in early 2012 to rein in credit and import growth contributed to slowing activity last year.

- Many ASEAN economies, especially Indonesia, Malaysia, the Philippines, and Thailand, bucked regional trends—growth held up on robust domestic demand, in part supported by accommodative monetary and fiscal stances and fueled by rapid credit expansion.
- Exports of Asian low-income economies slackened, although external headwinds were mitigated in some cases: by privileged access to advanced economies (such as the European Union in the case of Cambodia), resilient remittances (Bangladesh and Nepal), and rapid domestic credit growth (Cambodia and the Lao People's Democratic Republic). More recently, export growth has gained momentum for a number of garment manufacturers, while sharply higher exports and imports in Myanmar in the first quarter of 2013 also reflected an improved business environment and the suspension of sanctions. On the other hand, recovery in the Pacific Island economies has continued to be held back by delays in growth-friendly structural reforms and in infrastructure investments to improve connectivity.

### Stronger Prospects in the Period Ahead Hinge on Internal Demand Dynamics

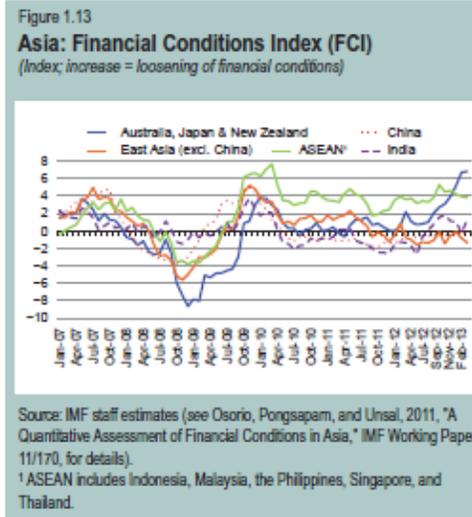
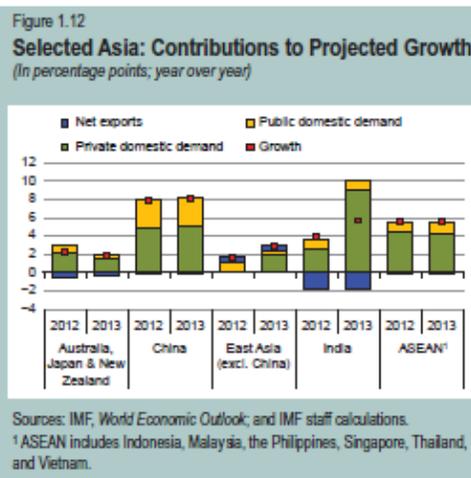
A small, gradual pickup in growth is expected to continue throughout 2013, underpinned by continued robust domestic demand and some modest strengthening in external demand (Figure 1.11, reflecting readings from a broad range of high-frequency activity indicators covering industrial Asia, large emerging market economies, and smaller export-dependent economies). Growth for Asia as a whole is forecast to increase to about 5¼ percent in 2013 and 6 percent in 2014 (Table 1.1 and Figure 1.12). The main elements

## 1. MANAGING SHIFTING RISKS



supporting this resilient domestic demand are labor markets and capital inflows:

- Labor market conditions are strong, supporting robust consumer confidence and household disposable income. Broadly, unemployment rates have fallen further over the past year and are substantially lower than their precrisis averages, in several cases—including Hong Kong SAR and Singapore—by more than 1 percentage point. At the same time, real wages have continued to climb across the region, including in China, where productivity has been strong and the



working-age population as a share of the total population is projected to decline after 2015.

- Capital inflows to emerging Asia are likely to remain buoyant, in light of push factors (easy monetary conditions in Western advanced economies and reduced risk aversion) and pull factors (notably growth and return differentials vis-à-vis advanced economies). Financial conditions have generally eased in early 2013, mainly as a result of the higher stock prices and rapid credit growth (Figure 1.13), thereby providing an impetus to economic activity going forward. In particular, portfolio equity flows are estimated to boost private consumption and investment in Asia mainly by raising asset prices and boosting credit growth. For emerging Asia as a whole, an increase of 1 percent of GDP in such portfolio flows is estimated to translate into a rise of about  $\frac{1}{2}$  percentage point in private consumption growth, and a  $1\frac{1}{2}$  percentage point increase in investment growth after three to four quarters (Figures 1.14 and 1.15).

Regional economies are also expected to benefit from growing spillovers of internal demand. For some of the more advanced open economies, such as Korea and Taiwan Province of China, direct and indirect exposure to demand from China and Japan is as important as exposure to demand from

## REGIONAL ECONOMIC OUTLOOK: ASIA AND PACIFIC

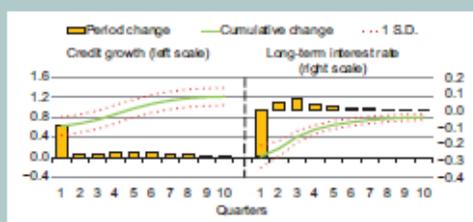
**Table 1.1. Asia and Pacific: Real GDP***(Year-over-year percent change)*

	Actual Data and Latest Projections					Difference from October 2012 WEO		
	2010	2011	2012	2013	2014	2012	2013	2014
Australia	2.6	2.4	3.6	3.0	3.3	0.3	0.0	0.1
Japan	4.7	-0.6	2.0	1.6	1.4	-0.2	0.4	0.3
New Zealand	1.8	1.4	2.5	2.7	2.6	0.3	-0.3	-0.1
<b>East Asia</b>	<b>9.9</b>	<b>8.2</b>	<b>6.7</b>	<b>7.1</b>	<b>7.5</b>	<b>-0.1</b>	<b>-0.3</b>	<b>-0.3</b>
China	10.4	9.3	7.8	8.0	8.2	0.0	-0.2	-0.3
Hong Kong SAR	6.8	4.9	1.4	3.0	4.4	-0.4	-0.5	0.1
Korea	6.3	3.6	2.0	2.8	3.9	-0.7	-0.8	-0.1
Taiwan Province of China	10.8	4.1	1.3	3.0	3.9	-0.1	-0.9	-0.6
<b>South Asia</b>	<b>10.9</b>	<b>7.7</b>	<b>4.2</b>	<b>5.7</b>	<b>6.3</b>	<b>-0.8</b>	<b>-0.3</b>	<b>-0.2</b>
Bangladesh	6.4	6.5	6.1	6.0	6.4	0.0	-0.1	-0.4
India	11.2	7.7	4.0	5.7	6.2	-0.9	-0.3	-0.2
Sri Lanka	8.0	8.2	6.4	6.3	6.7	-0.3	-0.5	0.3
<b>ASEAN</b>	<b>7.6</b>	<b>4.6</b>	<b>5.7</b>	<b>5.5</b>	<b>5.5</b>	<b>0.5</b>	<b>0.0</b>	<b>0.0</b>
Brunel Darussalam	2.6	2.2	1.3	1.2	6.0	-1.4	-0.4	1.1
Cambodia	6.1	7.1	6.5	6.7	7.2	0.0	0.0	0.0
Indonesia	6.2	6.5	6.2	6.3	6.4	0.2	0.0	-0.1
Lao People's Democratic Republic	8.1	8.0	8.3	8.0	7.7	0.0	0.0	0.0
Malaysia	7.2	5.1	5.6	5.1	5.2	1.2	0.4	0.2
Myanmar	5.3	5.5	6.3	6.5	6.6	0.1	0.2	0.2
Philippines	7.6	3.9	6.6	6.0	5.5	1.8	1.2	0.5
Singapore	14.8	5.2	1.3	2.0	5.1	-0.8	-0.9	1.5
Thailand	7.8	0.1	6.4	5.9	4.2	0.9	-0.1	-0.3
Vietnam	6.8	5.9	5.0	5.2	5.2	-0.1	-0.6	-1.2
<b>Small States<sup>1</sup></b>	<b>3.7</b>	<b>4.5</b>	<b>3.8</b>	<b>3.6</b>	<b>3.5</b>	<b>-0.1</b>	<b>-0.3</b>	<b>0.0</b>
<b>Pacific Island Countries<sup>2</sup></b>	<b>2.5</b>	<b>3.2</b>	<b>2.6</b>	<b>2.2</b>	<b>2.5</b>	<b>-0.3</b>	<b>-0.3</b>	<b>0.2</b>
<b>Emerging Asia<sup>3</sup></b>	<b>10.1</b>	<b>8.2</b>	<b>6.7</b>	<b>7.2</b>	<b>7.4</b>	<b>-0.1</b>	<b>-0.2</b>	<b>-0.2</b>
<b>Asia, Total</b>	<b>8.6</b>	<b>6.1</b>	<b>5.3</b>	<b>5.7</b>	<b>6.0</b>	<b>-0.2</b>	<b>-0.2</b>	<b>-0.1</b>

Source: IMF staff projections.

<sup>1</sup> Small states include Bhutan, Fiji, Kiribati, Maldives, Marshall Islands, Micronesia, Palau, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu.<sup>2</sup> Pacific Island Countries include Fiji, Kiribati, Marshall Islands, Micronesia, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.<sup>3</sup> Emerging Asia includes China, India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.

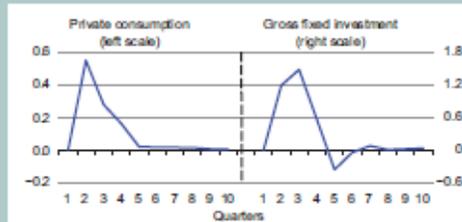
Figure 1.14

**Emerging Asia: Response of Credit Growth and Long-Term Interest Rate to Non-FDI Inflows<sup>1</sup>***(In percentage points)*

Source: IMF staff estimates.

<sup>1</sup> Includes the Philippines, Malaysia, Thailand, Indonesia, India, Korea, and Taiwan Province of China. Response of quarter-on-quarter annualized growth to 1 percentage point of GDP increase in net inflows of each type.

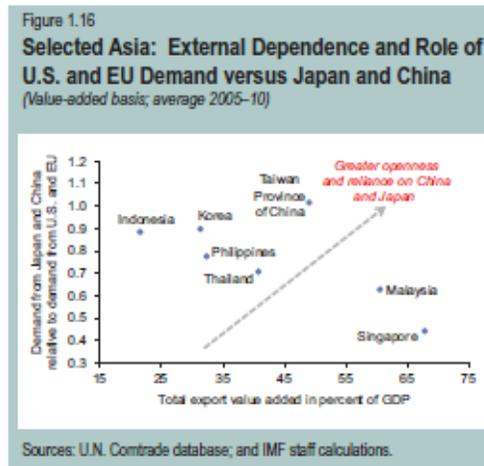
Figure 1.15

**Emerging Asia: Response of Domestic Demand to Portfolio Equity Flows<sup>1</sup>***(In percentage points)*

Source: IMF staff estimates.

<sup>1</sup> Includes the Philippines, Malaysia, Thailand, Indonesia, India, Korea, and Taiwan Province of China. Response of quarter-on-quarter annualized growth to 1 percentage point of GDP increase in net inflows.

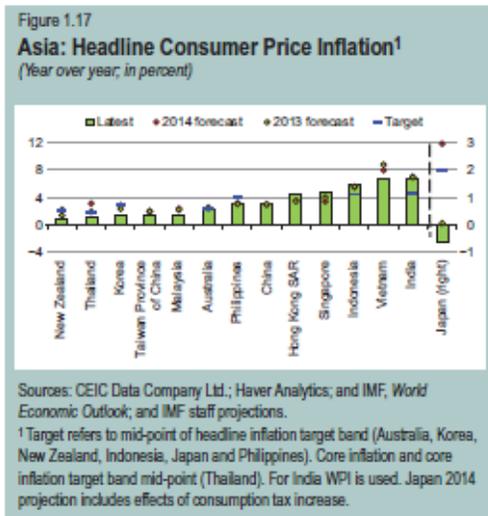
## 1. MANAGING SHIFTING RISKS



the United States and Europe (Figure 1.16). They should therefore benefit from the ongoing recovery in China and the stimulus measures in Japan. Recent exchange rate movements are unlikely to materially affect this outlook, as they have been generally moderate, and supply-chain links tend to dampen their impact on external competitiveness (see IMF, 2011b: April 2011 *Regional Economic Outlook: Asia and Pacific*). From a historical perspective, export market shares of Asian economies remained close to trend despite large swings in real effective exchange rates in the aftermath of the global financial crisis.<sup>2</sup> Moreover, in the case of ASEAN economies, growing integration in final consumer goods trade may also contribute to favorable intraregional demand dynamics (Box 1.1).

While leading indicators also point to a recovery of Asia's electronics exports, the role of the information technology (IT) sector as Asia's traditional engine of industrial growth is becoming more varied across the region. As highlighted in Box 1.2, the IT sectors in East Asia, led by China and Taiwan Province of China, have had a relatively

<sup>2</sup> Since mid-2012 the yen depreciated by over 18 percent in real effective terms, while many other regional currencies appreciated by about 3–6 percent. This follows real effective exchange rate movements of more than 20 percent between mid-2008 and 2010 for a number of economies, including Japan (increase) and Korea (decrease).



strong recovery, with exports exceeding precrisis trends as early as 2011. In these economies, IT sectors have undergone a longer-term upgrading with a steady rise in the share of high-tech outputs, such as semiconductors, flash drives, and fiber-optical devices. By contrast, in economies where the share of medium-tech output continues to play a dominant role, export growth has been weaker, and often the share of IT in overall exports has shrunk, including in the Philippines, and to a lesser extent Indonesia and Thailand.

Inflation is expected to remain generally within central banks' explicit or implicit comfort zones, with the notable exception of India. Consistent with the moderate pickup in growth and a stable outlook for global food and commodity prices, headline inflation would average 3.3 percent in 2013, only slightly higher than the 2012 average of 3.2 percent and would rise to 3.7 percent in 2014 (Figure 1.17).

In addition to these general trends, important country-specific factors influence this outlook:

- In Japan, a sizable fiscal stimulus—about 1½ percent of GDP over two years—will boost growth by some 0.6 percentage point in 2013, and growth will be further supported by a recovery in external demand and the substantial further monetary easing under the recently announced quantitative and qualitative

## REGIONAL ECONOMIC OUTLOOK: ASIA AND PACIFIC

## Box 1.1

ASEAN-5 Integration as a Source of Resilience<sup>1</sup>

Intraregional trade among ASEAN-5 economies currently accounts for more than 20 percent of this region's total trade with the world, a larger share than trade with China, Japan, the United States, or the European Union. The large rise in the countries' trade with China over the past decade can largely be attributed to increasing trade in intermediate goods, as ASEAN-5 and China have integrated to form a new supply-chain network.<sup>2</sup> On the other hand, trade in final consumption goods within ASEAN-5 economies has seen a remarkable uptrend (figure, top), pointing to the growing significance of domestic consumption as a source of short-term growth and resilience for the region.

Besides global demand, intraregional demand is indeed empirically found to be an important driver of ASEAN-5 growth (excluding Indonesia, which has a lower trade-to-GDP ratio and whose major exports, including commodities, are outside ASEAN). A Bayesian vector autoregression analysis highlights the importance of trade shocks (global growth) and financial channels (VIX, a measure of global risk aversion) of global spillovers, over and above shocks to ASEAN-5 trading partners' growth in determining the region's growth (figure, middle). The increasing role of intraregional trade in final consumption goods, together with a large domestic market, especially in Indonesia, appears to provide the region with a potential source of resilience against global demand shocks.<sup>3</sup>

Despite the softening of global growth in 2012, robust domestic demand in many ASEAN economies has continued to lend support to growth momentum. Can domestic demand continue to be resilient in the face of external headwinds? A threshold model is estimated for each country, whereby the spillover from external to domestic demand can potentially intensify once the former deteriorates beyond a certain threshold. In relatively open economies such as Malaysia and Thailand, domestic demand is able to withstand external shocks, provided they are not too large; domestic demand in these countries is almost immune to a one-standard-deviation external shock, but is substantially affected once the shock size is doubled (figure, bottom).<sup>4</sup> For ASEAN as a bloc, there are also significant threshold effects, but it takes a much larger external shock to materially affect the aggregate domestic demand—even a two-standard-deviations shock does not exceed the estimated threshold (figure, bottom). Domestic demand for ASEAN as a whole is therefore more resilient than the sum of its parts, reflecting a boost to resilience afforded by greater intraregional trade integration and pooling of risks among country members.

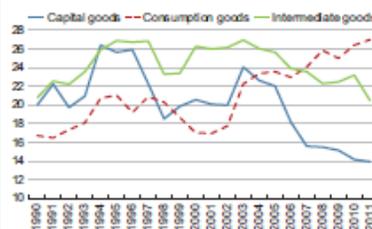
Note: The main author of this box is Phurichai Rungecharoenkitkul.

<sup>1</sup> Cubero and others (forthcoming). For purposes here, ASEAN-5 consists of Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

<sup>2</sup> See Unterroberdoerster and others (2010).

<sup>3</sup> The effect of China's growth shocks on ASEAN's GDP growth appears to be more mixed. While China serves as conduit in transmitting global shocks through the supply chain, shocks to Chinese investment are found to have adverse spillovers.

<sup>4</sup> External shocks are innovations of exports equations assumed to follow a simple autoregressive process.

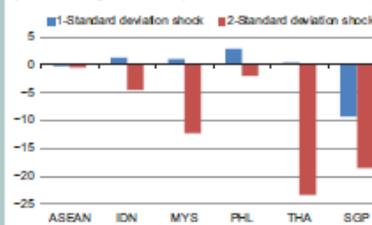
Intraregional Exports by Category  
(In percent of total exports in each category)

Sources: U.N. Comtrade database; and IMF staff calculations.

Accumulated Response of ASEAN-5 (excl. Indonesia) GDP Growth to Cholesky One Standard Deviation Innovations<sup>1</sup>

Sources: IMF staff estimates.

<sup>1</sup> The chart includes statistically significant variables only. The model is identified using a standard Cholesky decomposition with lag length of the VAR based on standard information criterion. The variables in the model are ordered as follows, starting with the most exogenous shock: VIX, external GDP growth, global oil prices, other exogenous variables, real ASEAN-4 GDP growth (excluding domestic economy), and domestic real GDP growth. The VIX is included in levels while all other variables are in log first differences.

Next-Quarter Impulse Responses of Domestic Demand to Export Shocks  
(Percent change; annualized)

Source: IMF staff estimates.

## 12. Exhibit 2E: US Automobile Parts Manufacturing Industry Report



**INDUSTRY PROFILE**  
**Automobile Parts Manufacturing**

QUARTERLY UPDATE: 8/5/2013  
SIC CODES: 3714  
NAICS CODES: 3363

### Industry Overview

Companies in this industry manufacture automobile parts, including transmission and power train components, engines and engine parts, body parts and trim, electronics, braking systems, and steering and suspension components. Major companies include BorgWarner, Dana, Lear, Tenneco, TRW Automotive, Visteon, and the automotive division of Johnson Controls (all based in the US), along with Robert Bosch and Continental (Germany); Delphi Automotive PLC (UK), DENSO and Aisin Seiki (Japan); Faurecia (France); and Magna International (Canada).

Worldwide, the auto parts manufacturing industry generates about \$1 trillion in annual revenue. Economic expansion in emerging markets is expected to drive healthy growth in the auto manufacturing sector over the next several years, which should bolster demand for auto parts.

The US auto parts manufacturing industry consists of about 4,000 companies with combined annual revenue of about \$185 billion and is expected to experience **moderate growth** in the next two years. Growth drivers include strong demand for new cars, and the high average age of the US automobile fleet.

### COMPETITIVE LANDSCAPE

Demand for auto parts is driven by **new car sales**, which are strongly affected by interest rates, and by the **replacement market**. Company profitability depends partly on the difficulty of manufacturing products and partly on demand volume, since many costs are fixed. Small companies can compete successfully by focusing on a small number of products or some highly technical ones. The US industry is **concentrated**: the 50 largest companies account for more than half of industry revenue.

The structure of the industry is complex. Most smaller companies (referred to as "**tier 2**" and "**tier 3**" suppliers) sell parts to larger suppliers (referred to as "**tier 1**" suppliers), which in turn sell component assemblies or modules to car and truck assemblers such as GM and Ford, which are known as original equipment manufacturers or **OEMs**.

### PRODUCTS, OPERATIONS & TECHNOLOGY

Major product categories for the US industry are **transmission and power train** components (20 percent of industry revenue); **engines and engine parts** (15 percent); and **metal stamping** of body parts and trim (15 percent). Other products include **electrical and electronic equipment** (10 percent); **seating and interior trim** (10 percent); **brake systems** (5 percent); and **steering and suspension components** (5 percent), as well as air conditioning systems and carburetors, pistons, and valves. Parts manufacturing plants are often located close to the assembly plants of the car companies, usually within 100 miles.

Because car and truck companies focus increasingly on design, assembly, and marketing operations (and less on actual manufacturing), the parts industry produces virtually everything that goes into a car or truck.

**Tier 1 suppliers** usually concentrate in one or two distinct industry segments such as axles, power trains, brakes, exhaust systems, suspensions, electrical components, seating, engine parts, or accessories. OEMs still build most of their own engines.

The **production process** depends on the types of parts a manufacturer produces. Companies may buy components from suppliers or make products from scratch by working raw materials like metals and plastics. Companies may own one or several production plants and may have large inventories of raw and finished materials.

Companies often own the tooling needed to manufacture parts, but tooling may also be owned by the customer the product is being made for. Tooling used for simple production processes may be bought from other manufacturers; companies may also develop their own special tooling for making proprietary products or components.

International trade is greatest with Canada and Mexico, where both part manufacturing plants and vehicle assembly plants are located to take advantage of NAFTA. Many foreign car makers have built US assembly plants and use a large number of US-made parts.

**Engineering and quality assurance** are important in the manufacturing process, both for producing parts to the specifications required by the customer, and for achieving cost efficiencies. Industrial engineering technology is a rapidly evolving field. **Computer systems** are extensively used for designing parts and for process control and inventory management. Many suppliers are integrating supply chain systems with customers to support "just-in-time" (JIT) delivery of parts to assembly operations. Big car companies are requiring suppliers to upgrade their electronic data interchange (EDI) capabilities to increase supply chain efficiency.

#### SALES & MARKETING

The operations of most parts manufacturers are determined by the **production cycle** of autos, which are often substantially redesigned every few years. As part of the product development process, tier 1 suppliers are consulted by the OEMs about the manufacturing feasibility and cost of individual components, and are given contracts to produce them. Tier 1 companies in turn award contracts to smaller suppliers based on their ability to produce a part and the cost. Once chosen as the component supplier for a particular car or truck platform, a parts manufacturer can count on a continuing flow of business from that line for several years, even producing replacement parts after the vehicle is no longer made. But because OEMs and big suppliers buy "as needed" from smaller ones, **long-term contracts** don't necessarily guarantee stable sales.

**Sales and marketing** is usually handled by senior managers, since relations with a few large customers are crucial to company revenues.

Many suppliers sell both to OEMs and the higher-margin aftermarket, which includes retail auto parts chains like AutoZone, auto and truck dealers, repair shops; and about 20,000 traditional parts distributors ("jobbers") like NAPA, which sell to installers. Although big chains concentrate mainly on the consumer market, some also have a large commercial business that competes with jobbers.

#### FINANCE & REGULATION

Auto part manufacturers incur substantial **design and capital costs** before they earn any revenue. The industry in the US is **capital-intensive**: average annual revenue per employee is about \$400,000. Depending on the part to be manufactured, machinery may have to be acquired or modified, a production line set up, and workers trained. The revenue trail for a particular part may be very long, lasting years. **Cash flow** for any particular part, therefore, is uneven over a multi-year period.

**Inventories** of raw materials, work in process, and finished product may be high, especially because tier 1 companies and the car companies want to use **just-in-time manufacturing** methods and therefore push inventories back up the supply chain.

**Receivables** are often highly concentrated in one or a few large customers. Typical receivables are about 40 days sales. Capital investments in new equipment are frequent and are typically about 4 to 5 percent of revenue.

Auto part makers are subject to the usual government **regulations** that apply to manufacturing industries, mainly workplace safety regulations administered by OSHA, and environmental regulations administered by EPA and state agencies. Because manufacturing operations can involve toxic metals and solvents, air and water pollution are often issues manufacturers must address, and waste disposal practices can be costly.

#### INTERNATIONAL INSIGHTS

Worldwide, the auto parts manufacturing industry generates about \$1 trillion in annual revenue. Leading auto parts manufacturers based outside the US include Robert Bosch and Continental (Germany), Delphi Automotive PLC (UK), DENSO and Aisin Seiki (Japan), Faurecia (France), and Magna International (Canada). Economic expansion in emerging markets is expected to drive **healthy growth** in the auto manufacturing sector over the next several years, which should bolster auto parts demand.

Generally auto parts makers concentrate operations in **major automotive manufacturing regions**. Based on revenue, Germany, Japan, and the US are the top producers of automobiles; other leading auto-producing countries include the China, South Korea, India, and Brazil. Mexico and Taiwan, both major centers of outsourced manufacturing services, also produce large amounts of auto parts.

Auto parts makers are targeting countries with burgeoning economies such as Brazil, China, and India for growth. **Developing countries** in Africa, the Middle East, and Eastern Europe also hold greater growth potential than the saturated markets of North America and Western Europe.

**Lower labor and transportation costs** in developing nations also make them attractive to automakers as manufacturing bases. To take full advantage of the cost-saving opportunities, automakers require local suppliers. Consequently, the geographic reach of auto parts makers is becoming an increasingly important factor for winning business with carmakers.

While global expansion affords auto parts makers new opportunities, it also exposes them to more **government regulation**. Companies must adhere to laws governing labor policies, safety regulations, and environmental standards, all of which can vary greatly from market to market. International trade agreements can also have a significant impact on the sale of auto parts in foreign markets. Parts suppliers may be subject to tariffs that effectively prohibit sales in a given country.

#### REGIONAL HIGHLIGHTS

In the US, parts manufacturing plants are typically clustered around **car assembly plants**. States with the most parts plants are

Michigan, California, Ohio, and Indiana, followed by Illinois, Texas, and Tennessee. Based on value of shipments, about half of US auto parts manufacturing occurs in Michigan, Ohio, and Indiana. However, in recent years auto assembly plants and parts suppliers have tended to move away from the Midwest in favor of the southern US, where labor unions are less influential and average wages tend to be lower.

### HUMAN RESOURCES

Production jobs in auto parts manufacturing typically involve operating complex machinery. Average pay for the industry in the US is about the same as the national average. Relatively high pay and benefits keep turnover low.

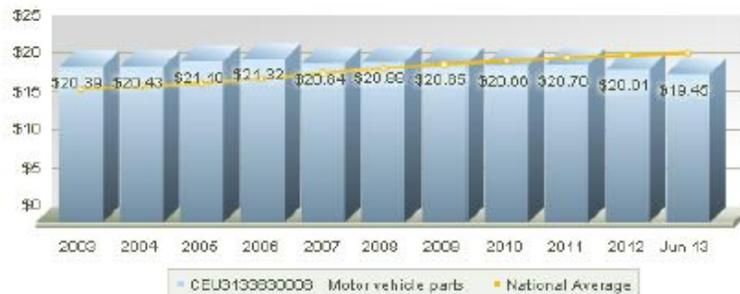
Due to challenging market conditions including **high fuel prices**, consumer preferences shifting from large SUVs and trucks, and intense foreign competition, car makers and their suppliers have had to lay off employees and renegotiate labor agreements.

The safety record of the industry has improved rapidly in the past decade, but injury rates are still much higher than the national average.

### Industry Employment Growth - Bureau of Labor Statistics



### Average Hourly Earnings & Annual Wage Increase - Bureau of Labor Statistics



## Quarterly Industry Update

### Trend: Suppliers May Seek to Shed Non-Core Operations

Global automotive suppliers may start a fresh round of industry consolidation by spinning off or selling noncore operations, especially divisions that manufacture automotive electronics, according to *Automotive News*. Johnson Controls plans to sell its electronics business, and Visteon's CEO has said he would consider selling the company's electronics division if economies of scale cannot be achieved. Nineteen of the industry's 25 leading suppliers offer electronic components, and the field has become more competitive with the entry of hardware and software application providers that hadn't previously sold into the automotive supply chain.

### Industry Impact

Some suppliers may opt to focus on core products rather than make the necessary global investments to keep their electronics divisions competitive.

## Business Challenges

### CRITICAL ISSUES

#### Customer Concentration

Consolidation of car companies and demand for larger and more complicated component assemblies have created larger, but fewer,

auto part suppliers. To cut costs, auto manufacturers have been awarding a larger share of business to a smaller number of large tier 1 auto parts suppliers. As large suppliers become the de facto manufacturing arms of car companies, they gain greater power over smaller suppliers. Many tier 2 and tier 3 suppliers depend financially on a few large contracts.

#### **International Competition**

The largest importers to the US are Canada, Mexico, and Japan; imported car parts account for more than 40 percent of the US market. Many US suppliers reduce costs by moving production to lower-cost countries or by investing capital in more efficient facilities and equipment.

### **OTHER BUSINESS CHALLENGES**

#### **Cyclical Demand**

The auto industry depends on a favorable economy, relying on personal income and employment levels. Amid an economic slowdown, US annual vehicle sales fell by nearly 3 million units in 2009. The industry has since rebounded, but as of 2012, US light vehicle production volumes still had not recovered to pre-recessionary levels. Due to the scale of operations and often far-flung supply chains, it is difficult for auto makers and their suppliers to adjust to sudden and dramatic shifts in consumer demand.

#### **Steel Price Volatility**

The price of steel, a primary raw material used in car part manufacturing, can rise or fall by more than 30 percent from year to year. With little ability to raise prices, part makers often have to absorb cost increases or lose business. Because of a glut of worldwide steelmaking capacity, foreign steel is often cheaper than US. More US auto part production facilities are moving to foreign locations where steel supplies and prices remain steadier than in the US.

#### **More Engineering Expertise Required**

The increasing sophistication of car components forces suppliers to upgrade product lines with more engineering and research and better coordination with customers. Today's vehicles are sophisticated, computer-driven machines requiring technicians who can work with cutting-edge, high-tech tools.

#### **Competition from Counterfeit Parts**

Auto parts counterfeiting results in lost sales of over \$12 billion worldwide for the auto industry, according to the FTC. Parts counterfeiters sell aftermarket parts packaged as if they're directly from automakers, but which rarely meet performance standards.

#### **Government Regulation**

Because of the nature of the work and raw materials used, production of auto parts can be hazardous and produce toxic pollutants. For example, auto part manufacturers that work with or near metalworking fluids can be at risk for serious respiratory illnesses. Some manufacturing plants struggle to meet OSHA and EPA standards.

#### **Competition from Used Parts**

To cut costs, insurance companies are urging greater use of used and refurbished parts in car repair, cutting into new auto parts sales. Today's junkyards, known as auto recycling centers, have become sophisticated auto parts providers equipped with high-tech equipment. Recycled parts cost an average of 50 percent less than new ones, and many now come with warranties.

## **Trends and Opportunities**

### **BUSINESS TRENDS**

#### **Globalization**

To compete globally, auto part companies are merging and forming partnerships and joint ventures with worldwide auto companies. Partnerships are often created for the mutual exchange of ideas. Big suppliers have expanded operations overseas, wherever US or foreign OEMs assemble cars. To keep or add business, smaller suppliers have followed suit, either by manufacturing abroad or expanding their international distribution system.

#### **More Older Vehicles Operating**

Demand for auto parts is increasing due to Americans owning more vehicles and keeping vehicles longer. The average light vehicle on the road is more than 11 years old, according to automotive research firm Polk. Older vehicles requires more maintenance and repairs than newer ones.

#### **R&D Shifts to Suppliers**

As big car companies concentrate on styling, marketing, and engines, part suppliers are advancing technology in many car components. Just as anti-lock brakes are now standard on many cars, parts companies believe that the computer-controlled, electronically operated systems they're developing will be popular for transmissions, suspensions, safety systems, and steering.

**Quality Control**

Many manufacturers require their suppliers to comply with QS9000 (quality control certification), a manufacturing standard guide. QS9000 demands evidence of continuous quality improvement, and is therefore more stringent than the better-known ISO9000.

**INDUSTRY OPPORTUNITIES****Telematics**

Integration of automotive telematics, technology that provides in-car access to communication networks, is expected to increase in the coming years. Employing computers and wireless communication networks, automotive telematic applications range from vehicle tracking and navigation systems to mobile television and email access. Growing interest in Internet-enabled automotive features could provide growth opportunities for parts and accessory manufacturers.

**Green Technologies**

Growing concern over climate change and energy dependency in the US has accelerated the development of environmentally friendly and alternative energy technologies. Demand for hybrid electric and alternative fuel-powered cars is growing, along with consumer expectations about the use of renewable, non-toxic materials. Some parts suppliers have created environmental initiatives to guide their product development and manufacturing practices.

**China: Growing Market**

With growing vehicle and parts sales and the WTO agreement opening the market, China has become a growing target market for motor vehicle parts and products, according to the Motor and Equipment Manufacturers Association (MEMA). Between 2002 and 2012, US exports of auto parts to China increased 325 percent.

**Motorsports Affiliation**

The auto aftermarket and motorsports have teamed for mutual benefit. Auto part manufacturers provide parts, participants, and sponsorships on the racetrack in exchange for marketing, merchandising, and parts testing. More people attend NASCAR races than NFL, NHL, or baseball, making it a perfect venue for marketing directly to consumers.

**Executive Insight****CHIEF EXECUTIVE OFFICER - CEO****Reducing Manufacturing Costs**

Parts suppliers have been pressured by US car companies for lower prices. To comply, parts suppliers have had to cut costs, often by moving production to low labor cost countries to avoid paying US union labor costs. Mexico is the largest supplier of US car part imports.

**Negotiating Contracts with Major Customers**

Many auto parts suppliers depend on a few large customers for the majority of business. Supply contracts are often awarded several years before the start of production.

**CHIEF FINANCIAL OFFICER - CFO****Arranging Working Capital and Equipment Financing**

Parts manufacturers need large amounts of capital and often have large amounts of debt. The larger manufacturers may issue secured notes; smaller companies rely more heavily on bank financing.

**Negotiating Contracts with Suppliers**

The large parts manufacturers buy components from smaller manufacturers or raw material suppliers. Under price pressure from customers, large manufacturers in turn expect cost savings from suppliers. Supply contracts often call for progressive cost decreases in exchange for higher production volume.

**CHIEF INFORMATION OFFICER - CIO****Implementing Manufacturing Automation Systems**

Aside from outsourcing to low-cost countries, parts manufacturers have been able to cut costs through greater automation. In many processes, the labor input is limited to supplying automated machinery with raw materials. Industry labor productivity increased more than 30 percent in the past decade.

**Streamlining Logistics Systems**

Because auto parts components are made by a large number of manufacturers, arranging for timely supply is difficult. Manufacturers also wish to minimize inventories of parts and finished products. To ensure appropriate shipment scheduling, part makers may integrate their computer systems with those of their suppliers and customers.

**HUMAN RESOURCES - HR****Training Production Workers**

Greater manufacturing automation requires that workers receive training in computer systems and other aspects of production control.

Many auto parts have also become more complicated to manufacture. Continual worker training is critical in an industry that has cut employment even as production has risen.

#### Coordinating International HR Issues

When parts manufacturers move production to foreign locations, new HR issues arise, including pay and benefits for foreign employees and for expatriate American employees, local labor laws, and local working conditions. Large manufacturers may have operations in several countries.

#### VP SALES/MARKETING - SALES

##### Exploring Non-Automotive Markets

The skills and equipment used to make auto parts can also be applied to make non-automotive products. Injection-molding of plastic auto parts, for example, can equally be applied to consumer goods. Some manufacturers also make parts for the aircraft industry. The level of future demand from US car makers is uncertain, pushing parts makers to diversify their customer base.

##### Expanding Aftermarket Sales

Some auto part makers focus on serving OEMs. However, sales to the aftermarket are generally more stable than sales that go into new cars.

## Financial Information

### COMPANY BENCHMARK TRENDS

#### Quick Ratio by Company Size

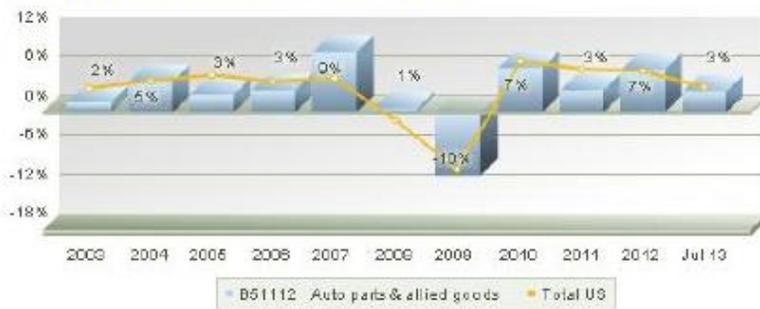
The quick ratio, also known as the acid test ratio, measures a company's ability to meet short-term obligations with liquid assets. The higher the ratio, the better; a number below 1 signals financial distress. Use the quick ratio to determine if companies in an industry are typically able to pay off their current liabilities.



Financial Industry data provided by MicroBilt Corporation collected from 32 different data sources and represents financial performance of over 4.5 million privately held businesses and detailed industry financial benchmarks of companies in over 900 industries (SIC and NAICS). More data available by subscription or single report purchase at [www.microbilt.com/firstresearch](http://www.microbilt.com/firstresearch).

**ECONOMIC STATISTICS AND INFORMATION**

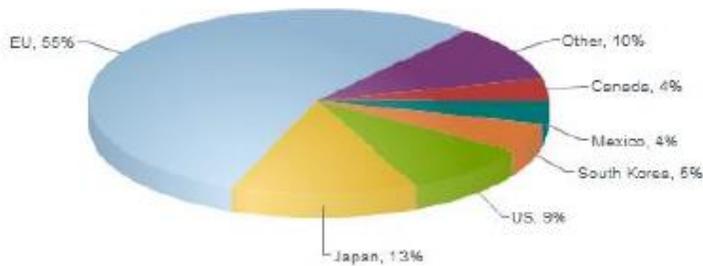
**Index of Industrial Production - Federal Reserve Board**



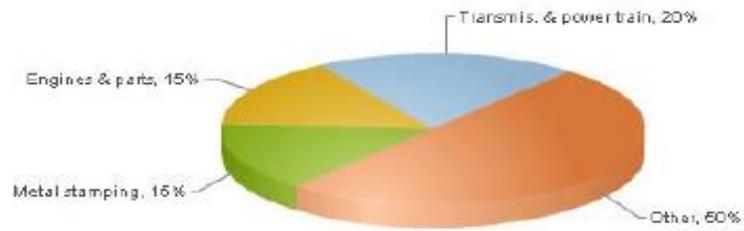
**Change in Producer Prices - Bureau of Labor Statistics**



**Auto Product Export Leaders - WTO, 2009**



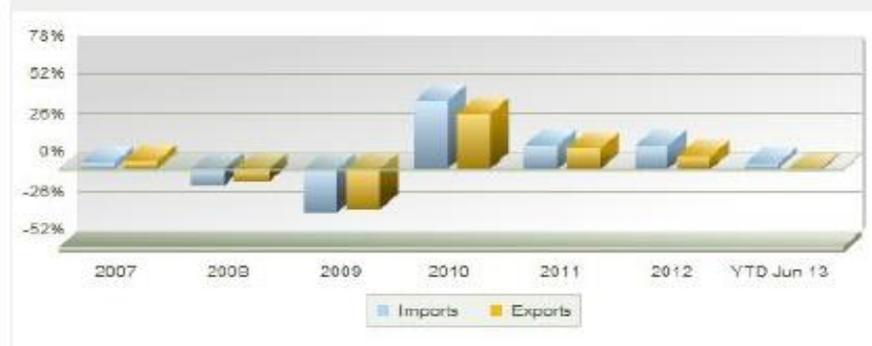
**Product Segmentation by Revenue - Census Bureau**



**Change in Dollar Value of US Trade - US International Trade Commission**

Imports of automobile parts to the US come primarily from Mexico, Canada, Japan, China, and Korea. Major export markets for US automobile parts include Canada, Mexico, China, Japan, and Germany.

**3363 MOTOR VEHICLE PARTS**

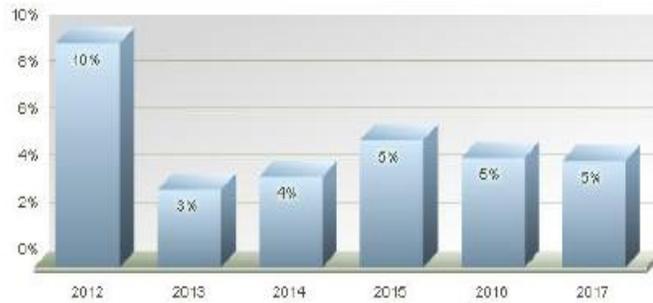


## Industry Forecast

The output of US motor vehicle parts manufacturing is forecast to grow at an annual compounded rate of 5 percent between 2013 and 2017. Data Published: March 2013

### Automobile Parts Manufacturing Growth Declines, Flattens

First Research forecasts are based on INFORUM forecasts that are licensed from the Interindustry Economic Research Fund, Inc. (IERF) in College Park, MD. INFORUM's "interindustry-macro" approach to modeling the economy captures the links between industries and the aggregate economy.



### First Research Industry Growth Rating

Reflects snapshot of industry performance vs. industry risk over the next 12 to 24 months relative to other U.S. industries, along with short descriptions of vital demand and risk factors influencing the industry. Use to quickly determine the overall projected health of an industry.



- Demand: Tied to new vehicle sales and the large after-market
- Need strong technical expertise
- Risk: Greater import competition

## Exhibit 2F: A Picture of EU Car Industry



## A picture of the EU car industry

**SUMMARY** 2012 was a tough year for the EU car industry. The chief of one major car-maker said that the industry as a whole probably lost €5 billion in Europe in 2012 and that a solution had to be found to achieve profits.

The perennial problem of surplus production capacity in Europe (15% in 2012) is allied to a mature (roughly flat since 2001) domestic market and buyers facing austerity.

However, the EU car production industry has a long history and still leads world production (26% market share) though others, like China (24%), are growing fast. It is one of the EU's most successful export industries, generating a large, positive trade balance, mostly from more expensive cars. The main competitors are Japan, the US and South Korea.

Car plants are spread throughout the EU - Germany, France, Italy and the UK have most - satisfying 85% of EU car purchases. Local customer preferences, high extra-EU transport costs relative to cars' low profit margins, along with a 10% import tariff rate are reasons for the 'high' level of 85%.

Along with sub-component suppliers and after-sales services, the industry is a major R&D investor, employer - including many SMEs - and generator of state taxes. It is global, networked and integrated.



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### In this briefing:

- Context
- EU production and sales data
- EU institutions' actions
- Global perspective
- Status and outlook
- Main references

### Context

The motor car was invented in Europe 127 years ago. Since then a large European automotive industry - car manufacturers, suppliers and aftermarket services - has built up, representing up to one third of all EU manufacturing jobs. Staff are involved in vehicle assembly, engine etc. production, testing, sales/marketing, financing, distribution, maintenance, recycling and disposal.

**ACEA** (European Automobile Manufacturers' Association) represents 15 major EU car, bus and truck manufacturers, accounting for about 95% of EU automotive production.

The European Commission (EC) reported in 2009 that the automotive sector (cars, trucks, buses etc.) has annual sales of €780 billion, with value added of over €140 billion. In 2007 approximately 70% of light vehicle (passenger and light commercial vehicles) production in the EU was in Germany, France, Spain, and the UK.

During the 2000s, production growth came in particular from Poland, the Czech Republic and Slovakia, being close to new customers and benefitting from less costly labour with manufacturing skills.

Along with EU sites, European manufacturers and suppliers have worldwide production networks.



## Car production in the EU

Worldwide, 65 million cars were registered in 2011, of which 13 million were in the EU (56% diesel). EU automotive turnover was €625 billion in 2009. Profitability has suffered in recent years, reflecting greater competition through new entrants to the market, commodity price increases and shortening model life-cycles.

The EU domestic market is split into western Europe where sales are flat representing mostly replacement vehicles in a mature market, and the newer MS, with greater potential given the lower ratio of vehicles to people.

An analysis covering 14 MS by ACEA based mainly on 2010 data showed that these MS received €375 billion in tax revenue related to motor vehicles covering purchasing, fuel taxes, road tolls, annual running fees etc. Top was Germany with €79.1 billion, followed by Italy with €67.8 billion, France €63.5 billion, the UK €56.6 billion and Spain €27.2 billion.

The industry has a pyramid structure with a relatively small number of car manufacturers, a larger number of suppliers to them and then thousands of small and medium-sized companies involved in sales, after-sales and also supplies.

### EU production and sales data

EU's leading sales (2011)	
Make and model	Market share
Volkswagen Golf	4.3%
Ford Focus	3.0%
Renault Mégane	3.0%
Volkswagen Polo	2.7%
Ford Fiesta	2.6%
Peugeot 206/207	2.5%
Opel Corsa	2.4%
Renault Clio	2.2%
Opel Astra	2.1%
Volkswagen Passat	1.9%

Source: CCFA

#### Jobs

It was estimated in 2009 by Eurostat that 2 million people were employed directly in the automotive industry, being 6.3% of manufacturing employment (approx. 1% of

Car sales	
2012	'000
AT	336
BE	487
BG	19
CY	11
CZ	174
DE	3 083
DK	171
EE	17
EL	58
ES	700
FI	111
FR	1 899
HU	53
IE	79
IT	1 402
LT	12
LU	50
LV	11
NL	503
PL	274
PT	95
RO	66
SE	280
SI	49
SK	69
UK	2 045
EU	12 054

Source: ACEA  
Malta data unavailable

total EU employment):

- 60%-70% engaged in skilled or semi-skilled manual work,
- 30-40% trained professionals or technicians (e.g. engineers, IT, quality control, marketing...).
- Major direct automotive employment in MS in 2010 was: Germany (709 000), France (220 000), Italy (169 000), the UK (135 000), Spain (126 000), Poland (115 000) and the Czech Republic (106 000).

Further, an estimated 1.2 million work in indirect automotive work (suppliers) with 3.4 million more in services (sales, repairs etc). A significant proportion of automotive jobs are on temporary contracts.

#### R&D

Car technologies continue to develop. ACEA says that cars in the EU today have much less pollution and noise than cars of the 1970's. Each US vehicle contains an estimated €1 500 of electronics.

In 2012 it was estimated that ACEA members spent over €26 billion on research and development (R&D); about 5% of sales. Indeed, the auto industry is the largest European investor in R&D at roughly 30% of the total (2008 figure). About 50% is spent by suppliers who also obtain the majority of patents. In 2011, 8 568 patents were filed with the European Patent Office in the automotive sector, of which 58% were from the EU, 20% from Japan and 14% from the US.

EU car plants	
2012	No.
AT	5
BE	5
CZ	6
DE	46
ES	13
FR	29
HU	4
IT	17
NL	3
PL	11
PT	5
RO	2
SE	11
SI	1
SK	2
UK	17
Total	177

Source: ACEA



## Car production in the EU

[EUCAR](#), the research organisation for the major European automotive manufacturers, says that key research areas are fuels, power-train, materials, manufacturing and integrated safety.

The industry is also a big spender on plant and machinery (€40 billion per annum) for the production process itself. There are around 250 factories in 18 EU countries, with ACEA members having 177 plants in 16 countries.

[VDA](#), the German carmakers association said that around 6 million cars were produced in Germany in 2010, with sales of around €317 billion, of which €118 billion were domestic and €199 billion export, and with 708 970 employees.

### Automotive (sub-component) suppliers

The manufacturer designs and assembles the car. First-tier suppliers manufacture and supply main components (e.g. the fuel pump), while second-tier suppliers produce simpler individual components (e.g. the housing of a fuel pump). Third and fourth-tier suppliers provide raw materials.

Manufacturing of many vehicle parts - electronics, mechanical and electrical engineering, information technology, steel, chemicals, plastics, metals and rubber products - is now outsourced to sub-contractors.

The European Association of Automotive Suppliers ([CLEPA](#)) is the overall EU

### Provisional 2012 top manufacturers

Car registrations	Number ('000)	Market share %
Volkswagen	2 997	24.7%
Peugeot / Citroen	1 431	11.9%
Renault	1 030	8.5%
GM (Opel)	984	8.2%
Ford	910	7.6%
Fiat	780	6.5%
BMW	768	6.4%
Daimler (Mercedes)	633	5.3%
Toyota	508	4.2%
Nissan	418	3.5%
Hyundai	415	3.4%

Source: ACEA

representative organisation of these suppliers. The largest of these are mainly American, Japanese or European.

An estimated 3 000 companies, of which 2 500 are small or medium-sized enterprises (SMEs), are independent suppliers to car manufacturers. They range significantly in size and for some the automotive side of their business is not the most important. Many work for more than one automotive client, indeed first-tier suppliers hardly ever deliver their products to only one manufacturer. In 2007 it was estimated that 20% of the EU's steel and 36% of its aluminium were used in the automotive industry and that typically there were 50 European component suppliers for a car. About 75% of a vehicle's original equipment components and technology is sourced from automotive suppliers.

### The EU aftermarket

According to [CECRA](#) (the European Council for Motor Trades and Repairs), the "aftermarket" consists of approximately 665 000 companies, mostly SMEs, employing approximately 3.5 million people. They look after about 260 million vehicles (cars,

trucks and buses) and provide around €82 billion worth of components (spare parts, tyres, accessories, etc.), covering:

- customer services, repair and servicing,
- spare parts,
- accessories and tuning,
- financing services.

Major EU suppliers	
	Sales (\$m)
<a href="#">R. Bosch</a>	64 500
<a href="#">Michelin</a>	24 000
<a href="#">Continental</a>	23 000
<a href="#">Faurecia</a>	16 350
<a href="#">ZF Group</a>	16 250
<a href="#">Valeo SA</a>	13 800
<a href="#">GKN</a>	8 500
<a href="#">Autoliv</a>	7 250

Source: PricewaterhouseCoopers 2008

German supplier data		
Supplier	Total Workers	Vehicle sales*
Robert Bosch	270 687	57%
Continental	134 434	95%
ThyssenKrupp	187 495	20%
ZF	60 480	86%
BASF	104 779	10%

Source: Business Reports, 2009  
\*Part of total business related to vehicles



## Car production in the EU

### EU institutions' actions

There are around 80 EU Directives and Regulations and more than 70 [UNECE](#) regulatory agreements mostly covering technological issues and standards.

The EC-organised CARS 21 high-level group's June 2012 report [Competitiveness and Sustainable Growth of the EU Automotive Industry](#) led to the November 2012 EC action plan for "[A competitive and sustainable European automotive industry](#)" covering increased global competitiveness through wider access to foreign markets and an improved regulatory environment.

The EC adopted a communication in April 2010 for a "[European strategy on clean and energy-efficient vehicles](#)".

### Global perspective

World car production		
2011	'000	Share
EU	15 702	26.2%
China	14 485	24.2%
Japan	7 159	11.9%
Nafta*	5 614	9.4%
Sth. Korea	4 222	7.0%
India	3 038	5.1%
Other	9 709	16.2%
Total	59 929	100%

Source: OICA, CCFA estimates for July 2012  
\*NAFTA: Canada, USA and Mexico

Since at least 2001, EU car production has been around 17 million units per annum. During that period China's

production has risen from almost nothing to over 14 million units in 2011. Indeed, vehicles produced in China now represent about 30% of Volkswagen's global sales.

### EU exports / imports

The EU's largest trade surplus is in cars, with sales

EU car imports / export		
2011	€million	'000
Imports	24 201	2 318
Exports	93 819	5 356
Balance	69 618	3 038

Source: EUROSTAT

concentrated in the higher priced (premium and large-sized) part of the market; trade in

2011 world car production	
Top 10 manufacturers	Number ('000)
<b>Volkswagen</b>	7 964
Toyota	6 794
General Motors	6 736
Hyundai-Kia	6 118
Nissan	3 581
<b>Peugeot Citroen</b>	3 162
Honda	2 886
<b>Renault</b>	2 443
Suzuki	2 337
Ford	2 239

Source: OICA, CCFA, Estimates 7/2012

smaller sized vehicles is, relatively, in balance.

From 2006, net EU exports increased due to:

- Growth, notably sales to Russia,
- Asian manufacturers opening production facilities in the EU (in particular in Poland, the Czech Republic and Slovakia), which replaced imports.

DG Trade [identifies](#) Japan as the EU's biggest car trade deficit country, from which it imports four times more cars than it exports. Other significant deficit countries are South Korea, India and Turkey.

Germany, Spain and France are major net exporters of vehicles, while the Czech Republic, Poland and Slovakia

EU car export destinations		
2011	Value (in €m)	Market share
US	19 543	20.8%
China	17 348	18.5%
Russia	7 050	7.5%
Switzerland	6 653	7.1%
Turkey	5 215	5.6%
Japan	5 094	5.4%
Other	32 916	35.1%
World	93 819	100%

Source: EUROSTAT

produce a lot more than domestic demand requires - they also have intra-EU sales. However, according to a 2009 EC [report](#), the 'large' exporting countries also import a lot of their components: 40% by value, 25% of which come from other EU MS.

Germany exported more than 4.5 million cars in 2011 - a record - with the US and China being the main markets. VW exports 40%, mostly of the up-market Audi brand.

[Free Trade Areas and the crisis in the European car industry](#) a February 2012 report from [ECIPE](#), says that more than 85% of cars for the EU are manufactured here: Japanese imports have 5% of the market and the US less than 3%. Most foreign brands produce their cars in the EU. This reflects EU import tariffs (normally 10%, but reduced to 6.5% for developing countries)

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which are usually higher than profit margins and thus dissuade imports.

There is also the cost of transport of a heavy vehicle from overseas. Added to that are differences in consumer tastes, which encourages

local development and sourcing, and foreign exchange fluctuations.

EU car import sources		
2011	€m	Share
Japan	6 652	27.5%
USA	4 721	19.5%
S. Korea	3 415	14.1%
Turkey	3 370	13.9%
Mexico	2 309	9.5%
India	1 547	6.4%
Other	2 187	9.1%
World	24 201	100%

Source: EUROSTAT

### Status and outlook

The EU has had a surplus in production capacity over demand for some time, currently estimated at around 15%. Particularly over-capacity affected are Italy (30%), Spain and France (20% each) whose markets are 85% for small and medium-sized cars, which have lower profits. Other structural problems in the industry are considered to include declining relative productivity, lower returns from innovation and the slow transition to high value-added production. PSA Peugeot-Citroën - Europe's second largest manufacturer - Renault and Fiat are all considered to be in a difficult situation.

The EU market is considered mature. Annual average car sales have been just over 17 million units over the last few years, with 239 million cars in total on the road in the EU in 2010. With new vehicle sales being mainly replacements, there is significant flexibility in purchase timing. Loan availability is also important to finance the purchase of the relatively high cost cars.

Third-country markets are growing fast. China has a motorisation rate of only 58 vehicles per 1 000 people (versus 477 in the EU in 2010).

## Car production in the EU

The EU has made automotive exports a trade priority. Free trade agreements should affect flows and allow the possibility of greater import penetration.

The EU-Japan talks - between the largest and fourth largest economies in the world, covering almost one third of global GDP - started in November 2012. ACEA warned of imports increasing more than exports. Non-tariff barriers (e.g. discriminatory certification, additional testing requirements, and luxury taxes) are bigger trade barriers than tariffs. This is considered particularly true for Japan, which has relatively low imports despite no car tariffs. EU manufacturers have reported problems such as more favourable treatment for local producers in the Chinese, Korean and Indian markets.

### Main references

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Exhibit 2G: Auto Component Business in India

Sources: IMRB (Indian Market Research Bureau – January 2009)

Sources: IBEF (India Brand Equity Foundation – August 2013)

Porter’s 5 Forces Analysis (Sources: IMRB (Indian Market Research Bureau – January 2009))

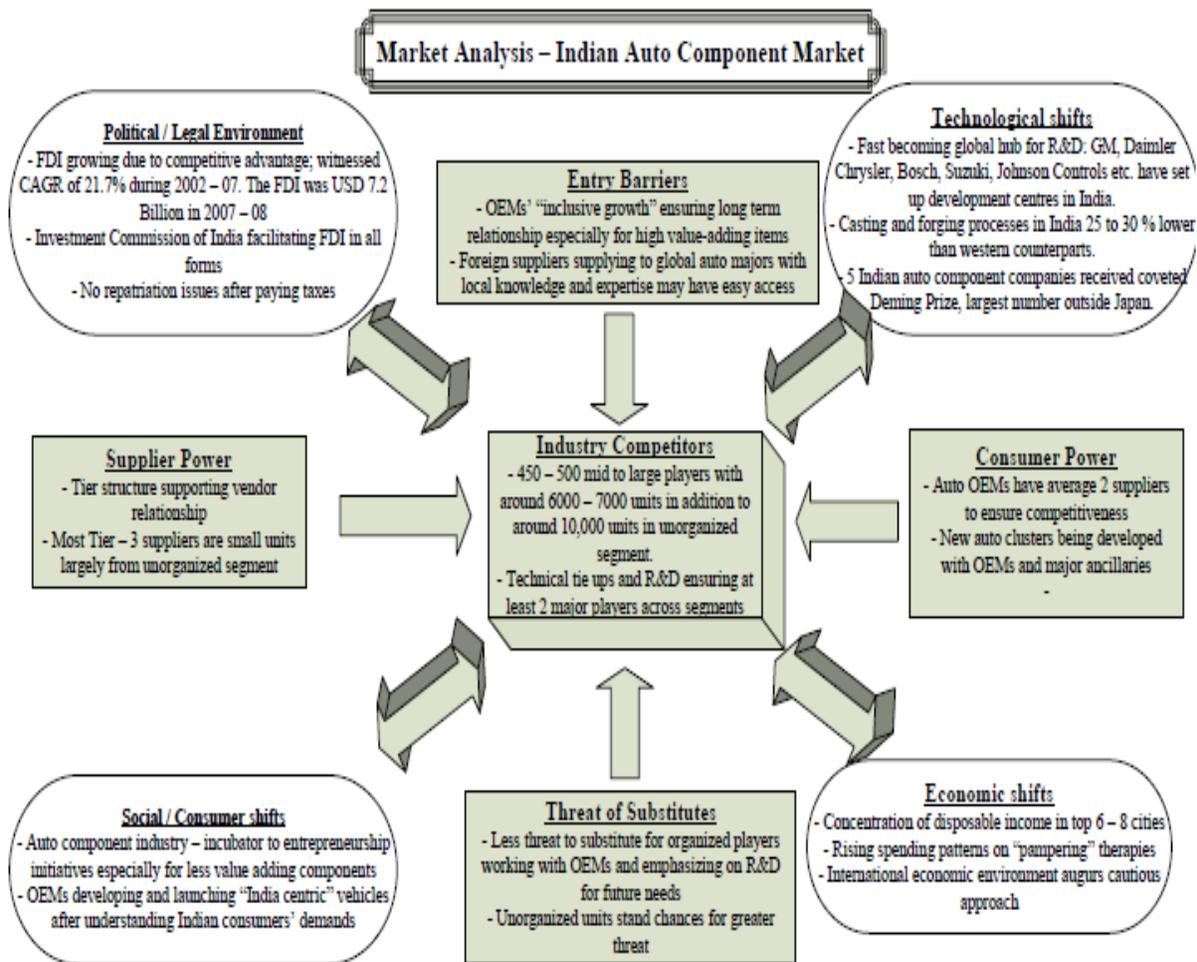
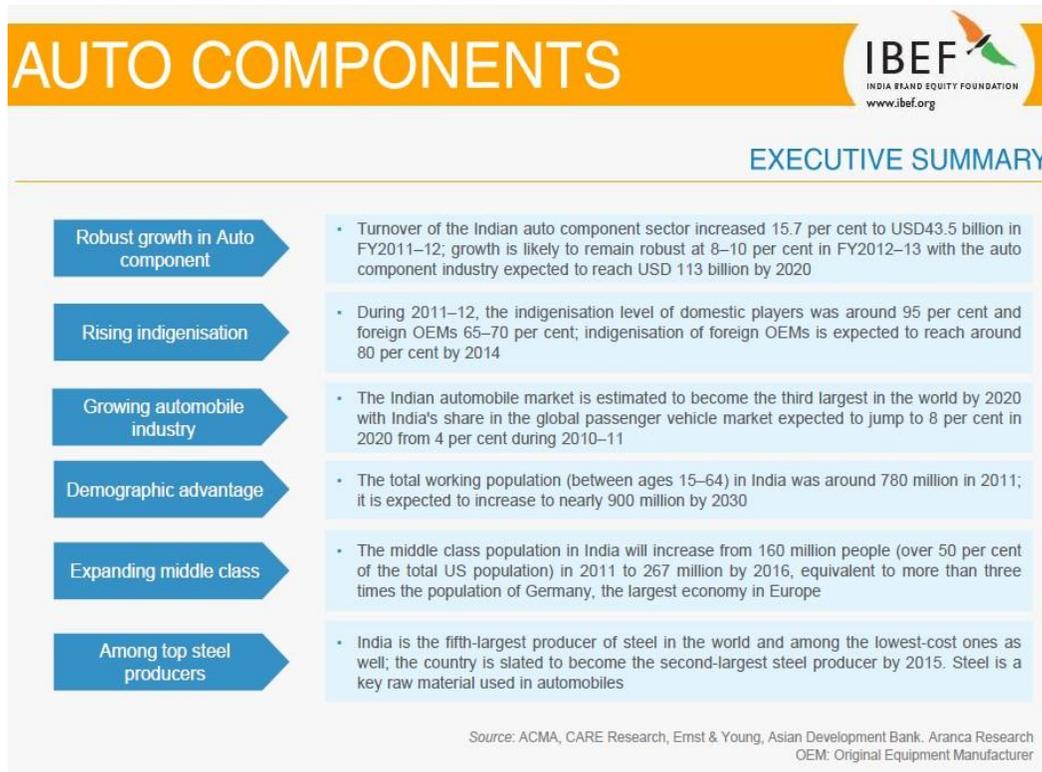


Exhibit: 18-Force Market Analysis of Indian auto component market

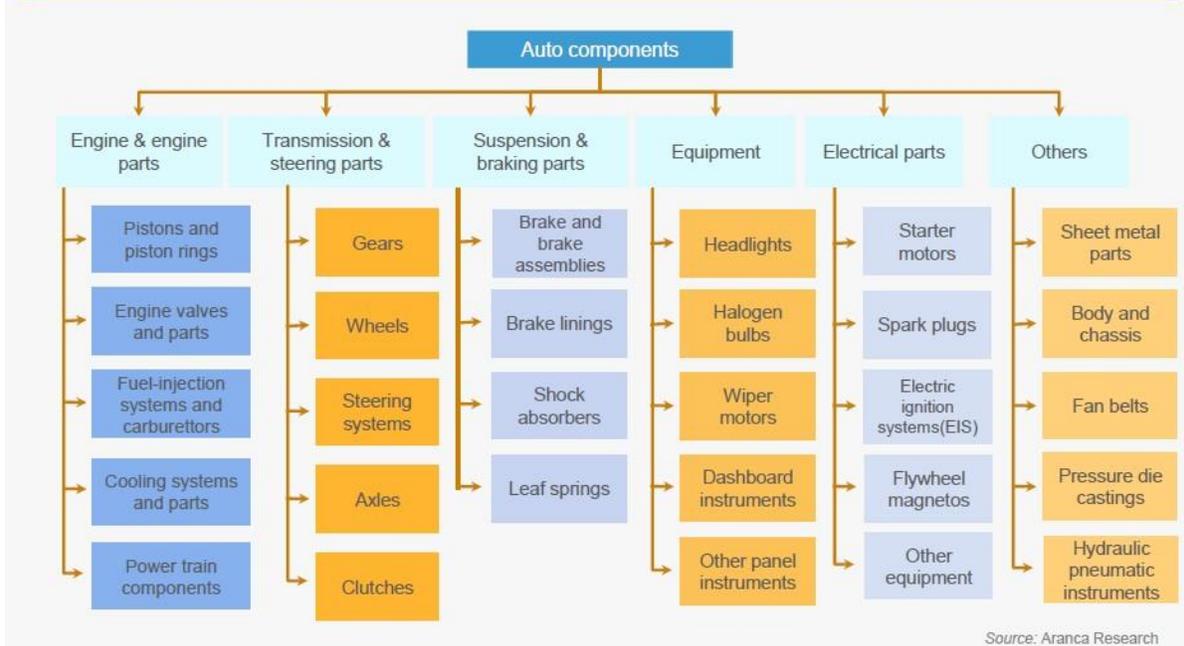
## Auto Components (Sources: IBEF (India Brand Equity Foundation – August 2013))



# AUTO COMPONENTS



THE AUTO COMPONENTS MARKET IS SPLIT INTO SIX PRODUCT SEGMENTS



Source: Aranca Research

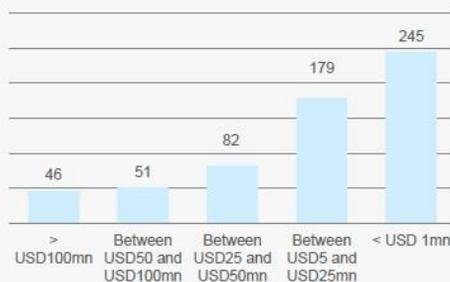
# AUTO COMPONENTS



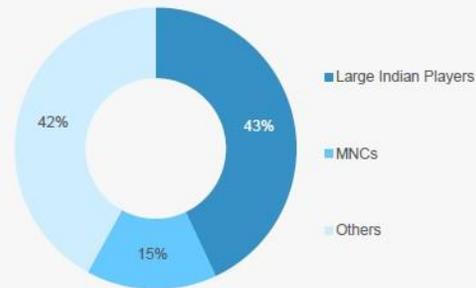
WITHIN THE ORGANISED SECTOR, LARGE PLAYERS PLAY A KEY ROLE

- ★ Large firms play a dominant role in the organised sector; of the total production in the sector in FY10, large Indian firms accounted for a major share (at 43 per cent); MNCs formed 15 per cent
- ★ High-value precision engineering products are primarily produced by the organised sector
- ★ From a sales perspective, about 30 per cent of firms have revenues higher than USD25 million (FY10)

Number of players by revenue in the organised sector (FY10)



Production breakup in the organised sector (FY10)



Source: ACMA, Aranca Research

# AUTO COMPONENTS



## NOTABLE TRENDS IN THE INDIAN AUTO COMPONENTS SECTOR

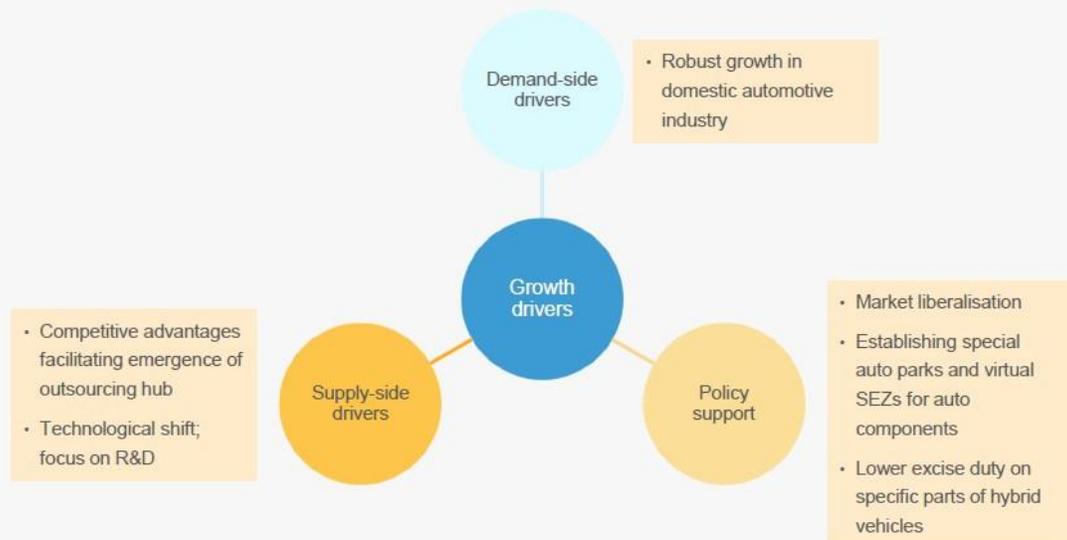


Source: Aranca Research  
Notes: OEM means Original Equipment Manufacturer

# AUTO COMPONENTS



## GROWTH DRIVERS OF THE INDIAN AUTO COMPONENTS MARKET



# AUTO COMPONENTS



## EXPORTS DRIVEN BY INDIA'S COMPETITIVE ADVANTAGE OVER PEERS

		Design and Engineering skills	Manufacturing skills	Manpower costs	Supplier base	Raw materials
East Asia	Korea	In competition with India	In competition with India	Less competitive than India	Less competitive than India	In competition with India
	China	In competition with India	Less competitive than India	In competition with India	Less competitive than India	In competition with India
	Thailand	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India
	Indonesia	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India
	Vietnam	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India
Central & Eastern Europe	Czech Republic	In competition with India	In competition with India	Less competitive than India	In competition with India	In competition with India
	Romania	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India
	Poland	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India
	Slovakia	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India	In competition with India
	Russia	In competition with India	Less competitive than India	Less competitive than India	Less competitive than India	In competition with India
	Hungary	In competition with India	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India
	Turkey	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India	In competition with India
Latin America	Brazil	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India
	Mexico	Less competitive than India	Less competitive than India	Less competitive than India	Less competitive than India	In competition with India

Less competitive than India    In competition with India

Source: ACMA, Aranca Research

# AUTO COMPONENTS



## INDIA IS POISED TO EMERGE AS AN OUTSOURCING HUB

\* Global auto component players are increasingly adopting a dual-shore manufacturing model, using overseas facilities to manufacture few types of components and Indian facilities to manufacture the others

	<ul style="list-style-type: none"> <li>Hyundai plans to source gasoline and diesel engines from its Indian manufacturing operations for its domestic and global operations</li> <li>The company is also planning to invest USD300 million for a new engine plant and metal pressing shop in India</li> </ul>
	<ul style="list-style-type: none"> <li>Ford is investing USD72 million to expand its power-train facility in Chennai to further support its sales and export growth plans in India.</li> <li>Plans to make India its manufacturing hub for engines for the Asia-Pacific region and Africa</li> </ul>
	<ul style="list-style-type: none"> <li>Honda intends to set up a power-train facility in Rajasthan with an investment of USD115 million</li> <li>The company has an export base for certain key engine components in India</li> </ul>
	<ul style="list-style-type: none"> <li>Volkswagen plans to increase sourcing from India to 70 per cent of its total global sourcing</li> <li>Plans to build engine assembly plant in India by 2015 and additional investment of USD84* million on component manufacturing</li> </ul>

Source: Respective Company Websites, News Articles, Aranca Research  
 (\* Figure converted from EUR to USD at EUR/USD = 1.4)

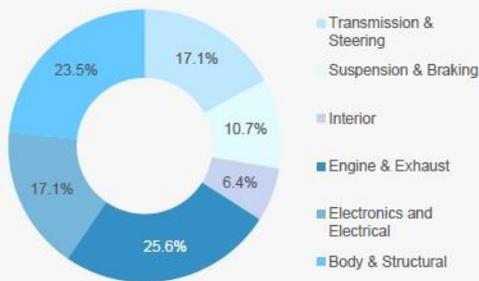
# AUTO COMPONENTS



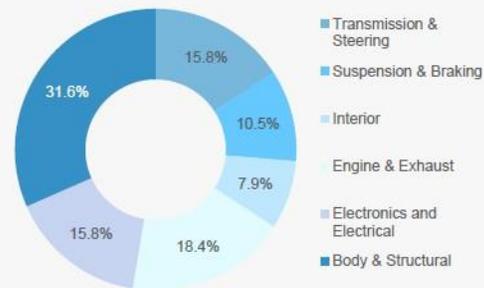
## MARKET POTENTIAL BALANCED ACROSS PRODUCT TYPES

- ★ Both domestic and export markets are almost similar in terms of potential share by different product types. For example, Engine & Exhaust components, along with Body & Structural parts, are expected to make up 50 per cent potential domestic sales as well as exports in 2020
- ★ Other key product types will most likely be Transmission & Steering components, and Electronics & Electrical parts

Domestic market potential by components (2020E)



Export market potential by components (2020E)

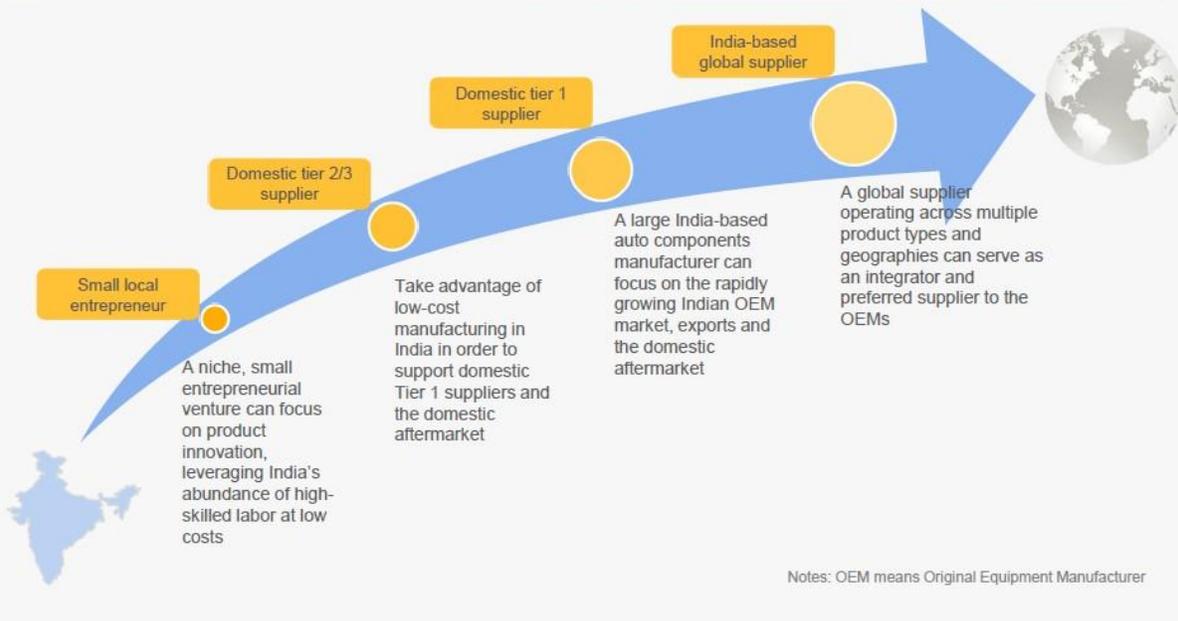


Source: ACMA, Aranca Research;  
Notes: 2020E – Estimated value for 2020 by ACMA

# AUTO COMPONENTS



## OPPORTUNITIES ABOUND FOR ALL PLAYERS



# AUTO COMPONENTS



## OPPORTUNITIES IN ENGINEERING PRODUCTS

Outlook	
Engine & Engine Parts	<ul style="list-style-type: none"> <li>New technological changes in this segment include introduction of turbochargers and common rail systems</li> <li>The trend of outsourcing may gain traction in this segment in the short to medium term</li> </ul>
Transmission & Steering Parts	<ul style="list-style-type: none"> <li>Share of the replacement market in sub-segments such as clutches is likely to grow due to rising traffic density</li> <li>The entry of global players is expected to intensify competition in sub-segments such as gears and clutches</li> </ul>
Suspension & Braking Parts	<ul style="list-style-type: none"> <li>The segment is estimated to witness high replacement demand, with players maintaining a diversified customer base in the replacement and OEM segments besides the export market</li> <li>The entry of global players is likely to intensify competition in sub-segments such as shock absorbers</li> </ul>
Equipment	<ul style="list-style-type: none"> <li>Companies operating in the replacement market are likely to focus on establishing a distribution network, brand image, product portfolio and pricing policy</li> </ul>
Electrical	<ul style="list-style-type: none"> <li>Manufacturers are expected to benefit from the growing demand for electric start mechanisms in the two-wheeler segment</li> </ul>
Others	<ul style="list-style-type: none"> <li>Leading players in the sheet metal parts sub-segment are in the process of expanding their customer base. This sub-segment is expected to grow 10–11 per cent between 2010–15</li> </ul>

Notes: OEM means Original Equipment Manufacturer

# AUTO COMPONENTS



## EXCHANGE RATES

Exchange Rates (Fiscal Year)

Year	INR equivalent of one USD
2004-05	44.95
2005-06	44.28
2006-07	45.28
2007-08	40.24
2008-09	45.91
2009-10	47.41
2010-11	45.57
2011-12	47.94
2012-13	54.31

Exchange Rates (Calendar Year)

Year	INR equivalent of one USD
2005	45.55
2006	44.34
2007	39.45
2008	49.21
2009	46.76
2010	45.32
2011	45.64
2012	54.69
2013	54.45

Average for the year



# Chapter 3. Business Enterprise Analysis

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## Section A. Overview of Business Enterprise Analysis

1. **Definition of Analysis** – Analysis is the systematic examination and evaluation of data or information, by breaking it into its component parts to uncover their interrelationships. It is an examination of data and facts to uncover and understand cause-effect relationships, thus providing a basis for problem solving and decision making. (see chapter 2)
  - A. Analysis therefore requires both **information** and a stated **objective** by which the information is assessed and evaluated. Without an analytical objective, “analysis” becomes merely descriptive.
  - B. Analysis utilizes both **qualitative** information and **quantitative** information. However, in business valuation the analytical process itself is essentially qualitative because its conclusion(s) require “informed judgment.”
  - C. The concluding analytical process therefore requires the appraiser’s informed judgment in order to reasonably integrate the relevant data elements to form a picture or synthesis of the whole from which the business appraiser may reasonably conclude an opinion of value which is the objective of the analysis.
2. **Purpose and Types of Business Enterprise Analysis** – The purpose of analysing the business enterprise or Subject Company is to assist the business appraiser (1) to identify the relevant company-specific valuation factors that affect the primary components of value and (2) to assess how they affect value. The fundamental two value drivers are:
  - A. Expected future financial performance of the business enterprise (i.e., the **expected future growth “g”** in the enterprise’s future cash flow returns); which is affected by;
    - (1) External economic and industry environmental factors (degree of rivalry, inflation expectations, availability and cost of credit, etc.)
    - (2) Internal operational factors such as strategic capital expansion
    - (3) Operational versus non-operational revenues, expenses, assets and liabilities
  - B. The relative uncertainty or variance of the enterprise’s expected future cash flows (i.e., the **relative risk “k”** of those future returns)
3. **Four Types of Valuation Analysis** – There are four basic categories or types of company or business enterprise analysis:

- A. *General economic analysis* – including local, regional, national and global factors that affect the value of the Subject Company (discussed in chapter 2)
  - B. *Industry analysis* – relevant industry factors that affect the value of the Subject Company (discussed in chapter 2)
  - C. *Operational analysis* – utilization and management of the enterprise's productive asset base both tangible and intangible interacting with the external economic environment to generate sales growth, minimize operating expenses and maximize operating profit.
  - D. *Financial funding analysis* – utilization and management of financial capital to minimize the total cost of capital and maximize return on invested capital and equity.
4. Company-Specific Value Drivers (Operational and Financial)
- A. Value Drivers – Every company has specific operational and financial value drivers.
    - (1) Generally, these value drivers are related to the industry and to the company's critical success factors.
    - (2) Unless the business appraiser can identify the company's specific value drivers, it will be impossible to assess relative risk or select the appropriate guideline companies.
  - B. Operational value drivers – These are the procedures that allow the company to provide high-quality products and services at a price that is acceptable to the paying customer and provides the company with a sufficient return on investment. Examples are:
    - (1) Sales, marketing, product development and research/development proficiency
    - (2) Cost and expense controls
    - (3) Management of working capital (receivables, inventory, payables, etc.)
    - (4) Capital expenditures and the utilization of operating leverage
    - (5) Management depth and human resource management
    - (6) Real time IT operational monitoring such as ERP systems
    - (7) Strategic planning, review and implementation

- C. Financial value drivers influence return on investment, enterprise value, and net cash flows through such value drivers as:
- (1) Management of receivables credit and use of current liability funding
  - (2) Utilization of long-term debt and financial leverage to minimize total capital costs and therefore maximize equity returns
  - (3) Monitor and manage enterprise financial risk (i.e., the risk of debt default)
5. Sources of Business Enterprise Information
- A. Internal sources of information:
- (1) Organizational documents and management reports
    - (a) Organizational filings (Articles and by-laws, Partnership Agreements, etc.)
    - (b) Owners' annual meeting minutes and Board minutes
    - (c) Financial statements – monthly and annual reports
    - (d) Monthly executive committee reports
    - (e) Weekly departmental reports
    - (f) Business or strategic plans
  - (2) Company documents produced for others
    - (a) Regulatory filings
    - (b) Reports submitted to lending institutions for financing
    - (c) Websites and other marketing publications
  - (3) Information gathered by the business appraiser from the company
    - (a) Answers to a company questionnaire provided by the appraiser
    - (b) Appraiser's meetings with management and key personnel at the company's facilities
    - (c) Appraiser's on-site inspection of facilities
- B. External sources of company information:
- (1) Business reporting agencies (e.g., Standard and Poors, Dunn and Bradstreet, Hoovers, Onesource, etc.)

- (2) Government agency reports
- (3) Media articles
- (4) Business blogs and other internet sources

## Section B. Equity or Invested Capital Analysis

1. **Equity or Invested Capital Analytical Perspective** – Valuation can determine the value of equity directly, or determine the value of invested capital from which the value of equity can be derived by subsequently subtracting debt.

Current Assets	Current Liabilities
Net Working Capital	Interest-Bearing Debt (short and long-term)
Fixed Assets	
Intangibles & Other Long-term Assets	Equity

} Invested Capital

- A. Except for certain situations, the invested capital model is the more common approach. An invested capital model allows the analyst to make separate assumptions about how operating results and capital structure affect value.
  - (1) Operating results are captured in earnings or cash flows excluding the effects of debt (eliminating interest expense and net debt payments or net borrowings).
  - (2) The financial capital structure is captured in weighted average cost of capital (WACC).
  - (3) It allows for more direct comparison to companies with different capital structures.
- B. Some situations that might call for an equity valuation model include:
  - (1) Small businesses which may have little debt capacity.

- (2) Business start-ups, joint-ventures, highly levered companies and other complicated financing situations where debt levels are expected to change.
  - (3) Minority interest valuations – allows the analyst to value the minority equity interest directly without having to provide a separate minority discount opinion.
  - (4) Investment, finance and banking enterprises where the use of debt is a fundamental aspect of their financing operations.
- C. Invested capital can be viewed two ways, from the financial capital side (liabilities and equity) and from the asset side of the balance sheet.
- (1) On the financial capital side of the balance sheet (the right side), invested capital is most often defined as interest-bearing debt, whether short or long-term, plus equity.
    - (a) An exception is “temporary or seasonal” debt (e.g., debt associated with the seasonal build-up of inventory). Such temporary debt can be classified as part of current liabilities and the associated interest expense can be included in expenses.
- D. On the asset side, invested capital is equal to the net investment in operating assets used to run the business.
- (1) On a book-value basis, this would include net working capital (excluding interest-bearing debt from current liabilities) plus net fixed assets.
    - (a) Booked intangible assets are normally excluded, since they represent a historical acquisition and not the sum total of the enterprise’s total intangible assets, identified and non-identified.
- E. On a going concern basis, invested capital is equal to the sum of net working capital plus net fixed assets plus long-term assets including both identified intangible assets (patents, trademarks, etc.) and non-identified intangible assets such as goodwill or going-concern value.
- (1) 'Going Concern Value' or 'Goodwill' has a specific meaning under fair value purchase price accounting (PPA) in which one company (the acquirer) when purchasing another company (the target) allocates the purchase price into the various assets and liabilities acquired in the transaction. The process of valuing going concern or goodwill value, while a component of the PPA process, is governed through goodwill accounting standards.

## Section C. Qualitative Analysis

1. Factors to Consider
  - A. When conducting qualitative analysis of a company, most investment professionals look at the business model, competitive advantage in the industry, management and corporate governance. This helps to determine how a company makes money, its uniqueness versus the competition, which people are making the decisions and how they treat ordinary shareholders.
  - B. A proper system of corporate governance that adheres to principles of integrity and transparent disclosures will mitigate the risks of fraudulent behavior. A valid system of checks and balances whereby independent third parties assess the integrity of corporate financial statements and monitor management is important.
  - C. How well the company adapts to social, technological, economic and political change. Firms with strong political connections may often be severely crippled once this support system is removed.
  - D. Similarly, if a company is entirely dependent on a current social phenomenon (such as a fad) or a single technology, changes in these variables may cripple the firm. This type of analysis is often more difficult than analysis based on fundamentals because it requires creating hypotheses that cannot easily be answered.
  - E. Gathering all of this data can provide a better idea of how a company intends to grow its business while rewarding shareholders. However, it isn't the entire picture. Touchy-feely subjects like satisfying the customer, rewarding employees and maintaining excellent supplier relationships matters as well.
  - F. Common sources of company-specific information:
    - (1) Financial statements, annual reports and other filings
    - (2) Business or strategic plans
    - (3) Reports submitted to lending institutions for financing
    - (4) Board minutes
    - (5) Websites and other marketing publications
    - (6) Meetings with management and key personnel at the company's facilities
  - G. As can be observed above, managing even a business requires extensive knowledge and leadership skills. The old saying in real estate is that the three most important value factors are location-location-location. In business the three

most important value factors are most often management-management-management.

2. Purpose of the management interview:
  - A. Judge management competence and depth
  - B. Observe physical assets and manufacturing or service delivery process
  - C. Get “the story” behind historical financial performance
  - D. Discuss adjustments to financial statements for valuation purposes
  - E. Obtain management’s perspective on industry trends and competitors, including any data sources they find useful
  - F. Understand management’s outlook for the future
3. Interview process:
  - A. Prepare a list of specific questions based on your initial economic, industry and financial analysis
  - B. Prepare a list of individuals you would like to interview – Board members, senior management, department heads, customers and suppliers
  - C. Do not forget the potential importance of outside advisors, such as accountant, corporate counsel, banker, insurance advisor, strategic consultant
4. Qualitative Analysis – SWOT Assessment:
  - A. SWOT analysis is an analytical framework used to evaluate a company’s internal strengths and weaknesses, and its external opportunities and threats. This type of assessment provides an analytical structure which summarizes the most relevant valuation factors that affect growth “g” and risk “k” on a qualitative basis.
  - B. Some factors to consider in a SWOT analysis are as follows:

<b>Strengths and Weaknesses (Internal Factors)</b>	<b>Opportunities and Threats (External Factors)</b>
Financial capital Physical capital Human capital Customer capital System capital Organizational capital	<ul style="list-style-type: none"> <li>• Industry – marketplace</li> <li>• Industry – competitive forces</li> <li>• Industry – suppliers</li> <li>• Political</li> <li>• Economic</li> <li>• Socio-cultural</li> </ul>

## Section D. Quantitative Analysis

1. **Objectives of Historical Financial Performance Analysis** – The fundamental purpose of analyzing historical financial performance is to provide a predictive basis for expected future financial performance.
  - A. This analysis will create a basis for developing financial projections or assessing company projections and therefore can provide a reasonable basis for assessing future financial performance resulting in net cash flow **growth “g”**
  - B. This analysis also will provide a basis for assessing the relative uncertainty or **risk “k”** of expected future net cash flows
  - C. The basic objectives of quantitative analysis are:
    - (1) Adjust the financials for accounting, unusual non-recurring and non-essential items
    - (2) Identify positive and negative trends and what caused them
    - (3) Enable a comparison of a Subject Company to an industry norm or peer group
    - (4) Create a basis for developing financial projections or assessing company projections
  
2. **Adjust or “Normalize” Financial Statements** – As valuation analysts, we have different objectives than accountants, and accounting statements usually require some adjustments or re-classifications for valuation purposes. Our primary purpose is to adjust the company’s financial statements to reflect “economic or “core operation” values that will therefore make them more predictive of future enterprise operations. There are generally four types of such adjustments:
  - A. *Translation of the accounting system*– restating certain line items to correspond in accounting methodology with that which will enable a comparison of a Subject Company to an industry norm or peer group (e.g., change cash to accrual, LIFO to FIFO depreciation method, US to EU accounting, etc.)

- B. *Elimination of unusual and non-recurring items*– identify such items, understand why they happened, and eliminate them from historical statements in order to make the past more predictive of the future
  - C. *Removal of “non-operating” elements*– identify and eliminate non-operating assets/liabilities and corresponding income statement effects
  - D. *Elimination of discretionary “non-essential” revenues and expenses – if valuation is for control*, isolate such items as excess management compensation, related party transactions not at market value (can be more or less than FMV) etc. and remove them. Such eliminations are only applicable for control holdings.
3. **Trend Assessment** – Analysis of a multi-year spread of income statements, balance sheets, and possibly the statements of comprehensive income and cash flows.
- A. Goal is to:
    - (1) Identify positive and negative trends
    - (2) Review past growth patterns
    - (3) Assess what is “normal” for the company
    - (4) Provide a basis for financial projections of future financial performance
  - B. Number of periods in the historical financial performance analysis:
    - (1) Five years is common, but will depend on specific case facts
    - (2) For a cyclical company, should capture a full business or economic cycle
    - (3) If there have been recent dramatic changes in business condition or strategy, data from even two or three years ago may be irrelevant
  - C. Income statement trends:
    - (1) Review levels and trends in sales and key expense items
    - (2) Review levels and trends in profitability: EBITDA, EBIT, pre-tax and post-tax profits (losses)
    - (3) Identify reclassifications, new items, nonrecurring items, non-operating items
  - D. Balance sheet trends – Note significant classes of assets and liabilities and review levels and trends in:

- 
- (1) Working capital (current assets less current liabilities), with and without interest-bearing debt
  - (2) Fixed assets
  - (3) Interest-bearing debt and equity
- E. Statement of cash flow trends
- (1) Reports cash inflows and outflows for a specific period and reconciles the accrual income statement to the cash flow generated by the business.
  - (2) Cash flows are generally classified into three categories
    - (a) Cash flow from operating activities (CFO) – cash generated/used in the firm’s normal operating activities, including sales, expense and changes in working capital items
    - (b) Cash flow from investing activities (CFI) – cash used/received from acquisition or disposal of plant, equipment and other investments
    - (c) Cash flow from financing activities (CFF) – cash used/received from transactions with sources of capital, e.g., proceeds from borrowing or issuing equity, outflows for payment of debt principal, dividends or repurchase of equity (interest payments are included in CFO because they are deducted as an expense on the income statement)
- F. Uses for cash flow trend analysis:
- (1) Assessing liquidity – trends in cash generation, receivables collection, and timing of cash flows versus accrual income
  - (2) Assessing financial strength – trends in cash flow from operations, ability to finance capital expenditures and debt service from operating cash flow
  - (3) Assessing financial decisions – review of fixed asset purchases/disposals and investment trends
- G. Cautions and potential pitfalls of cash flow trend analysis
- (1) Misclassification among the three types of cash flows can distort a firm’s financial picture
  - (2) Negative cash flows may be a positive sign for the business, if it is the result of growth.
-

- (3) Leasing versus buying fixed assets results in CFO (lease expense is in CFO; purchased assets are in CFI)

#### 4. Common-size Analysis

- A. Each line item on the income statement is expressed as a percentage of sales. Each line item on the balance sheet is expressed as a percentage of total assets.
  - (1) Required to compare the Subject Company to industry norms, since such norms are expressed in common size formats.
  - (2) Useful in comparing the Subject Company to different companies as under the market approach, since most companies are of different size.
  - (3) Identifies relative trends for the company to itself over time.
  - (4) Helps in making projections or evaluating budgets.

#### 5. Ratio Analysis

- A. Financial Ratios – ratios should express relationships that have significance (i.e. average accounts receivable collection period for a fast-food restaurant is not meaningful). Several ratios reflected in the discussion below contain additional analytical concepts.
  - (1) To interpret ratios for a Subject Company, they need to be compared with an industry average, peer group, or guideline companies, or to the company's historical trends.
  - (2) It is helpful to calculate the same ratios for historical results and for projections. Any changes in future performance can then be identified and explained.

#### 6. Liquidity Ratios

- A. Liquidity Ratios – this ratio is primarily an assessment of financial risk.
  - (1) Liquidity ratios measure a company's ability to pay off its short-term debts and obligations. Failure to pay current obligations (e.g., "default") is the primary cause of bankruptcy. A company may be less capable of paying its short-term obligations if it has a relatively lower current ratio, thereby increasing investment risk and lowering value.

### **Liquidity Ratios**

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

A liquidity ratio that measures a company's ability to pay short-term obligations. The higher the current ratio, the more capable the company is of paying its short-term obligations.

$$\text{Quick or "Acid Test" Ratio} = \frac{\text{Cash + Receivables}}{\text{Current Liabilities}}$$

A more stringent indicator that determines whether a firm has enough short-term assets to cover its immediate liabilities without selling inventory.

7. **Profitability Ratios** – measure how effectively the company manages expenses relative to sales to generate profits and returns to financial capital.

- A. Profitability is usually measured as a “profit margin” (the percentage ratio of profits to sales). The “bottom line” traditionally is defined as “net income after-tax”, although other measures of profitability such as gross profit and operating profit are also important to consider. In addition, measures of profitability differ depending upon whether invested capital or equity is being valued.

#### **Equity Profitability Ratios**

$$\text{Gross Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

$$\text{Operating Margin} = \frac{\text{Operating Profit}}{\text{Sales}}$$

$$\text{Pre-tax Margin} = \frac{\text{Pre-tax Profit}}{\text{Sales}}$$

~ na ~

$$\text{After-tax Net Margin} = \frac{\text{NIAT}}{\text{Sales}}$$

$$\text{Gross Cash Flow Margin} = \frac{\text{GFC-e}}{\text{Sales}}$$

#### **Invested Capital Profitability Ratios**

$$\text{Gross Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

$$\text{Operating Margin} = \frac{\text{Operating Profit}}{\text{Sales}}$$

$$\text{Pre-tax Margin} = \frac{\text{EBIT}}{\text{Sales}}$$

$$\text{Pre-tax Cash Flow} = \frac{\text{EBITDA}}{\text{Sales}}$$

$$\text{After-tax Net Margin} = \frac{\text{NOPAT}}{\text{Sales}}$$

$$\text{Gross Cash Flow Margin} = \frac{\text{GFC-ic}}{\text{Sales}}$$

**Equity Profitability Definitions**

NIAT is "Net Income After Tax"  
 = Pre-tax - Taxes

GFC-e is "Gross Cash Flow to Equity"  
 = NIAT + Depr + Amort

**Invested Capital Profitability Definitions**

EBIT is "Earnings Before Interest & Taxes"  
 = Pre-tax + Interest

EBITDA is "Earnings Before Interest Taxes Depr & Amort"  
 = Pre-tax + Interest + Depr + Amort

NOPAT is "Net Operating Profit After Tax"  
 = EBIT - Taxes

GFC-ic is "Gross Cash Flow to Invested Capital"  
 = NOPAT + Depr + Amort

- B. The profit margin ratio is very useful when comparing companies in similar industries. A higher profit margin indicates a more profitable company that has better control over its costs compared to its competitors or is taking advantage of one or more competitive advantage such as returns to scale (i.e., low cost producer), market leadership, etc. Higher profit margins increases returns on investment and reduces investment risk (better able to sustain an economic downturn), thereby increasing value.
- C. Volatility of profit margins, as with volatility in sales, is a manifestation of risk regarding future returns and therefore tends to increase the perception of investment risk and reduce value.
8. **Activity or Turnover Ratios** – measure how effectively the company manages expenses relative to sales to generate profits and returns to financial capital.
- A. This determinant of value directly addresses the ability of a firm to manage its productive asset base and the need for an enterprise to invest in its asset base to provide for future operations. The investment in the productive assets of the enterprise includes not only reinvestment to replace capital consumed but also new investment to fund growth.
- B. Below are some examples of asset management turnover ratios. It is important to observe that these turnover ratios combine a flow measurement from the income statement in the numerator with a point-in-time value from the balance sheet in the denominator. Because of this, these ratios are generally calculated in two ways:
- (1) With the denominator expressed as an average of the beginning and ending balance sheet account amount (this is theoretically more correct),  
or
  - (2) With the denominator expressed only as of the ending balance sheet account amount (this is more common for many financial reporting services such as RMA).

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### Activity or "Turnover" Ratios

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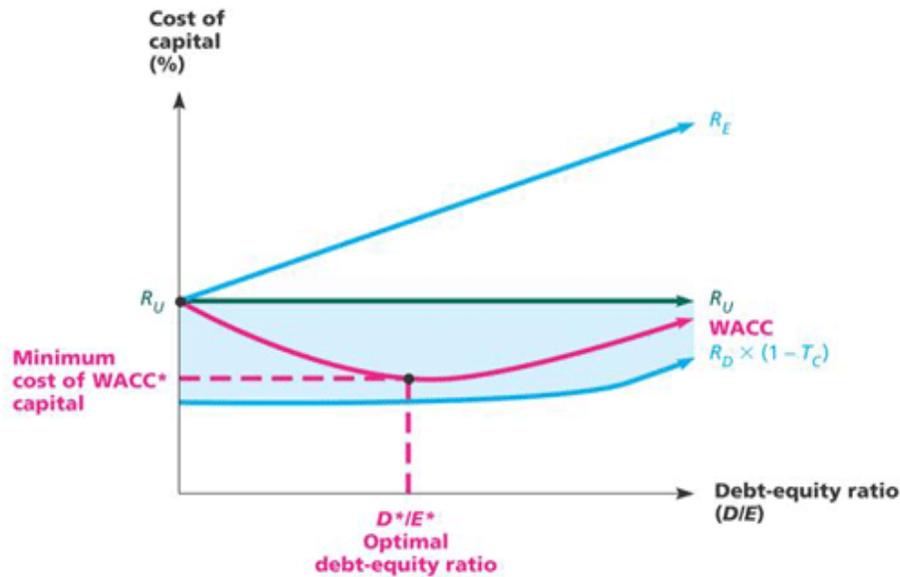
$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$	Total asset turnover is a comprehensive ratio that measures a firm's overall efficiency at using its assets in generating sales or revenue.
$\text{Accounts Receivable Turnover} = \frac{\text{Sales}}{\text{Accounts Receivable}}$	An accounting measure used to quantify a firm's effectiveness in extending credit as well as collecting debts. It is affected by the company's credit and collection policies.
$\text{Average Collection Period} = \frac{365 \text{ Days per Year}}{\text{AR Turnover}}$	Another way to measure a firm's management of its credit and collection policies.
$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}}$	A measurement that provides some useful information as to how effectively a company is managing its inventory to generate sales.
$\text{Working Capital Turnover} = \frac{\text{Sales}}{\text{Working Capital}}$	A measurement that provides some useful information as to how effectively a company is using its working capital to generate sales.
$\text{Net Fixed Asset Turnover} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$	This ratio measures a company's ability to generate net sales from fixed-asset investments - specifically property, plant and equipment (PP&E) - net of depreciation.

- C. **Cash Cycle** – In addition to the formulas shown above, a cash cycle analysis can uncover shortcomings in a company's working capital management.

$$\text{Cash Cycle} = \text{Days Inventory Ratio} + \text{Days A/R Ratio} - \text{Days Payable Ratio}$$

- (1) The cash cycle analysis looks at the average amount of time it takes a company to move inventory plus the amount of time it takes to collect cash from the sale of inventory, minus the amount of time it takes the company to pay its suppliers for inventory.
  - (2) The cash cycle is meaningful when compared to reliable industry norms. A higher ratio here may indicate that the company is not managing its working capital properly.
9. **Financial Leverage and Coverage Ratios** – measure the ability of the company to cover its debt obligations (i.e., the company's *financial risk*). This determinant of value directly addresses the utilization of "financial leverage" or the use of debt in the capital structure of the right-hand side of the balance sheet.
- A. In its broadest meaning, debt can be thought of as all capital supplied by investors other than equity holders, including:

- (1) trade accounts payable,
  - (2) accrued expenses,
  - (3) deferred taxes,
  - (4) interest-bearing debt, and
  - (5) all other claims of stakeholders on the future income of the business that are senior to those of the equity holders.
- B. All of these various “stakeholders” have claims on the future income of the business enterprise that are senior to those of the equity holders (they get their money first). Hence, financial leverage is generally measured either as a ratio of total liabilities “debt” to total assets or as a ratio of debt to equity investment.
- C. In financial theory, the company is most efficient and generates the highest return to its owners by *minimizing the total cost of capital* (that is the weighted average cost of capital or WACC) through the judicious use of debt. As the graph below demonstrates, there is an unleveraged “cost of capital” for every firm which is essentially a capital structure funded entirely by equity. As cheaper debt is added (cheaper due to its fixed income characteristics and tax shield), the combined WACC decreases even as the cost of equity  $R_e$  continually increases. However, at some point the marginal increase in the amount (“weight”) of debt generates a sufficient increase in the “cost” of debt  $R_d$  so that when combined with increased cost of equity generates an increase in the combined WACC. Therefore it is at just before this point that the WACC is minimized. When WACC is minimized, ROIC generates the most value to the equity holders.



Where:

$R_U$	=	Cost of “unleveraged” capital
$R_E$	=	Cost of equity capital
$R_D$	=	Cost of debt capital
$(1-T_c)$	=	After-tax cost multiplier
WACC	=	Weighted Average Cost of Capital

### Leverage & Coverage Ratios

$$\text{Financial Leverage} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

The overall measure of a company's use of non-equity financial capital (i.e., “financial leverage”). It indicates what proportion of total assets are funded by all types of liabilities.

$$\text{DuPont Formula Financial Leverage} = \frac{\text{Total Assets}}{\text{Total Equity}}$$

Used in the DuPont ROE formula, this is another measure of overall financial leverage. It calculates the reciprocal of the proportion of total assets that are funded by equity.

$$\text{Debt to Equity} = \frac{\text{Total Liabilities}}{\text{Total Equity}}$$

A common measure of a company's financial leverage. It indicates what proportion of equity and debt the company is using to finance its assets.

$$\text{Interest-bearing Debt to Equity} = \frac{\text{Interest-bearing Debt}}{\text{Total Equity}}$$

A similar measure as debt to equity, but using only interest-bearing debt.

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Expense}}$$

A ratio used to determine how easily a company can pay interest on outstanding debt. The lower the ratio, the more the company is burdened by debt expense.

$$\text{Fixed Charges Coverage Ratio} = \frac{\text{EBIT} + \text{Fixed Charges}}{\text{Interest} + \text{Fixed Charges}}$$

Similar ratio as above. Fixed charges are before tax and include principal debt payments, lease expense, and any other regular or recurring payments.

10. **Return on Investment (ROI) Ratios** – a comprehensive measure of the enterprise’s ability to generate investment returns on its operating assets that belong to one or more classes of capital (e.g., total assets, invested capital, equity, etc.).
- A. As a cash flow metric, ROI essentially compares the magnitude and timing of investment returns directly with the magnitude and timing of investment costs. A high ROI means that gains compare favorably to costs.
- B. Some borrow the term “efficiency” from the field of economics and say that ROI also measures productivity in the use of invested assets. Efficiency is used also to describe what is measured by quite a few different financial metrics, including internal rate of return (IRR), payback period, inventory turns, and return on capital employed (ROCE).

### Return on Investment Ratios

*Generalized Return on Investment (ROI)* =  $\frac{\text{Benefit}}{\text{Cost of Investment}}$  A performance measure used to evaluate the efficiency of an investment calculated by dividing the benefit (return) of an investment by the cost of the investment.

*Return on Assets (ROA)* =  $\frac{\text{Net Income}}{\text{Total Assets}}$  ROA gives an idea of how efficient management is at using its assets to generate earnings. Calculated by dividing a company's annual earnings by its total assets.

*Return on Equity (ROE)* =  $\frac{\text{Net Income}}{\text{Stockholders' Equity}}$  Return on equity measures a corporation's efficiency in generating returns on the money shareholders have invested.

**DuPont Formula**  $\text{ROE} = \text{Profitability} \times \text{Asset Turnover} \times \text{Financial Leverage}$

*Return on Equity (ROE)* =  $\frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Stockholders' Equity}}$

**Generalized DuPont Formula**  $\text{ROI} = \frac{\text{Earnings}}{\text{Type of Revenue}} \times \frac{\text{Type of Revenue}}{\text{Type of Assets}} \times \frac{\text{Type of Assets}}{\text{Type of Investment}}$

*Return on Invested Capital (ROIC)* =  $\frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Invested Capital}}$

11. **Growth Rates** – the expected future growth of returns to the enterprise’s investors is one of the two fundamental determinants of value.
- A. An investor in an investment asset receives two types of return:

- (1) current cash distributions and
  - (2) growth in the value of the investment – this “capital appreciation” of the investment is directly dependent upon the expected growth in future returns.
- B. Volatility in growth rates indicates uncertainty regarding future returns and tends to increase investment risk and reduce value.
- C. There are two primary methods of measuring growth.
- (1) *Average annual growth* – the average of growth for one period calculated for two or more consecutive periods. This growth rate has all of the advantages and disadvantages of the arithmetic mean statistic (coefficient of variation, etc.). It considers all of the growth data points during the entire period considered.

$$\text{Year-to-Year Growth in Sales} = \frac{\text{SalesYr2} - \text{SalesYr1}}{\text{SalesYr1}}$$

$$\text{5-Year Average Annual Growth in Sales} = \frac{[\text{SlsGrYr1} + \text{SlsGrYr2} + \text{SlsGrYr3} + \text{SlsGrYr4} + \text{SlsGrYr5}]}{5 \text{ Years}}$$

- (2) *Compound average annual growth rate (CAGR)* – the compound annual growth rate is calculated by taking the nth root of the *ratio of total change* (ending value / beginning value), where n is the number of years in the elapsed period being considered.

$$\text{Compound Average Growth Rate (CAGR)} = \left( \frac{\text{Ending Value}}{\text{Beginning Value}} \right)^{(1/\#periods)} - 1$$

$$\text{5-Year Compound Avg Growth in Sales (CAGR)} = \left( \frac{\text{SalesYr6}}{\text{SalesYr1}} \right)^{(1/5)} - 1$$

- (3) Compound growth rates are important but can be misleading because they are based only on the beginning and ending years. They say nothing about what happened in the years in between the beginning and the ending periods.

## 12. Industry Comparative Assessment

- A. Company performance cannot be evaluated without some basis for comparison.
  - (1) Industries have different financial characteristics.

- (a) Retailers often have low margins, high turnover, and low leverage.
  - (b) Specialty manufacturers may have high margins, low turnover and moderate leverage.
  - (2) Within any industry, there are high-performing and low-performing companies, often pursuing different strategies.
  - (3) Knowing where the Subject Company fits provides insight into risks and opportunities.
- B. Sources of comparative industry financial data
- (1) Publicly traded guideline companies (often the most informative)
  - (2) Data compiled by trade associations
  - (3) Examples of multi-industry benchmarking sources (US data)
    - (a) Risk Management Association (RMA) *Annual Statement Studies*
    - (b) MicroBilt Integra Industry Benchmarking Data
    - (c) CCH Almanac of Business and Industrial Financial Ratios
    - (d) Value Line Investment Survey
- C. It is necessary to understand how the selected source calculates different financial ratios
- (1) The definition of financial ratios varies from source to source.
  - (2) Financial ratios must be calculated consistently for the Subject Company.

## Section E. Cross Border Valuation Issues

1. Valuing foreign subsidiaries or companies which operate across borders generally has certain specific issues that need to be addressed. The most important starting point is to understand the business (streams of cash flows) and follow the general principle that foreign cash flows need to be discounted at a foreign risk-adjusted discount rate. Below are some issues that need to be addressed:
2. Accounting statements valuation issues:
  - A. When valuing foreign subsidiaries or cross border companies, accounting policies should be reviewed. Accounting related issues should generally be adjusted through cash flows. In case of APS-India, the Company and its subsidiaries all use local GAAP which is a reason for detailed analysis.

- B. Depreciation related issues:
- (1) The difference in average depreciation life (Parent company and APS) could be a result of different structure of asset classes or material differences in asset depreciation. If the later is the case valuer should study fixed assets, depreciation, CapEx and related ratios more closely. If it is established that APS is using depreciation rates that do not correspond to expected economic life of assets adjustments will need to be considered in the projection (level of CapEx, level of depreciation).
- C. R&D cost related issues:
- (1) APR (APS's subsidiary) is capitalizing R&D costs that would not be capitalized under IFRS. This has an effect on EBIT and profitability. The valuer should cover this adjustment under analysis and adjustments of historical APR statements in order to arrive to adjusted profitability that would be a valid base for future forecasting.
- D. Tax related issues:
- (1) The appropriate treatment of foreign taxes in cross border valuations depends on the nature of the existing tax treaties between countries. There is a difference between the worldwide tax credit system and territorial tax exemption system that can have a material impact.
  - (2) Because of tax breaks and the existence of permanent and temporary differences, statutory tax rates will most probably differ from the effective tax rate.
3. Currency & country valuation issues:
- A. Currency related issues:
- (1) In the case of APS the main “functional currency” would be Indian Rupees (INR). However the valuer needs to take into account that raw materials are purchased from subsidiary APR and are invoiced in Chinese Yuan.
  - (2) In order to forecast APR's statements in Indian Rupees (currently expressed in Chinese Yuan) the valuer will need to convert Chinese Yuan's into Indian Rupees, forecasting forward exchange rate movements (interest rate parity). The same needs to be done for Chinese based subsidiary APC that is responsible for 30% of total sales that are invoiced in Chinese Yuan.
  - (3) In the case of valuing APS using market pricing denominated in its Parent functional currency (the “presentation currency”), the valuer would need

to translate APS' financial statements according to IAS21. In the case at hand the presentation currency is US dollars (USD).

B. Country risk related issues:

- (1) Manageable country related risks (such as change of local legal legislation or political risk) could be incorporated within cash flow, other country related risks will however be treated within the discount rate.
- (2) Discount rate should be in line with level of cash flows. Since APS forecast will be done in Indian Rupees, the discount rate should be based on the same currency (use of international cost of capital model for CAPM calculation).
- (3) The assumption whether the investor's opportunity cost is global or only home currency is important. Some non-diversifiable systematic risk in the home market may be diversifiable within the context of global market.

C. Other potential valuation issues:

- (1) Transfer pricing: Companies try to minimize taxes in high tax jurisdictions (in our case India is considered to be in higher tax jurisdiction). Valuer should thus investigate pricing of raw material (APS – APR related purchase) if done based on market prices and/or if including any intercompany hidden margins.
- (2) Tax loss carry forwards: If companies were generating losses or losses are part of initial projection, the valuer should study how and when tax losses can be used.
- (3) Shareholder protection: There can be a low degree of shareholder protection under local jurisdiction (any specific legal requirements such as required local ownership)

## 4. Exercise 3-1: Financial Performance Analysis Using INR Currency

**Exhibits Provided:** Review and analyse the following information:

**Exhibit 3A** India Rupee Denominated Financial Statements – Five years of historical financial statements for Auto Parts Superior (APS-India)

- 5 years income statements
- 5 years balance sheets
- 5 years financial ratios

**Exercise 3-1:** Perform an initial financial performance analysis as follows:

- Review the financial data for any possible normalization adjustments
- Perform a trend analysis (compare the company to itself over time) using both common size and ratio analyses
- Perform a review of the industry benchmark information and perform a comparative analysis using both common size and ratio analyses

**Problem 3-1.1:** What normalization adjustments do you recommend to make to APS-India's financial statement and why?

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**Problem 3-1.2:** What effect do the normalization adjustments have on financial performance (e.g., increase profitability, change asset turnover, etc.)?

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**Problem 3-1.3:** How does APS-India compare to itself over time (trend analysis)?

Growth:

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Liquidity:

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Profitability:

---

Turnover:

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Leverage:

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Return on Investment:

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**Problem 3-1.4:** How does APS-India compare to the industry benchmark data?

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Size:

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Growth:

---

Liquidity:

---

Profitability:

---

Turnover:

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Leverage:

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Return on Investment:

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**Problem 3-1.5:** Identify the most relevant performance factors that affect value (risk & growth) and explain why they are important and how they affect value:

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## 5. Exercise 3-2: Currency Translation Analysis – INR versus USD

**Exhibits Provided:** Review and analyse the following information:

Exhibit 3B.1 Technical Summary of IAS21 – The Effects of Changes in Foreign Exchange Rates

Exhibit 3B.2 Average Monthly Exchange Rates – Between USD and INR over the past 10 years

Exhibit 3B.3 APS-India Financial Performance Ratios Comparison – Comparison of APS-India’s 5-year average financial performance ratios denominated in INR versus USD

**Exercise 3-2:** Review the data in Exhibit 3B and answer the following questions:

**Problem 3-2.1:** Review the 10-year history of INR-USD exchange rate data in Exhibit3B and discuss the trend over time:

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**Problem 3-2.2:** Review the 5-year average financial performance comparison of APS-India denominated in INR versus USD (Exhibit3B) and discuss the effects of the translation of the Company’s “functional currency” (INR) to its “presentation” currency (USD):

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**Problem 3-2.3:** Is currency risk important to the valuation of APS-India, and if so, how does the data so far reviewed affect your evaluation of the Company’s risk and future growth outlook?

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## 6. Exercise 3-3: Financial Performance Analysis Using USD Currency

**Exhibit 3C** – Provides the following:

USD Denominated – Five years of historical financial statements for Auto Parts Superior (APS-India)

- 5 years income statements
- 5 years balance sheets
- 5 years financial ratios

**Exercise 3-2:** Perform an initial financial performance analysis as follows:

Review the financial data for any possible normalization adjustments

Perform a trend analysis (compare the company to itself over time) using both common size and ratio analyses

Perform a review of the industry benchmark information and perform a comparative analysis using both common size and ratio analyses

**Problem 3-3.1:** What normalization adjustments do you recommend to make to APS-India's financial statement and why?

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**Problem 3-3.2:** What effect do the normalization adjustments have on financial performance (e.g., increase profitability, change asset turnover, etc.)?

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**Problem 3-3.3:** How does APS-India compare to itself over time (trend analysis)?

Growth:

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Liquidity:

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Profitability:

---

Turnover:

---

Leverage:

---

Return on Investment:

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**Problem 3-3.4:** How does APS-India compare to the industry benchmark data?

Size:

---

Growth:

---

Liquidity:

---

Profitability:

---

Turnover:

---

Leverage:

---

Return on Investment:

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**Problem 3-3.5:** Identify the most relevant performance factors that affect value (risk & growth) and explain why they are important and how they affect value:

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Exhibit 3A: APS 5-yr Historical Financials Using INR Currency

### APS Case - General Accounting Information

The parent company to APS, Automotive Inc., uses US GAAP (Generally Accepted Accounting Standards). APS and APR use local accounting standards that are in line with IFRS (International Financial Reporting Standards).

While reviewing the accounts the following issues were noted:

APS uses straight line depreciation for all asset classes. Average depreciation life of its PP&E (property, plant and equipment) is 15 years which is material different if compared to mother company Automotive Inc. (8 years).

APR is capitalizing R&D costs that refer to development of recycled materials. Under IFRS, similar R&D could not be capitalized but would need to be expenses.

APS is currently entitled to considerable tax breaks in China. There is a rumor that the Chinese government will change applicable tax law preventing APS from using tax breaks.

Auto Parts Superior (APS) - INDIA							
Historical Balance Sheets For the fiscal year ended December 31							
	In Millions of Indian Rupee (INR)					5-Year Historical FY2008-FY2012	
	2008	2009	2010	2011	2012	Average	Median
<b>Current Assets</b>							
Cash at bank and in hand	20	22	25	28	30	25	25
Accounts receivable	380	405	445	500	545	455	445
Inventory	525	537	600	650	720	606	600
<b>Total current assets</b>	<b>925</b>	<b>964</b>	<b>1,070</b>	<b>1,178</b>	<b>1,295</b>	<b>1,086</b>	<b>1,070</b>
<b>Non-current assets</b>							
Gross property, plant & equipment	1,086	1,214	1,457	1,544	1,609	1,382	1,457
Less: accumulated depreciation	(524)	(594)	(684)	(794)	(929)	(705)	(684)
<b>Property, plant and equipment (net)</b>	<b>562</b>	<b>620</b>	<b>773</b>	<b>750</b>	<b>680</b>	<b>677</b>	<b>680</b>
Intangible assets	137	188	163	179	240	181	179
Deferred Tax Assets	0	0	15	20	25	12	15
<b>Total non-current assets</b>	<b>699</b>	<b>808</b>	<b>951</b>	<b>949</b>	<b>945</b>	<b>870</b>	<b>945</b>
<b>Total Assets</b>	<b>1,624</b>	<b>1,772</b>	<b>2,021</b>	<b>2,127</b>	<b>2,240</b>	<b>1,957</b>	<b>2,021</b>
<b>Current Liabilities</b>							
Short term interest bearing debt	605	648	718	632	578	636.2	632
Accounts Payable	450	440	494	475	482	468.2	475
<b>Total current liabilities</b>	<b>1,055</b>	<b>1,088</b>	<b>1,212</b>	<b>1,107</b>	<b>1,060</b>	<b>1,104</b>	<b>1,088</b>
<b>Non-current liabilities</b>							
Long term interest bearing debt	100	110	120	150	150	126	120
Deferred tax liabilities	15	20	17	18	15	17	17
<b>Total non-current liabilities</b>	<b>115</b>	<b>130</b>	<b>137</b>	<b>168</b>	<b>165</b>	<b>143</b>	<b>137</b>
Provisions for future liabilities	0	0	10	15	15	8	10
<b>Long-term Liabs - Actual and Provisional</b>	<b>115</b>	<b>130</b>	<b>147</b>	<b>183</b>	<b>180</b>	<b>151</b>	<b>147</b>
<b>Total Liabilities</b>	<b>1,170</b>	<b>1,218</b>	<b>1,359</b>	<b>1,290</b>	<b>1,240</b>	<b>1,255</b>	<b>1,240</b>
<b>Stockholders' Equity</b>	<b>454</b>	<b>554</b>	<b>662</b>	<b>837</b>	<b>1,000</b>	<b>701</b>	<b>662</b>
<b>Total Liabilities &amp; Equity</b>	<b>1,624</b>	<b>1,772</b>	<b>2,021</b>	<b>2,127</b>	<b>2,240</b>	<b>1,957</b>	<b>2,021</b>
Control	0	0	0	0	0		
<b>Additional Calculations</b>							
Conventional working capital	(130)	(124)	(142)	71	235	-18	-124
Operating working capital (Invest. Cap.)	475	524	576	703	813	618	576
Depreciation and amortization	34	70	90	110	135	88	90
CAPEX net of disposed assets	63	179	218	103	126	138	126
CAPEX / Depr&Amort	185.3%	255.7%	242.2%	93.6%	93.3%	174.0%	185.3%
Interest-bearing Debt	705	758	838	782	728	762	758
Equity / Invested Capital	454	554	662	837	1,000	701	662
<b>Invested Capital</b>	<b>1,159</b>	<b>1,312</b>	<b>1,500</b>	<b>1,619</b>	<b>1,728</b>	<b>1,464</b>	<b>1,500</b>
Debt / Equity	1.6	1.4	1.3	0.9	0.7	1.2	1.3
Debt / Invested Capital	61%	58%	56%	48%	42%	53%	56%
Equity / Invested Capital	39%	42%	44%	52%	58%	47%	44%
<b>Notes</b>							
Operating working capital = current asset minus non-interest bearing current liabilities							
Invested Capital = interest-bearing debt + equity							
We are assuming balance sheets are prepared on consolidated basis taking into account currency exchange differences.							

<b>Auto Parts Superior (APS) - INDIA</b>							
<b>Historical Income Statements For the fiscal year ended December 31</b>							
	<i>In Millions of Indian Rupee (INR)</i>					<b>5-Year Historical FY2008-FY2012</b>	
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>Average</b>	<b>Median</b>
<b>Revenue</b>	<b>2,101</b>	<b>2,320</b>	<b>2,558</b>	<b>2,865</b>	<b>3,209</b>	<b>2,611</b>	<b>2,558</b>
Cost of revenue	(1,429)	(1,589)	(1,727)	(1,928)	(2,153)	(1,765)	(1,727)
<b>Gross Profit</b>	<b>672</b>	<b>731</b>	<b>831</b>	<b>937</b>	<b>1,056</b>	<b>845</b>	<b>831</b>
Selling expenses	(120)	(90)	(110)	(130)	(145)	(119)	(120)
Personal expenses	(250)	(245)	(252)	(265)	(285)	(259)	(252)
Administrative expenses	(95)	(100)	(110)	(115)	(120)	(108)	(110)
Depreciation and amortization	(34)	(70)	(90)	(110)	(135)	(88)	(90)
Write offs	-	(12)	(13)	(29)	(32)	(17)	(13)
Other operating expenses	(32)	(35)	(38)	(43)	(32)	(36)	(35)
<b>Total operating expenses</b>	<b>(531)</b>	<b>(551)</b>	<b>(613)</b>	<b>(692)</b>	<b>(749)</b>	<b>(627)</b>	<b>(613)</b>
<b>Operating profit (EBIT)</b>	<b>142</b>	<b>179</b>	<b>218</b>	<b>245</b>	<b>307</b>	<b>218</b>	<b>218</b>
Finance income	-	-	-	-	-	0	0
Finance costs	(35)	(40)	(65)	(70)	(80)	(58)	(65)
<b>Profit before tax (EBT)</b>	<b>107</b>	<b>139</b>	<b>153</b>	<b>175</b>	<b>227</b>	<b>160</b>	<b>153</b>
Tax	-	(39)	(46)	-	(63)	(30)	(39)
<b>Profit from continuing operations</b>	<b>107</b>	<b>100</b>	<b>107</b>	<b>175</b>	<b>163</b>	<b>131</b>	<b>107</b>
Discontinued operations	-	-	-	-	-	0	0
<b>Profit for the year</b>	<b>107</b>	<b>100</b>	<b>107</b>	<b>175</b>	<b>163</b>	<b>131</b>	<b>107</b>
<b>Additional Calculations</b>							
Effective Tax rate (% Pre-tax)	0.0%	28.0%	30.0%	0.0%	28.0%	17.2%	28.0%
EBITDA	176	249	308	355	442	306	308
EBIT	142	179	218	245	307	218	218
<b>NOPAT = EBIT x (1-t)</b>	<b>142</b>	<b>129</b>	<b>153</b>	<b>245</b>	<b>221</b>	<b>178</b>	<b>153</b>

Auto Parts Superior (APS) - INDIA							
"Common Sized" Historical Balance Sheets For the fiscal year ended December 31							
	Percentage of Assets					5-Year	5-Year
	2008	2009	2010	2011	2012	Historical Average	Historical Median
<b>Current Assets</b>							
Cash at bank and in hand	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%	1.2%
Accounts receivable	23.4%	22.9%	22.0%	23.5%	24.3%	23.2%	23.4%
Inventory	32.3%	30.3%	29.7%	30.6%	32.1%	31.0%	30.6%
<b>Total current assets</b>	<b>57.0%</b>	<b>54.4%</b>	<b>52.9%</b>	<b>55.4%</b>	<b>57.8%</b>	<b>55.5%</b>	<b>55.4%</b>
<b>Non-current assets</b>							
<i>Gross property, plant &amp; equipment</i>	66.9%	68.5%	72.1%	72.6%	71.8%	70.4%	71.8%
<i>Less: accumulated depreciation</i>	-32.3%	-33.5%	-33.8%	-37.3%	-41.5%	-35.7%	-33.8%
<b>Property, plant and equipment (net)</b>	<b>34.6%</b>	<b>35.0%</b>	<b>38.2%</b>	<b>35.3%</b>	<b>30.4%</b>	<b>34.7%</b>	<b>35.0%</b>
Intangible assets	8.4%	10.6%	8.1%	8.4%	10.7%	9.2%	8.4%
Deferred Tax Assets	0.0%	0.0%	0.7%	0.9%	1.1%	0.6%	0.7%
<b>Total non-current assets</b>	<b>43.0%</b>	<b>45.6%</b>	<b>47.1%</b>	<b>44.6%</b>	<b>42.2%</b>	<b>44.5%</b>	<b>44.6%</b>
<b>Total Assets</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Current Liabilities</b>							
Short term interest bearing debt	37.3%	36.6%	35.5%	29.7%	25.8%	33.0%	35.5%
Accounts Payable	27.7%	24.8%	24.4%	22.3%	21.5%	24.2%	24.4%
<b>Total current liabilities</b>	<b>65.0%</b>	<b>61.4%</b>	<b>60.0%</b>	<b>52.0%</b>	<b>47.3%</b>	<b>57.1%</b>	<b>60.0%</b>
<b>Non-current liabilities</b>							
Long term interest bearing debt	6.2%	6.2%	5.9%	7.1%	6.7%	6.4%	6.2%
Deferred tax liabilities	0.9%	1.1%	0.8%	0.8%	0.7%	0.9%	0.8%
<b>Total non-current liabilities</b>	<b>7.1%</b>	<b>7.3%</b>	<b>6.8%</b>	<b>7.9%</b>	<b>7.4%</b>	<b>7.3%</b>	<b>7.3%</b>
Provisions for future liabilities	0.0%	0.0%	0.5%	0.7%	0.7%	0.4%	0.5%
<b>Long-term Liabs - Actual and Provisional</b>	<b>7.1%</b>	<b>7.3%</b>	<b>7.3%</b>	<b>8.6%</b>	<b>8.0%</b>	<b>7.7%</b>	<b>7.3%</b>
<b>Total Liabilities</b>	<b>72.0%</b>	<b>68.7%</b>	<b>67.2%</b>	<b>60.6%</b>	<b>55.4%</b>	<b>64.8%</b>	<b>67.2%</b>
<b>Stockholders' Equity</b>	<b>28.0%</b>	<b>31.3%</b>	<b>32.8%</b>	<b>39.4%</b>	<b>44.6%</b>	<b>35.2%</b>	<b>32.8%</b>
<b>Total Liabilities &amp; Equity</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Additional Calculations</b>							
Conventional working capital	-8.0%	-7.0%	-7.0%	3.3%	10.5%	-1.6%	-7.0%
Operating working capital	29.2%	29.6%	28.5%	33.1%	36.3%	31.3%	29.6%
Depreciation and amortization	2.1%	4.0%	4.5%	5.2%	6.0%	4.3%	4.5%
CapEx net of disposed assets	3.9%	10.1%	10.8%	4.8%	5.6%	7.0%	5.6%
CapEx / Depr&Amort	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest-bearing Debt	43.4%	42.8%	41.5%	36.8%	32.5%	39.4%	41.5%
Equity / Invested Capital	28.0%	31.3%	32.8%	39.4%	44.6%	35.2%	32.8%
<b>Invested Capital</b>	<b>71.4%</b>	<b>74.0%</b>	<b>74.2%</b>	<b>76.1%</b>	<b>77.1%</b>	<b>74.6%</b>	<b>74.2%</b>
<b>Notes</b>							
<i>Operating working capital = current asset minus non-interest bearing current liabilities</i>							
<i>Invested Capital = interest-bearing debt + equity</i>							
<i>We are assuming balance sheets are prepared on consolidated basis taking into account currency exchange differences.</i>							

Auto Parts Superior (APS) - INDIA							
"Common Sized" Historical Income Statements For the fiscal year ended December 31							
	Percentage of Sales					5-Year Historical FY2008-FY2012	
	2008	2009	2010	2011	2012	Average	Median
<b>Revenue</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Cost of revenue	-68.0%	-68.5%	-67.5%	-67.3%	-67.1%	-67.7%	-67.5%
<b>Gross Profit</b>	<b>32.0%</b>	<b>31.5%</b>	<b>32.5%</b>	<b>32.7%</b>	<b>32.9%</b>	<b>32.3%</b>	<b>32.5%</b>
Selling expenses	-5.7%	-3.9%	-4.3%	-4.5%	-4.5%	-4.6%	-4.5%
Personal expenses	-11.9%	-10.6%	-9.9%	-9.2%	-8.9%	-10.1%	-9.9%
Administrative expenses	-4.5%	-4.3%	-4.3%	-4.0%	-3.7%	-4.2%	-4.3%
Depreciation and amortization	-1.6%	-3.0%	-3.5%	-3.8%	-4.2%	-3.2%	-3.5%
Write offs	0.0%	-0.5%	-0.5%	-1.0%	-1.0%	-0.6%	-0.5%
Other operating expenses	-1.5%	-1.5%	-1.5%	-1.5%	-1.0%	-1.4%	-1.5%
<b>Total operating expenses</b>	<b>-25.3%</b>	<b>-23.8%</b>	<b>-24.0%</b>	<b>-24.1%</b>	<b>-23.3%</b>	<b>-24.1%</b>	<b>-24.0%</b>
<b>Operating profit (EBIT)</b>	<b>6.7%</b>	<b>7.7%</b>	<b>8.5%</b>	<b>8.6%</b>	<b>9.6%</b>	<b>8.2%</b>	<b>8.5%</b>
Finance income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Finance costs	-1.7%	-1.7%	-2.5%	-2.4%	-2.5%	-2.2%	-2.4%
<b>Profit before tax (EBT)</b>	<b>5.1%</b>	<b>6.0%</b>	<b>6.0%</b>	<b>6.1%</b>	<b>7.1%</b>	<b>6.1%</b>	<b>6.0%</b>
Tax	0.0%	-1.7%	-1.8%	0.0%	-2.0%	-1.1%	-1.7%
<b>Profit from continuing operations</b>	<b>5.1%</b>	<b>4.3%</b>	<b>4.2%</b>	<b>6.1%</b>	<b>5.1%</b>	<b>5.0%</b>	<b>5.1%</b>
Discontinued operations	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Profit for the year</b>	<b>5.1%</b>	<b>4.3%</b>	<b>4.2%</b>	<b>6.1%</b>	<b>5.1%</b>	<b>5.0%</b>	<b>5.1%</b>
<b>Additional Calculations</b>							
Effective Tax rate (% Pre-tax)	0.0%	28.0%	30.0%	0.0%	28.0%	17.2%	28.0%
EBITDA	8.4%	10.8%	12.0%	12.4%	13.8%	11.5%	12.0%
EBIT	6.7%	7.7%	8.5%	8.6%	9.6%	8.2%	8.5%
<b>NOPAT = EBIT x (1-t)</b>	<b>6.7%</b>	<b>5.6%</b>	<b>6.0%</b>	<b>8.6%</b>	<b>6.9%</b>	<b>6.7%</b>	<b>6.7%</b>

<b>INDUSTRY BENCHMARK INFORMATION</b>					
<b>NAICS 3363 - Motor Vehicle Parts Manufacturing</b>					
This industry group comprises establishments primarily engaged in manufacturing motor vehicle parts					
<i>Information provided by MicroBilt Corporation collected from 32 different data sources.</i>					
Date Period	Last Update July 2013				
Table Data Format	Mean				
		<b>Avg Med+Lg</b>	<b>Large</b>	<b>Medium</b>	<b>Small</b>
<b>Size by Revenue</b>	<b>All</b>	<b>Over \$5M</b>	<b>Over \$50M</b>	<b>\$5M - \$50M</b>	<b>Under \$5M</b>
<b>Company Count</b>	<b>3380</b>	<b>469</b>	<b>67</b>	<b>402</b>	<b>2911</b>
<b>Income Statement</b>					
Net Sales	100.0%	100.0%	100.0%	100.0%	100.0%
Gross Margin	26.0%	25.8%	25.2%	26.4%	28.0%
Officer Compensation	1.6%	1.5%	1.2%	1.7%	3.2%
Advertising & Sales	0.4%	0.5%	0.4%	0.5%	0.4%
Other Operating Expenses	21.8%	21.8%	21.3%	22.3%	22.5%
Operating Expenses	23.8%	23.7%	23.0%	24.4%	26.1%
Operating Income	2.2%	2.2%	2.3%	2.0%	1.9%
Net Income	0.9%	0.9%	0.9%	0.8%	0.8%
<b>Balance Sheet</b>					
Cash	10.3%	10.3%	10.1%	10.5%	10.6%
Accounts Receivable	23.1%	23.2%	23.0%	23.4%	22.4%
Inventory	23.5%	23.5%	22.1%	24.9%	26.8%
Total Current Assets	61.5%	61.7%	59.9%	63.5%	64.3%
Property, Plant & Equipment	21.6%	21.6%	22.2%	21.0%	20.3%
Other Non-Current Assets	16.9%	16.7%	17.9%	15.5%	15.5%
Total Assets	100.0%	100.0%	100.0%	100.0%	100.0%
Accounts Payable	12.9%	13.0%	12.4%	13.6%	13.6%
Total Current Liabilities	29.2%	29.3%	29.0%	29.5%	29.9%
Total Long Term Liabilities	21.9%	21.8%	20.0%	23.6%	27.2%
Net Worth	48.9%	49.0%	51.1%	46.9%	42.9%
<b>Financial Ratios</b>					
Quick Ratio	x1.16	x1.17	x1.17	x1.17	x1.12
Current Ratio	x2.10	x2.11	x2.07	x2.15	x2.15
Current Liabilities to Net Worth	59.8%	59.8%	56.7%	62.9%	69.8%
Current Liabilities to Inventory	x1.24	x1.25	x1.31	x1.18	x1.11
Total Debt to Net Worth	x1.05	x1.05	x0.96	x1.13	x1.33
Fixed Assets to Net Worth	x0.44	x0.44	x0.43	x0.45	x0.47
Days Accounts Receivable	52.00	52.00	55.00	49.00	45.00
Inventory Turnover	x5.07	x5.12	x5.08	x5.15	x4.82
Total Assets to Sales	63.3%	63.1%	67.9%	58.3%	56.8%
Working Capital to Sales	20.4%	20.4%	21.0%	19.8%	19.5%
Accounts Payable to Sales	8.0%	8.0%	8.2%	7.8%	7.5%
Pre-Tax Return on Sales	1.4%	1.4%	1.4%	1.3%	1.3%
Pre-Tax Return on Assets	2.2%	2.2%	2.1%	2.2%	2.3%
Pre-Tax Return on Net Worth	4.5%	4.5%	4.2%	4.7%	5.4%
Interest Coverage	x2.29	x2.24	x2.22	x2.25	x2.49
EBITDA to Sales	5.8%	5.8%	6.2%	5.3%	5.2%
Capital Expenditures to Sales	4.5%	4.5%	4.9%	4.1%	4.0%

Auto Parts Superior (APS) - INDIA								
"Common Sized" Historical Financial Statements For the fiscal year ended December 31								
	<u>Ratios &amp; Percentages Based Upon Nominal Amounts In</u>					<u>5-Year Historical</u>		<u>MicroBilt Data</u>
	<u>Millions of Indian Rupee (INR)</u>					<u>FY2008-FY2012</u>		<u>NAICS 3363</u>
	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>Average</u>	<u>Median</u>	<u>Companies</u>
<b>Income Statement:</b>								
Net Sales	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Gross Margin	32.0%	31.5%	32.5%	32.7%	32.9%	32.3%	32.5%	25.8%
Operating Expenses	-25.3%	-23.8%	-24.0%	-24.1%	-23.3%	-24.1%	-24.0%	-23.7%
Operating Income (EBIT)	6.7%	7.7%	8.5%	8.6%	9.6%	8.2%	8.5%	2.2%
Pre-tax Income (EBT)	5.1%	6.0%	6.0%	6.1%	7.1%	6.1%	6.0%	1.4%
Net Income (NIAT)	5.1%	4.3%	4.2%	6.1%	5.1%	5.0%	5.1%	0.9%
Effective Tax rate (% Pre-tax)	0.0%	28.0%	30.0%	0.0%	28.0%	17.2%	28.0%	37.0% >calc
EBITDA	8.4%	10.8%	12.0%	12.4%	13.8%	11.5%	12.0%	5.8%
NOPAT	6.7%	5.6%	6.0%	8.6%	6.9%	6.7%	6.7%	1.4% >calc
<b>Balance Sheet:</b>								
Cash	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%	1.2%	10.3%
Accounts Receivable	23.4%	22.9%	22.0%	23.5%	24.3%	23.2%	23.4%	23.2%
Inventory	32.3%	30.3%	29.7%	30.6%	32.1%	31.0%	30.6%	23.5%
Total Current Assets	57.0%	54.4%	52.9%	55.4%	57.8%	55.5%	55.4%	61.7%
Property, Plant & Equipment	34.6%	35.0%	38.2%	35.3%	30.4%	34.7%	35.0%	21.6%
Total Assets	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Accounts Payable	27.7%	24.8%	24.4%	22.3%	21.5%	24.2%	24.4%	13.0%
Total Current Liabilities	65.0%	61.4%	60.0%	52.0%	47.3%	57.1%	60.0%	29.3%
Total Long Term Liabilities	7.1%	7.3%	7.3%	8.6%	8.0%	7.7%	7.3%	21.8%
Net Worth	28.0%	31.3%	32.8%	39.4%	44.6%	35.2%	32.8%	49.0%
<b>Additional Calculations:</b>								
CAPEX / Assets	3.9%	10.1%	10.8%	4.8%	5.6%	7.0%	5.6%	7.1% >calc
Conventional WC / Assets	-8.0%	-7.0%	-7.0%	3.3%	10.5%	-1.6%	-7.0%	32.5% >calc
Net Operating WC / Assets	29.2%	29.6%	28.5%	33.1%	36.3%	31.3%	29.6%	45.5% >est
Interest-bearing Debt / Assets	43.4%	42.8%	41.5%	36.8%	32.5%	39.4%	41.5%	38.1% >est
Invested Capital / Assets	71.4%	74.0%	74.2%	76.1%	77.1%	74.6%	74.2%	87.1% >est
~na~ = not available								
~nm~ = not meaningful								
>calc = calculated from provided data								
>est = estimated from provided data								
<b>Notes</b>								
1. Revenues for 2012 represent a full year.								
2. Averages include only the full fiscal years of 2008 through 2012.								
3. Other working capital items include all current asset less current liability accounts with the exception of trade receivables, inventory, and trade payables.								

Auto Parts Superior (APS) - INDIA								
Historical Financial Performance Ratios For the fiscal year ended December 31								
	<u>Ratios &amp; Percentages Based Upon Nominal Amounts In</u>					<u>5-Year Historical</u>		<u>MicroBilt Data</u>
	<u>Millions of Indian Rupee (INR)</u>					<u>FY2008-FY2012</u>		<u>NAICS 3363</u>
	2008	2009	2010	2011	2012	Average	Median	469 Companies
<b>Size</b>								
Revenue - INR millions	2,101	2,320	2,558	2,865	3,209	2,611	2,558	Avg Med+Lg Size
Revenue - USD millions	48.7	48.0	56.0	61.7	60.2	54.9	56.0	Over \$5M
Total Assets - INR millions	1,624	1,772	2,021	2,127	2,240	1,957	2,021	~na~
Total Assets - USD millions	33.4	38.2	45.2	40.1	40.8	39.5	40.1	~na~
<b>Growth</b>								
			5-yr CAGR =		11.5%			
Revenue Growth	12.7%	10.4%	10.3%	12.0%	12.0%	11.5%	12.0%	10.0%
Asset Growth	7.2%	9.1%	14.1%	5.2%	5.3%	8.2%	7.2%	~na~
			5-yr CAGR =		8.1%			
<b>Liquidity &amp; Debt Coverage</b>								
Current ratio	x0.88	x0.89	x0.88	x1.06	x1.22	x0.99	x0.89	x2.11
EBIT / Interest Coverage	x4.05	x4.49	x3.36	x3.50	x3.83	x3.85	x3.83	x2.24
<b>Profitability - Invested Capital</b>								
Gross profit margin	32.0%	31.5%	32.5%	32.7%	32.9%	32.3%	32.5%	25.8%
EBITDA margin	8.4%	10.8%	12.0%	12.4%	13.8%	11.5%	12.0%	5.8%
EBIT margin	6.7%	7.7%	8.5%	8.6%	9.6%	8.2%	8.5%	2.2%
NOPAT margin	6.7%	5.6%	6.0%	8.6%	6.9%	6.7%	6.7%	1.4%
<b>Profitability - Equity</b>								
Operating margin (EBIT)	6.7%	7.7%	8.5%	8.6%	9.6%	8.2%	8.5%	2.2%
Pre-tax margin (EBT)	5.1%	6.0%	6.0%	6.1%	7.1%	6.1%	6.0%	1.4%
Net Income After Tax (NIAT)	5.1%	4.3%	4.2%	6.1%	5.1%	5.0%	5.1%	0.9%
<b>Turnover (Asset Management)</b>								
Sales / Receivable turnover	x5.53	x5.73	x5.75	x5.73	x5.89	x5.72	x5.73	x7.02 >calc
COS / Inventory turnover	x2.72	x2.96	x2.88	x2.97	x2.99	x2.90	x2.96	x3.80 >calc
COS / Payable turnover	x3.17	x3.61	x3.50	x4.06	x4.47	x3.76	x3.61	x9.28 >calc
Conventional WC turnover	-x16.16	-x18.71	-x18.01	x40.35	x13.65	x0.22	-x16.16	x4.90
Net Operating WC <sub>IC</sub> turnover	x4.42	x4.43	x4.44	x4.08	x3.95	x4.26	x4.42	x3.49
Sales/Net fixed assets	x3.74	x3.74	x3.31	x3.82	x4.72	x3.87	x3.74	x7.34 >calc
Accum Depr / Gross Fixed Assets	48.3%	48.9%	46.9%	51.4%	57.7%	50.7%	48.9%	~na~
Average age of assets (years)	15.4	8.5	7.6	7.2	6.9	9.1	7.6	~na~
CAPEX / Sales	3.0%	7.7%	8.5%	3.6%	3.9%	5.4%	3.9%	4.5%
Total asset turnover	x1.29	x1.31	x1.27	x1.35	x1.43	x1.33	x1.31	x1.58
<b>Leverage &amp; Solvency</b>								
Net Fixed Assets / Invest Cap	x0.48	x0.47	x0.52	x0.46	x0.39	x0.47	x0.47	x0.25 >est
Interest bearing debt / Invest Cap	60.8%	57.8%	55.9%	48.3%	42.1%	53.0%	55.9%	43.7% >est
Equity / Invested Capital	39.2%	42.2%	44.1%	51.7%	57.9%	47.0%	44.1%	56.3% >est
Assets / Invested Capital	x1.40	x1.35	x1.35	x1.31	x1.30	x1.34	x1.35	x1.15 >est
Assets/Equity	x3.58	x3.20	x3.05	x2.54	x2.24	x2.92	x3.05	x2.04
<b>Return on Assets (ROA)</b>								
EBIT / Assets	8.7%	10.1%	10.8%	11.5%	13.7%	11.0%	10.8%	3.4% >calc
EBT / Assets	6.6%	7.9%	7.6%	8.2%	10.1%	8.1%	7.9%	2.2%
<b>Return on Invested Capital (ROIC)</b>								
NOPAT / Sales	6.7%	5.6%	6.0%	8.6%	6.9%	6.7%	6.7%	1.4% >calc
x Sales / Assets	x1.29	x1.31	x1.27	x1.35	x1.43	x1.33	x1.31	x1.58
x Assets / Invested Capital	x1.40	x1.35	x1.35	x1.31	x1.30	x1.34	x1.35	x1.15 >est
NOPAT / Invested Capital	12.2%	9.8%	10.2%	15.1%	12.8%	12.0%	12.2%	2.5% >calc
<b>Return on Equity (ROE)</b>								
NI / Sales	5.1%	4.3%	4.2%	6.1%	5.1%	5.0%	5.1%	0.9%
x Sales / Assets	x1.29	x1.31	x1.27	x1.35	x1.43	x1.33	x1.31	x1.58
x Assets / Equity	x3.58	x3.20	x3.05	x2.54	x2.24	x2.92	x3.05	x2.04 >calc
NI / Equity	23.5%	18.1%	16.2%	20.9%	16.3%	19.0%	18.1%	2.7% >calc
EBT / Equity	23.5%	18.1%	16.2%	20.9%	16.3%	19.0%	18.1%	4.5%

Exhibit 3B: Currency Translation Analysis – INR versus USD

## 7. Exhibit 3B.1 - Technical Summary of IAS21

2012

## Technical Summary

**IAS 21*****The Effects of Changes in Foreign Exchange Rates***

as issued at 1 January 2012. Includes IFRSs with an effective date after 1 January 2012 but not the IFRSs they will replace.

*This extract has been prepared by IFRS Foundation staff and has not been approved by the IASB. For the requirements reference must be made to International Financial Reporting Standards.*

An entity may carry on foreign activities in two ways. It may have transactions in foreign currencies or it may have foreign operations. In addition, an entity may present its financial statements in a foreign currency. The objective of this Standard is to prescribe how to include foreign currency transactions and foreign operations in the financial statements of an entity and how to translate financial statements into a presentation currency. The principal issues are which exchange rate(s) to use and how to report the effects of changes in exchange rates in the financial statements.

This Standard does not apply to hedge accounting for foreign currency items, including the hedging of a net investment in a foreign operation. IAS 39 applies to hedge accounting.

This Standard does not apply to the presentation in a statement of cash flows of the cash flows arising from transactions in a foreign currency, or to the translation of cash flows of a foreign operation (see IAS 7 *Statement of Cash Flows*).

**Functional currency**

Functional currency is the currency of the primary economic environment in which the entity operates. The primary economic environment in which an entity operates is normally the one in which it primarily generates and expends cash.

An entity considers the following factors in determining its functional currency:

- (a) the currency:
  - (i) that mainly influences sales prices for goods and services (this will often be the currency in which sales prices for its goods and services are denominated and settled); and



- (ii) of the country whose competitive forces and regulations mainly determine the sales prices of its goods and services.
- (b) the currency that mainly influences labour, material and other costs of providing goods or services (this will often be the currency in which such costs are denominated and settled).

### Reporting foreign currency transactions in the functional currency

Foreign currency is a currency other than the functional currency of the entity. *Spot exchange rate* is the exchange rate for immediate delivery.

Exchange difference is the difference resulting from translating a given number of units of one currency into another currency at different exchange rates.

Net investment in a foreign operation is the amount of the reporting entity's interest in the net assets of that operation.

A foreign currency transaction shall be recorded, on initial recognition in the functional currency, by applying to the foreign currency amount the spot exchange rate between the functional currency and the foreign currency at the date of the transaction.

At the end of each reporting period:

- (a) foreign currency monetary items shall be translated using the closing rate;
- (b) non-monetary items that are measured in terms of historical cost in a foreign currency shall be translated using the exchange rate at the date of the transaction; and
- (c) non-monetary items that are measured at fair value in a foreign currency shall be translated using the exchange rates at the date when the fair value was measured.

Exchange differences arising on the settlement of monetary items or on translating monetary items at rates different from those at which they were translated on initial recognition during the period or in previous financial statements shall be recognised in profit or loss in the period in which they arise.

However, exchange differences arising on a monetary item that forms part of a reporting entity's net investment in a foreign operation shall be recognised in profit or loss in the separate financial statements of the reporting entity or the individual financial statements of the foreign operation, as appropriate. In the financial statements that include the foreign operation and the reporting entity (eg consolidated financial statements when the foreign operation is a subsidiary), such exchange differences shall be recognised initially in other comprehensive income and reclassified from equity to profit or loss on disposal of the net investment.

Furthermore, when a gain or loss on a non-monetary item is recognised in other comprehensive income, any exchange component of that gain or loss shall be recognised in other comprehensive income. Conversely, when a gain or loss on a non-monetary item is recognised in profit or loss, any exchange component of that gain or loss shall be recognised in profit or loss.



### Translation to the presentation currency/Translation of a foreign operation

The Standard permits an entity to present its financial statements in any currency (or currencies). For this purpose, an entity could be a stand-alone entity, a parent preparing consolidated financial statements or a parent, an investor or a venturer preparing separate financial statements in accordance with IAS 27 *Consolidated and Separate Financial Statements*. If the presentation currency differs from the entity's functional currency, it translates its results and financial position into the presentation currency. For example, when a group contains individual entities with different functional currencies, the results and financial position of each entity are expressed in a common currency so that consolidated financial statements may be presented.

An entity is required to translate its results and financial position from its functional currency into a presentation currency (or currencies) using the method required for translating a foreign operation for inclusion in the reporting entity's financial statements.

The results and financial position of an entity whose functional currency is not the currency of a hyperinflationary economy shall be translated into a different presentation currency using the following procedures:

- (a) assets and liabilities for each statement of financial position presented (ie including comparatives) shall be translated at the closing rate at the date of that statement of financial position;
- (b) income and expenses for each statement of comprehensive income or separate income statement presented (ie including comparatives) shall be translated at exchange rates at the dates of the transactions; and
- (c) all resulting exchange differences shall be recognised in other comprehensive income.

Any goodwill arising on the acquisition of a foreign operation and any fair value adjustments to the carrying amounts of assets and liabilities arising on the acquisition of that foreign operation shall be treated as assets and liabilities of the foreign operation. Foreign operation is an entity that is a subsidiary, associate, joint venture or branch of a reporting entity, the activities of which are based or conducted in a country or currency other than those of the reporting entity.

On the disposal of a foreign operation, the cumulative amount of the exchange differences relating to that foreign operation, recognised in other comprehensive income and accumulated in the separate component of equity, shall be reclassified from equity to profit or loss (as a reclassification adjustment) when the gain or loss on disposal is recognised (see IAS 1 *Presentation of Financial Statements* (as revised in 2007)).

On the partial disposal of a subsidiary that includes a foreign operation, the entity shall re-attribute the proportionate share of the cumulative amount of the exchange differences recognised in other comprehensive income to the non-controlling interests in that foreign operation. In any other partial disposal of a foreign operation the entity shall reclassify to profit or loss only the proportionate share of the cumulative amount of the exchange differences recognised in other comprehensive income.



When there is a change in an entity's functional currency, the entity shall apply the translation procedures applicable to the new functional currency prospectively from the date of the change.

If the functional currency is the currency of a hyperinflationary economy, the entity's financial statements are restated in accordance with IAS 29 *Financial Reporting in Hyperinflationary Economies*.

The results and financial position of an entity whose functional currency is the currency of a hyperinflationary economy shall be translated into a different presentation currency using the following procedures:

- (a) all amounts (ie assets, liabilities, equity items, income and expenses, including comparatives) shall be translated at the closing rate at the date of the most recent statement of financial position, except that
- (b) when amounts are translated into the currency of a non-hyperinflationary economy, comparative amounts shall be those that were presented as current year amounts in the relevant prior year financial statements (ie not adjusted for subsequent changes in the price level or subsequent changes in exchange rates).



## 8. Exhibit 3B.2 – Average Monthly Exchange Rates INR to USD

Average Monthly Currency Exchange Rates Between US Dollar (USD) & Indian Rupee (INR)										
Obtained from X-RATES										
<a href="http://www.x-rates.com/average/?from=INR&amp;to=USD&amp;amount=1&amp;year=2013">http://www.x-rates.com/average/?from=INR&amp;to=USD&amp;amount=1&amp;year=2013</a>										
Exchange 1 INR = xxx USD										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Jan	0.02201	0.02292	0.02259	0.02260	0.02546	0.02053	0.02174	0.02202	0.01953	0.01844
Feb	0.02210	0.02293	0.02260	0.02269	0.02520	0.02030	0.02159	0.02203	0.02034	0.01857
Mar	0.02223	0.02293	0.02254	0.02278	0.02486	0.01954	0.02200	0.02226	0.01986	0.01838
Apr	0.02279	0.02289	0.02230	0.02379	0.02503	0.02002	0.02250	0.02257	0.01934	0.01839
May	0.02216	0.02302	0.02209	0.02459	0.02378	0.02062	0.02181	0.02227	0.01840	0.01820
Jun	0.02199	0.02297	0.02176	0.02464	0.02337	0.02096	0.02152	0.02232	0.01788	0.01716
Jul	0.02174	0.02300	0.02156	0.02479	0.02338	0.02067	0.02137	0.02253	0.01806	0.01674
Aug	0.02160	0.02296	0.02151	0.02455	0.02329	0.02073	0.02149	0.02204	0.01801	0.01595
Sep	0.02172	0.02281	0.02169	0.02487	0.02193	0.02070	0.02177	0.02105	0.01838	0.01568
Oct	0.02186	0.02236	0.02203	0.02534	0.02059	0.02141	0.02254	0.02035	0.01885	0.01616
Nov	0.02220	0.02190	0.02233	0.02537	0.02045	0.02148	0.02224	0.01972	0.01824	
Dec	0.02276	0.02195	0.02244	0.02539	0.02062	0.02147	0.02219	0.01907	0.01830	
<b>Avg</b>	<b>0.02210</b>	<b>0.02272</b>	<b>0.02212</b>	<b>0.02428</b>	<b>0.02316</b>	<b>0.02070</b>	<b>0.02190</b>	<b>0.02152</b>	<b>0.01877</b>	<b>0.01737</b>
%Chg					-4.6%	-10.6%	5.8%	-1.7%	-12.8%	-7.5%
As of	<u>12/31/04</u>	<u>12/31/05</u>	<u>12/31/06</u>	<u>12/31/07</u>	<u>12/31/08</u>	<u>12/31/09</u>	<u>12/31/10</u>	<u>12/31/11</u>	<u>12/31/12</u>	<u>10/6/13</u>
	0.02302	0.02225	0.02260	0.02540	0.02059	0.02155	0.02237	0.01885	0.01823	0.01629
%Chg		-3.3%	1.6%	12.4%	-19.0%	4.7%	3.8%	-15.8%	-3.3%	-10.6%
Exchange 1 USD = xxx INR										
<b>Avg</b>	<b>45.25348</b>	<b>44.01715</b>	<b>45.20728</b>	<b>41.18164</b>	<b>43.17556</b>	<b>48.30471</b>	<b>45.66888</b>	<b>46.47002</b>	<b>53.28928</b>	<b>57.58412</b>
As of	<u>12/31/04</u>	<u>12/31/05</u>	<u>12/31/06</u>	<u>12/31/07</u>	<u>12/31/08</u>	<u>12/31/09</u>	<u>12/31/10</u>	<u>12/31/11</u>	<u>12/31/12</u>	<u>10/6/13</u>
	43.45000	44.95000	44.25000	39.37000	48.58007	46.41000	44.70000	53.06004	54.85097	61.38500
%Chg		3.5%	-1.6%	-11.0%	23.4%	-4.5%	-3.7%	18.7%	3.4%	11.9%

**Exchange Rate - Indian Rupee to US Dollar**  
Average Annual Rates 2008-2013

Year	Exchange Rate (USD per INR)
2004	\$0.02210
2005	\$0.02272
2006	\$0.02212
2007	\$0.02428
2008	\$0.02316
2009	\$0.02070
2010	\$0.02190
2011	\$0.02152
2012	\$0.01877
10/6/13	\$0.01737

2004	2005	2006	2007	2008	2009	2010	2011	2012	to 10/6/13
\$0.02210	\$0.02272	\$0.02212	\$0.02428	\$0.02316	\$0.02070	\$0.02190	\$0.02152	\$0.01877	\$0.01737

## 9. Exhibit 3B.3 – APS-India Financial Ratios Comparison, INR vs USD

<b>Auto Parts Superior (APS) - INDIA</b>					
<b>"Common Sized" Historical Financial Statements For the fiscal year ended December 31</b>					
	<b>5-Year Historical FY2008-FY2012</b>				<b>MicroBilt Data NAICS 3363 Companies</b>
	<b>India Rupee (INR)</b>		<b>US Dollar (USD)</b>		
	<b>Average</b>	<b>Median</b>	<b>Average</b>	<b>Median</b>	
<b>Income Statement:</b>					
Net Sales	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Gross Margin	32.3%	32.5%	32.3%	32.5%	25.8%
Operating Expenses	-24.1%	-24.0%	-24.1%	-24.0%	-23.7%
Operating Income (EBIT)	8.2%	8.5%	8.2%	8.5%	2.2%
Pre-tax Income (EBT)	6.1%	6.0%	6.1%	6.0%	1.4%
Net Income (NIAT)	<b>5.0%</b>	<b>5.1%</b>	<b>5.0%</b>	<b>5.1%</b>	<b>0.9%</b>
Effective Tax rate (% Pre-tax)	17.2%	28.0%	17.2%	28.0%	37.0% >calc
EBITDA	11.5%	12.0%	11.5%	12.0%	5.8%
NOPAT	6.7%	6.7%	6.7%	6.7%	1.4% >calc
<b>Balance Sheet:</b>					
Cash	1.3%	1.2%	1.3%	1.2%	10.3%
Accounts Receivable	23.2%	23.4%	23.2%	23.4%	23.2%
Inventory	31.0%	30.6%	31.0%	30.6%	23.5%
Total Current Assets	55.5%	55.4%	55.5%	55.4%	61.7%
Property, Plant & Equipment	34.7%	35.0%	34.7%	35.0%	21.6%
Total Assets	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Accounts Payable	24.2%	24.4%	24.2%	24.4%	13.0%
Total Current Liabilities	57.1%	60.0%	57.1%	60.0%	29.3%
Total Long Term Liabilities	7.7%	7.3%	7.7%	7.3%	21.8%
Net Worth	<b>35.2%</b>	<b>32.8%</b>	<b>35.2%</b>	<b>32.8%</b>	<b>49.0%</b>
<b>Additional Calculations:</b>					
CAPEX / Assets	7.0%	5.6%	4.0%	4.4%	7.1% >calc
Conventional WC / Assets	-1.6%	-7.0%	-1.6%	-7.0%	32.5% >calc
Net Operating WC / Assets	31.3%	29.6%	31.3%	29.6%	45.5% >est
Interest-bearing Debt / Assets	39.4%	41.5%	39.4%	41.5%	38.1% >est
Invested Capital / Assets	74.6%	74.2%	74.6%	74.2%	87.1% >est
~na~ = not available					
~nm~ = not meaningful					
>calc = calculated from provided data					
>est = estimated from provided data					
<b>Notes</b>					
1. Revenues for 2012 represent a full year.					
2. Averages include only the full fiscal years of 2008 through 2012.					
3. Other working capital items include all current asset less current liability accounts with the exception of trade receivables, inventory, and trade payables.					

Auto Parts Superior (APS) - INDIA					
Historical Financial Performance Ratios For the fiscal year ended December 31					
	5-Year Historical FY2008-FY2012				MicroBilt Data
	India Rupee (INR)		US Dollar (USD)		NAICS 3363
	Average	Median	Average	Median	469 Companies
<b>Size</b>					
Revenue	2,611	2,558	54.914	56.012	Avg Med+Lg Size Over \$5M
Total Assets	1,957	2,021	39.550	40.088	~na~ ~na~
<b>Growth</b>					
<b>Revenue Growth</b>	<b>11.5%</b>	<b>12.0%</b>	<b>6.1%</b>	<b>7.5%</b>	<b>10.0%</b>
Asset Growth	8.2%	7.2%	2.0%	1.9%	~na~
<b>Liquidity &amp; Debt Coverage</b>					
Current ratio	x0.99	x0.89	x0.99	x0.89	x2.11
EBIT / Interest Coverage	x3.85	x3.83	x3.85	x3.83	x2.24
<b>Profitability - Invested Capital</b>					
Gross profit margin	32.3%	32.5%	32.3%	32.5%	25.8%
EBITDA margin	11.5%	12.0%	11.5%	12.0%	5.8%
EBIT margin	8.2%	8.5%	8.2%	8.5%	2.2%
<b>NOPAT margin</b>	<b>6.7%</b>	<b>6.7%</b>	<b>6.7%</b>	<b>6.7%</b>	<b>1.4%</b>
<b>Profitability - Equity</b>					
Operating margin (EBIT)	8.2%	8.5%	8.2%	8.5%	2.2%
Pre-tax margin (EBT)	6.1%	6.0%	6.1%	6.0%	1.4%
<b>Net Income After Tax (NIAT)</b>	<b>5.0%</b>	<b>5.1%</b>	<b>5.0%</b>	<b>5.1%</b>	<b>0.9%</b>
<b>Turnover (Asset Management)</b>					
Sales / Receivable turnover	x5.72	x5.73	x5.99	x6.06	x7.02 >calc
COS / Inventory turnover	x2.90	x2.96	x3.04	x3.06	x3.80 >calc
COS / Payable turnover	x3.76	x3.61	x3.94	x3.57	x9.28 >calc
Conventional WC turnover	x0.22	-x16.16	x1.27	-x17.63	x4.90
Net Operating WC <sub>IC</sub> turnover	x4.26	x4.42	x4.46	x4.35	x3.49
Sales/Net fixed assets	x3.87	x3.74	x4.05	x4.21	x7.34 >calc
Accum Depr / Gross Fixed Assets	50.7%	48.9%	50.7%	48.9%	~na~
Average age of assets (years)	9.1	7.6	8.7	7.8	~na~
CAPEX / Sales	5.4%	3.9%	3.3%	3.0%	4.5%
<b>Total asset turnover</b>	<b>x1.33</b>	<b>x1.31</b>	<b>x1.39</b>	<b>x1.46</b>	<b>x1.58</b>
<b>Leverage &amp; Solvency</b>					
Net Fixed Assets / Invest Cap	x0.47	x0.47	x0.47	x0.47	x0.25 >est
Interest bearing debt / Invest Cap	53.0%	55.9%	53.0%	55.9%	43.7% >est
Equity / Invested Capital	47.0%	44.1%	47.0%	44.1%	56.3% >est
<b>Assets / Invested Capital</b>	<b>x1.34</b>	<b>x1.35</b>	<b>x1.34</b>	<b>x1.35</b>	<b>x1.15</b> >est
<b>Assets/ Equity</b>	<b>x2.92</b>	<b>x3.05</b>	<b>x2.92</b>	<b>x3.05</b>	<b>x2.04</b>
<b>Return on Assets (ROA)</b>					
EBIT / Assets	11.0%	10.8%	11.5%	10.6%	3.4% >calc
EBT / Assets	8.1%	7.9%	8.4%	7.6%	2.2%
<b>Return on Invested Capital (ROIC)</b>					
NOPAT / Sales	6.7%	6.7%	6.7%	6.7%	1.4% >calc
x Sales / Assets	x1.33	x1.31	x1.39	x1.46	x1.58
x Assets / Invested Capital	x1.34	x1.35	x1.34	x1.35	x1.15 >est
<b>NOPAT / Invested Capital</b>	<b>12.0%</b>	<b>12.2%</b>	<b>12.7%</b>	<b>13.1%</b>	<b>2.5%</b> >calc
<b>Return on Equity (ROE)</b>					
NI / Sales	5.0%	5.1%	5.0%	5.1%	0.9%
x Sales / Assets	x1.33	x1.31	x1.39	x1.46	x1.58
x Assets / Equity	x2.92	x3.05	x2.92	x3.05	x2.04 >calc
<b>NI / Equity</b>	<b>19.0%</b>	<b>18.1%</b>	<b>20.1%</b>	<b>17.4%</b>	<b>2.7%</b> >calc
<i>EBT / Equity</i>	<i>19.0%</i>	<i>18.1%</i>	<i>20.1%</i>	<i>17.4%</i>	<i>4.5%</i>

Exhibit 3C: APS 5-yr Historical Financials Using USD Currency

<b>Auto Parts Superior (APS) - INDIA</b>							
<b>Historical Balance Sheets For the fiscal year ended December 31</b>							
	<i>In Millions of US Dollars (USD)</i>					<b>5-Year Historical FY2008-FY2012</b>	
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>Average</b>	<b>Median</b>
<b>Current Assets</b>							
Cash at bank and in hand	0.412	0.474	0.559	0.528	0.547	0.504	0.528
Accounts receivable	7.822	8.727	9.955	9.424	9.936	9.173	9.424
Inventory	10.807	11.571	13.423	12.251	13.126	12.235	12.251
<b>Total current assets</b>	<b>19.041</b>	<b>20.771</b>	<b>23.937</b>	<b>22.202</b>	<b>23.609</b>	<b>21.912</b>	<b>22.202</b>
<b>Non-current assets</b>							
<i>Gross property, plant &amp; equipment</i>	22.355	26.158	32.595	29.100	29.334	27.908	29.100
<i>Less: accumulated depreciation</i>	(10.787)	(12.799)	(15.302)	(14.965)	(16.937)	(14.158)	(14.965)
<b>Property, plant and equipment (net)</b>	<b>11.569</b>	<b>13.359</b>	<b>17.293</b>	<b>14.135</b>	<b>12.397</b>	<b>13.751</b>	<b>13.359</b>
Intangible assets	2.820	4.051	3.646	3.374	4.375	3.653	3.646
Deferred Tax Assets	0.000	0.000	0.336	0.377	0.456	0.234	0.336
<b>Total non-current assets</b>	<b>14.389</b>	<b>17.410</b>	<b>21.275</b>	<b>17.886</b>	<b>17.228</b>	<b>17.638</b>	<b>17.410</b>
<b>Total Assets</b>	<b>33.430</b>	<b>38.181</b>	<b>45.212</b>	<b>40.088</b>	<b>40.837</b>	<b>39.550</b>	<b>40.088</b>
<b>Current Liabilities</b>							
Short term interest bearing debt	12.454	13.962	16.062	11.911	10.538	12.986	12.454
Accounts Payable	9.263	9.481	11.051	8.952	8.787	9.507	9.263
<b>Total current liabilities</b>	<b>21.717</b>	<b>23.443</b>	<b>27.114</b>	<b>20.864</b>	<b>19.325</b>	<b>22.492</b>	<b>21.717</b>
<b>Non-current liabilities</b>							
Long term interest bearing debt	2.059	2.370	2.685	2.827	2.735	2.535	2.685
Deferred tax liabilities	0.309	0.431	0.380	0.339	0.273	0.347	0.339
<b>Total non-current liabilities</b>	<b>2.367</b>	<b>2.801</b>	<b>3.065</b>	<b>3.166</b>	<b>3.008</b>	<b>2.882</b>	<b>3.008</b>
Provisions for future liabilities	0.000	0.000	0.224	0.283	0.273	0.156	0.224
<b>Long-term Liabs - Actual and Provisional</b>	<b>2.367</b>	<b>2.801</b>	<b>3.289</b>	<b>3.449</b>	<b>3.282</b>	<b>3.038</b>	<b>3.282</b>
<b>Total Liabilities</b>	<b>24.084</b>	<b>26.244</b>	<b>30.402</b>	<b>24.313</b>	<b>22.606</b>	<b>25.530</b>	<b>24.313</b>
<b>Stockholders' Equity</b>	<b>9.346</b>	<b>11.937</b>	<b>14.810</b>	<b>15.775</b>	<b>18.231</b>	<b>14.020</b>	<b>14.810</b>
<b>Total Liabilities &amp; Equity</b>	<b>33.430</b>	<b>38.181</b>	<b>45.212</b>	<b>40.088</b>	<b>40.837</b>	<b>39.550</b>	<b>40.088</b>
<i>Control</i>	0.000	0.000	0.000	0.000	0.000		
<b>Additional Calculations</b>							
Conventional working capital	(2.676)	(2.672)	(3.177)	1.338	4.284	(0.580)	(2.672)
Operating working capital (Invest. Cap.)	9.778	11.291	12.886	13.249	14.822	12.405	12.886
Depreciation and amortization	0.787	1.449	1.971	2.367	2.533	1.822	1.971
CAPEX net of disposed assets	(1.842)	4.470	5.500	(1.063)	1.797	1.772	1.797
CAPEX / Depr&Amort	-233.9%	308.5%	279.1%	-44.9%	70.9%	75.9%	70.9%
Interest-bearing Debt	14.512	16.333	18.747	14.738	13.272	15.520	14.738
Equity / Invested Capital	9.346	11.937	14.810	15.775	18.231	14.020	14.810
<b>Invested Capital</b>	<b>23.858</b>	<b>28.270</b>	<b>33.557</b>	<b>30.513</b>	<b>31.503</b>	<b>29.540</b>	<b>30.513</b>
Debt / Equity	x1.55	x1.37	x1.27	x0.93	x0.73	x1.17	x1.27
Debt / Invested Capital	61%	58%	56%	48%	42%	53%	56%
Equity / Invested Capital	39%	42%	44%	52%	58%	47%	44%
<b>Notes</b>							
<i>Operating working capital = current asset minus non-interest bearing current liabilities</i>							
<i>Invested Capital = interest-bearing debt + equity</i>							
<i>We are assuming balance sheets are prepared on consolidated basis taking into account currency exchange differences.</i>							

<b>Auto Parts Superior (APS) - INDIA</b>							
<b>Historical Income Statements For the fiscal year ended December 31</b>							
	<i>In Millions of US Dollars (USD)</i>					<b>5-Year Historical FY2008-FY2012</b>	
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>Average</b>	<b>Median</b>
<b>Revenue</b>	<b>48.662</b>	<b>48.028</b>	<b>56.012</b>	<b>61.652</b>	<b>60.214</b>	<b>54.914</b>	<b>56.012</b>
Cost of revenue	-33.090	-32.899	-37.808	-41.492	-40.404	(37.139)	(37.808)
<b>Gross Profit</b>	<b>15.572</b>	<b>15.129</b>	<b>18.204</b>	<b>20.160</b>	<b>19.810</b>	<b>17.775</b>	<b>18.204</b>
Selling expenses	-2.779	-1.863	-2.409	-2.798	-2.721	(2.514)	(2.721)
Personal expenses	-5.790	-5.072	-5.518	-5.703	-5.348	(5.486)	(5.518)
Administrative expenses	-2.200	-2.070	-2.409	-2.475	-2.252	(2.281)	(2.252)
Depreciation and amortization	-0.787	-1.449	-1.971	-2.367	-2.533	(1.822)	(1.971)
Write offs	0.000	-0.240	-0.280	-0.617	-0.602	(0.348)	(0.280)
Other operating expenses	-0.730	-0.720	-0.840	-0.925	-0.602	(0.763)	(0.730)
<b>Total operating expenses</b>	<b>-12.287</b>	<b>-11.415</b>	<b>-13.426</b>	<b>-14.883</b>	<b>-14.059</b>	<b>(13.214)</b>	<b>(13.426)</b>
<b>Operating profit (EBIT)</b>	<b>3.284</b>	<b>3.714</b>	<b>4.778</b>	<b>5.277</b>	<b>5.752</b>	<b>4.561</b>	<b>4.778</b>
Finance income	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Finance costs	-0.811	-0.828	-1.423	-1.506	-1.501	(1.214)	(1.423)
<b>Profit before tax (EBT)</b>	<b>2.474</b>	<b>2.886</b>	<b>3.354</b>	<b>3.771</b>	<b>4.250</b>	<b>3.347</b>	<b>3.354</b>
Tax	0.000	-0.808	-1.006	0.000	-1.190	(0.601)	(0.808)
<b>Profit from continuing operations</b>	<b>2.474</b>	<b>2.078</b>	<b>2.348</b>	<b>3.771</b>	<b>3.060</b>	<b>2.746</b>	<b>2.474</b>
Discontinued operations	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Profit for the year</b>	<b>2.474</b>	<b>2.078</b>	<b>2.348</b>	<b>3.771</b>	<b>3.060</b>	<b>2.746</b>	<b>2.474</b>
<b>Additional Calculations</b>							
Effective Tax rate (% Pre-tax)	0.0%	28.0%	30.0%	0.0%	28.0%	17.2%	28.0%
EBITDA	4.072	5.163	6.748	7.644	8.285	6.382	6.748
EBIT	3.284	3.714	4.778	5.277	5.752	4.561	4.778
<b>NOPAT = EBIT x (1-t)</b>	<b>3.284</b>	<b>2.674</b>	<b>3.344</b>	<b>5.277</b>	<b>4.141</b>	<b>3.744</b>	<b>3.344</b>

Auto Parts Superior (APS) - INDIA							
"Common Sized" Historical Balance Sheets For the fiscal year ended December 31							
	Percentage of Assets					5-Year	5-Year
	2008	2009	2010	2011	2012	Historical	Historical
						Average	Median
<b>Current Assets</b>							
Cash at bank and in hand	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%	1.2%
Accounts receivable	23.4%	22.9%	22.0%	23.5%	24.3%	23.2%	23.4%
Inventory	32.3%	30.3%	29.7%	30.6%	32.1%	31.0%	30.6%
<b>Total current assets</b>	<b>57.0%</b>	<b>54.4%</b>	<b>52.9%</b>	<b>55.4%</b>	<b>57.8%</b>	<b>55.5%</b>	<b>55.4%</b>
<b>Non-current assets</b>							
<i>Gross property, plant &amp; equipment</i>	66.9%	68.5%	72.1%	72.6%	71.8%	70.4%	71.8%
<i>Less: accumulated depreciation</i>	-32.3%	-33.5%	-33.8%	-37.3%	-41.5%	-35.7%	-33.8%
<b>Property, plant and equipment (net)</b>	<b>34.6%</b>	<b>35.0%</b>	<b>38.2%</b>	<b>35.3%</b>	<b>30.4%</b>	<b>34.7%</b>	<b>35.0%</b>
Intangible assets	8.4%	10.6%	8.1%	8.4%	10.7%	9.2%	8.4%
Deferred Tax Assets	0.0%	0.0%	0.7%	0.9%	1.1%	0.6%	0.7%
<b>Total non-current assets</b>	<b>43.0%</b>	<b>45.6%</b>	<b>47.1%</b>	<b>44.6%</b>	<b>42.2%</b>	<b>44.5%</b>	<b>44.6%</b>
<b>Total Assets</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Current Liabilities</b>							
Short term interest bearing debt	37.3%	36.6%	35.5%	29.7%	25.8%	33.0%	35.5%
Accounts Payable	27.7%	24.8%	24.4%	22.3%	21.5%	24.2%	24.4%
<b>Total current liabilities</b>	<b>65.0%</b>	<b>61.4%</b>	<b>60.0%</b>	<b>52.0%</b>	<b>47.3%</b>	<b>57.1%</b>	<b>60.0%</b>
<b>Non-current liabilities</b>							
Long term interest bearing debt	6.2%	6.2%	5.9%	7.1%	6.7%	6.4%	6.2%
Deferred tax liabilities	0.9%	1.1%	0.8%	0.8%	0.7%	0.9%	0.8%
<b>Total non-current liabilities</b>	<b>7.1%</b>	<b>7.3%</b>	<b>6.8%</b>	<b>7.9%</b>	<b>7.4%</b>	<b>7.3%</b>	<b>7.3%</b>
Provisions for future liabilities	0.0%	0.0%	0.5%	0.7%	0.7%	0.4%	0.5%
<b>Long-term Liabs - Actual and Provisional</b>	<b>7.1%</b>	<b>7.3%</b>	<b>7.3%</b>	<b>8.6%</b>	<b>8.0%</b>	<b>7.7%</b>	<b>7.3%</b>
<b>Total Liabilities</b>	<b>72.0%</b>	<b>68.7%</b>	<b>67.2%</b>	<b>60.6%</b>	<b>55.4%</b>	<b>64.8%</b>	<b>67.2%</b>
<b>Stockholders' Equity</b>	<b>28.0%</b>	<b>31.3%</b>	<b>32.8%</b>	<b>39.4%</b>	<b>44.6%</b>	<b>35.2%</b>	<b>32.8%</b>
<b>Total Liabilities &amp; Equity</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Additional Calculations</b>							
Conventional working capital	-8.0%	-7.0%	-7.0%	3.3%	10.5%	-1.6%	-7.0%
Operating working capital	29.2%	29.6%	28.5%	33.1%	36.3%	31.3%	29.6%
Depreciation and amortization	2.4%	3.8%	4.4%	5.9%	6.2%	4.5%	4.4%
CapEx net of disposed assets	-5.5%	11.7%	12.2%	-2.7%	4.4%	4.0%	4.4%
CapEx / Depr&Amort	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest-bearing Debt	43.4%	42.8%	41.5%	36.8%	32.5%	39.4%	41.5%
Equity / Invested Capital	28.0%	31.3%	32.8%	39.4%	44.6%	35.2%	32.8%
<b>Invested Capital</b>	<b>71.4%</b>	<b>74.0%</b>	<b>74.2%</b>	<b>76.1%</b>	<b>77.1%</b>	<b>74.6%</b>	<b>74.2%</b>
<b>Notes</b>							
<i>Operating working capital = current asset minus non-interest bearing current liabilities</i>							
<i>Invested Capital = interest-bearing debt + equity</i>							
<i>We are assuming balance sheets are prepared on consolidated basis taking into account currency exchange differences.</i>							

Auto Parts Superior (APS) - INDIA							
"Common Sized" Historical Income Statements For the fiscal year ended December 31							
	Percentage of Sales					5-Year Historical FY2008-FY2012	
	2008	2009	2010	2011	2012	Average	Median
<b>Revenue</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Cost of revenue	-68.0%	-68.5%	-67.5%	-67.3%	-67.1%	-67.7%	-67.5%
<b>Gross Profit</b>	<b>32.0%</b>	<b>31.5%</b>	<b>32.5%</b>	<b>32.7%</b>	<b>32.9%</b>	<b>32.3%</b>	<b>32.5%</b>
Selling expenses	-5.7%	-3.9%	-4.3%	-4.5%	-4.5%	-4.6%	-4.5%
Personal expenses	-11.9%	-10.6%	-9.9%	-9.2%	-8.9%	-10.1%	-9.9%
Administrative expenses	-4.5%	-4.3%	-4.3%	-4.0%	-3.7%	-4.2%	-4.3%
Depreciation and amortization	-1.6%	-3.0%	-3.5%	-3.8%	-4.2%	-3.2%	-3.5%
Write offs	0.0%	-0.5%	-0.5%	-1.0%	-1.0%	-0.6%	-0.5%
Other operating expenses	-1.5%	-1.5%	-1.5%	-1.5%	-1.0%	-1.4%	-1.5%
<b>Total operating expenses</b>	<b>-25.3%</b>	<b>-23.8%</b>	<b>-24.0%</b>	<b>-24.1%</b>	<b>-23.3%</b>	<b>-24.1%</b>	<b>-24.0%</b>
<b>Operating profit (EBIT)</b>	<b>6.7%</b>	<b>7.7%</b>	<b>8.5%</b>	<b>8.6%</b>	<b>9.6%</b>	<b>8.2%</b>	<b>8.5%</b>
Finance income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Finance costs	-1.7%	-1.7%	-2.5%	-2.4%	-2.5%	-2.2%	-2.4%
<b>Profit before tax (EBT)</b>	<b>5.1%</b>	<b>6.0%</b>	<b>6.0%</b>	<b>6.1%</b>	<b>7.1%</b>	<b>6.1%</b>	<b>6.0%</b>
Tax	0.0%	-1.7%	-1.8%	0.0%	-2.0%	-1.1%	-1.7%
<b>Profit from continuing operations</b>	<b>5.1%</b>	<b>4.3%</b>	<b>4.2%</b>	<b>6.1%</b>	<b>5.1%</b>	<b>5.0%</b>	<b>5.1%</b>
Discontinued operations	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Profit for the year</b>	<b>5.1%</b>	<b>4.3%</b>	<b>4.2%</b>	<b>6.1%</b>	<b>5.1%</b>	<b>5.0%</b>	<b>5.1%</b>
<b>Additional Calculations</b>							
Effective Tax rate (% Pre-tax)	0.0%	28.0%	30.0%	0.0%	28.0%	17.2%	28.0%
EBITDA	8.4%	10.8%	12.0%	12.4%	13.8%	11.5%	12.0%
EBIT	6.7%	7.7%	8.5%	8.6%	9.6%	8.2%	8.5%
<b>NOPAT = EBIT x (1-t)</b>	<b>6.7%</b>	<b>5.6%</b>	<b>6.0%</b>	<b>8.6%</b>	<b>6.9%</b>	<b>6.7%</b>	<b>6.7%</b>

Auto Parts Superior (APS) - INDIA								
"Common Sized" Historical Financial Statements For the fiscal year ended December 31								
	<i>Ratios &amp; Percentages Based Upon Nominal Amounts In</i>					5-Year Historical		MicroBilt Data
	<i>Millions of US Dollars (USD)</i>					FY2008-FY2012		NAICS 3363
	2008	2009	2010	2011	2012	Average	Median	Companies
<b>Income Statement:</b>								
Net Sales	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Gross Margin	32.0%	31.5%	32.5%	32.7%	32.9%	32.3%	32.5%	25.8%
Operating Expenses	-25.3%	-23.8%	-24.0%	-24.1%	-23.3%	-24.1%	-24.0%	-23.7%
Operating Income (EBIT)	6.7%	7.7%	8.5%	8.6%	9.6%	8.2%	8.5%	2.2%
Pre-tax Income (EBT)	5.1%	6.0%	6.0%	6.1%	7.1%	6.1%	6.0%	1.4%
Net Income (NIAT)	5.1%	4.3%	4.2%	6.1%	5.1%	5.0%	5.1%	0.9%
Effective Tax rate (% Pre-tax)	0.0%	28.0%	30.0%	0.0%	28.0%	17.2%	28.0%	37.0% >calc
EBITDA	8.4%	10.8%	12.0%	12.4%	13.8%	11.5%	12.0%	5.8%
NOPAT	6.7%	5.6%	6.0%	8.6%	6.9%	6.7%	6.7%	1.4% >calc
<b>Balance Sheet:</b>								
Cash	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%	1.2%	10.3%
Accounts Receivable	23.4%	22.9%	22.0%	23.5%	24.3%	23.2%	23.4%	23.2%
Inventory	32.3%	30.3%	29.7%	30.6%	32.1%	31.0%	30.6%	23.5%
Total Current Assets	57.0%	54.4%	52.9%	55.4%	57.8%	55.5%	55.4%	61.7%
Property, Plant & Equipment	34.6%	35.0%	38.2%	35.3%	30.4%	34.7%	35.0%	21.6%
Total Assets	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Accounts Payable	27.7%	24.8%	24.4%	22.3%	21.5%	24.2%	24.4%	13.0%
Total Current Liabilities	65.0%	61.4%	60.0%	52.0%	47.3%	57.1%	60.0%	29.3%
Total Long Term Liabilities	7.1%	7.3%	7.3%	8.6%	8.0%	7.7%	7.3%	21.8%
Net Worth	28.0%	31.3%	32.8%	39.4%	44.6%	35.2%	32.8%	49.0%
<b>Additional Calculations:</b>								
CAPEX / Assets	-5.5%	11.7%	12.2%	-2.7%	4.4%	4.0%	4.4%	7.1% >calc
Conventional WC / Assets	-8.0%	-7.0%	-7.0%	3.3%	10.5%	-1.6%	-7.0%	32.5% >calc
Net Operating WC / Assets	29.2%	29.6%	28.5%	33.1%	36.3%	31.3%	29.6%	45.5% >est
Interest-bearing Debt / Assets	43.4%	42.8%	41.5%	36.8%	32.5%	39.4%	41.5%	38.1% >est
Invested Capital / Assets	71.4%	74.0%	74.2%	76.1%	77.1%	74.6%	74.2%	87.1% >est
~na~ = not available								
~nm~ = not meaningful								
>calc = calculated from provided data								
>est = estimated from provided data								
<b>Notes</b>								
1. Revenues for 2012 represent a full year.								
2. Averages include only the full fiscal years of 2008 through 2012.								
3. Other working capital items include all current asset less current liability accounts with the exception of trade receivables, inventory, and trade payables.								

Auto Parts Superior (APS) - INDIA								
Historical Financial Performance Ratios For the fiscal year ended December 31								
	<u>Ratios &amp; Percentages Based Upon Nominal Amounts In</u>					<u>5-Year Historical</u>		<u>MicroBilt Data</u>
	<u>Millions of US Dollars (USD)</u>					<u>FY2008-FY2012</u>		<u>NAICS 3363</u>
	2008	2009	2010	2011	2012	Average	Median	469 Companies
<b>Size</b>								
Revenue - USD millions	48.662	48.028	56.012	61.652	60.214	54.914	56.012	Avg Med+Lg Size Over \$5M
Total Assets - USD millions	33.430	38.181	45.212	40.088	40.837	39.550	40.088	~na~ ~na~
<b>Growth</b>								
				5-yr CAGR =	<u>5.9%</u>			
Revenue Growth	7.5%	-1.3%	16.6%	10.1%	-2.3%	6.1%	7.5%	10.0%
Asset Growth	-13.1%	14.2%	18.4%	-11.3%	1.9%	2.0%	1.9%	~na~
				5-yr CAGR =	<u>1.2%</u>			
<b>Liquidity &amp; Debt Coverage</b>								
Current ratio	x0.88	x0.89	x0.88	x1.06	x1.22	x0.99	x0.89	x2.11
EBIT / Interest Coverage	x4.05	x4.49	x3.36	x3.50	x3.83	x3.85	x3.83	x2.24
<b>Profitability - Invested Capital</b>								
Gross profit margin	32.0%	31.5%	32.5%	32.7%	32.9%	32.3%	32.5%	25.8%
EBITDA margin	8.4%	10.8%	12.0%	12.4%	13.8%	11.5%	12.0%	5.8%
EBIT margin	6.7%	7.7%	8.5%	8.6%	9.6%	8.2%	8.5%	2.2%
NOPAT margin	6.7%	5.6%	6.0%	8.6%	6.9%	6.7%	6.7%	1.4%
<b>Profitability - Equity</b>								
Operating margin (EBIT)	6.7%	7.7%	8.5%	8.6%	9.6%	8.2%	8.5%	2.2%
Pre-tax margin (EBT)	5.1%	6.0%	6.0%	6.1%	7.1%	6.1%	6.0%	1.4%
Net Income After Tax (NIAT)	5.1%	4.3%	4.2%	6.1%	5.1%	5.0%	5.1%	0.9%
<b>Turnover (Asset Management)</b>								
Sales / Receivable turnover	x6.22	x5.50	x5.63	x6.54	x6.06	x5.99	x6.06	x7.02 >calc
COS / Inventory turnover	x3.06	x2.84	x2.82	x3.39	x3.08	x3.04	x3.06	x3.80 >calc
COS / Payable turnover	x3.57	x3.47	x3.42	x4.63	x4.60	x3.94	x3.57	x9.28 >calc
Conventional WC turnover	-x18.18	-x17.98	-x17.63	x46.07	x14.05	x1.27	-x17.63	x4.90
Net Operating WC <sub>IC</sub> turnover	x4.98	x4.25	x4.35	x4.65	x4.06	x4.46	x4.35	x3.49
Sales/Net fixed assets	x4.21	x3.60	x3.24	x4.36	x4.86	x4.05	x4.21	x7.34 >calc
Accum Depr / Gross Fixed Assets	48.3%	48.9%	46.9%	51.4%	57.7%	50.7%	48.9%	~na~
Average age of assets (years)	13.7	8.8	7.8	6.3	6.7	8.7	7.8	~na~
CAPEX / Sales	-3.8%	9.3%	9.8%	-1.7%	3.0%	3.3%	3.0%	4.5%
<b>Total asset turnover</b>	<b>x1.46</b>	<b>x1.26</b>	<b>x1.24</b>	<b>x1.54</b>	<b>x1.47</b>	<b>x1.39</b>	<b>x1.46</b>	<b>x1.58</b>
<b>Leverage &amp; Solvency</b>								
Net Fixed Assets / Invest Cap	x0.48	x0.47	x0.52	x0.46	x0.39	x0.47	x0.47	x0.25 >est
Interest bearing debt / Invest Cap	60.8%	57.8%	55.9%	48.3%	42.1%	53.0%	55.9%	43.7% >est
Equity / Invested Capital	39.2%	42.2%	44.1%	51.7%	57.9%	47.0%	44.1%	56.3% >est
<b>Assets / Invested Capital</b>	<b>x1.40</b>	<b>x1.35</b>	<b>x1.35</b>	<b>x1.31</b>	<b>x1.30</b>	<b>x1.34</b>	<b>x1.35</b>	<b>x1.15</b> >est
<b>Assets/ Equity</b>	<b>x3.58</b>	<b>x3.20</b>	<b>x3.05</b>	<b>x2.54</b>	<b>x2.24</b>	<b>x2.92</b>	<b>x3.05</b>	<b>x2.04</b>
<b>Return on Assets (ROA)</b>								
EBIT / Assets	9.8%	9.7%	10.6%	13.2%	14.1%	11.5%	10.6%	3.4% >calc
EBT / Assets	7.4%	7.6%	7.4%	9.4%	10.4%	8.4%	7.6%	2.2%
<b>Return on Invested Capital (ROIC)</b>								
NOPAT / Sales	6.7%	5.6%	6.0%	8.6%	6.9%	6.7%	6.7%	1.4% >calc
x Sales / Assets	x1.46	x1.26	x1.24	x1.54	x1.47	x1.39	x1.46	x1.58
x Assets / Invested Capital	x1.40	x1.35	x1.35	x1.31	x1.30	x1.34	x1.35	x1.15 >est
<b>NOPAT / Invested Capital</b>	<b>13.8%</b>	<b>9.5%</b>	<b>10.0%</b>	<b>17.3%</b>	<b>13.1%</b>	<b>12.7%</b>	<b>13.1%</b>	<b>2.5%</b> >calc
<b>Return on Equity (ROE)</b>								
NI / Sales	5.1%	4.3%	4.2%	6.1%	5.1%	5.0%	5.1%	0.9%
x Sales / Assets	x1.46	x1.26	x1.24	x1.54	x1.47	x1.39	x1.46	x1.58
x Assets / Equity	x3.58	x3.20	x3.05	x2.54	x2.24	x2.92	x3.05	x2.04 >calc
<b>NI / Equity</b>	<b>26.5%</b>	<b>17.4%</b>	<b>15.9%</b>	<b>23.9%</b>	<b>16.8%</b>	<b>20.1%</b>	<b>17.4%</b>	<b>2.7%</b> >calc
<i>EBT / Equity</i>	<i>26.5%</i>	<i>17.4%</i>	<i>15.9%</i>	<i>23.9%</i>	<i>16.8%</i>	<i>20.1%</i>	<i>17.4%</i>	<i>4.5%</i>



# Chapter 4. Valuation Theory And Methods

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## Section A. Key Valuation Principles

1. Value is determined at a specific point in time – it is a function only of facts *known and knowable as of the valuation date*, including reasonable forecasts available at that particular point in time.
  - A. In a notional valuation context, hindsight evidence is generally inadmissible, but it is sometimes allowable to corroborate or assess assumptions formed earlier.
2. Value is prospective – it is equivalent to the present value of all future benefits anticipated to accrue from ownership of the investment assets.
3. Value is market based – the capital market participants “price” the investment asset relative to its perceived investment risk.
4. Value is influenced by the liquidity of the investment asset – when other factors are equal, the greater the number of prospective buyers, the greater the value of the investment asset.
5. The value of a non-controlling minority interest in a business may be less than the value of a controlling interest where each is viewed on a “pro rata” basis.
6. Fundamental Equation of Value – shows the relationship between value, risk and growth.

$$\text{Present Value} = \frac{\text{Cash Flow-yr1}}{(k - g)} \quad \text{"Gordon Dividend Discount" model}$$

$$\frac{\text{Present Value}}{\text{Cash Flow-yr1}} = \frac{1}{(k - g)} \quad \text{"PE" ratio equals 1 / market capitalization rate}$$

Cash Flow-yr1 = "Normalized" cash flow projected for the next year

" k " = Market derived risk adjusted discount rate ("cost of capital")

" g " = Long-term growth rate in cash flow (present value weighted)

" k - g " = Market based capitalization rate (single period model)

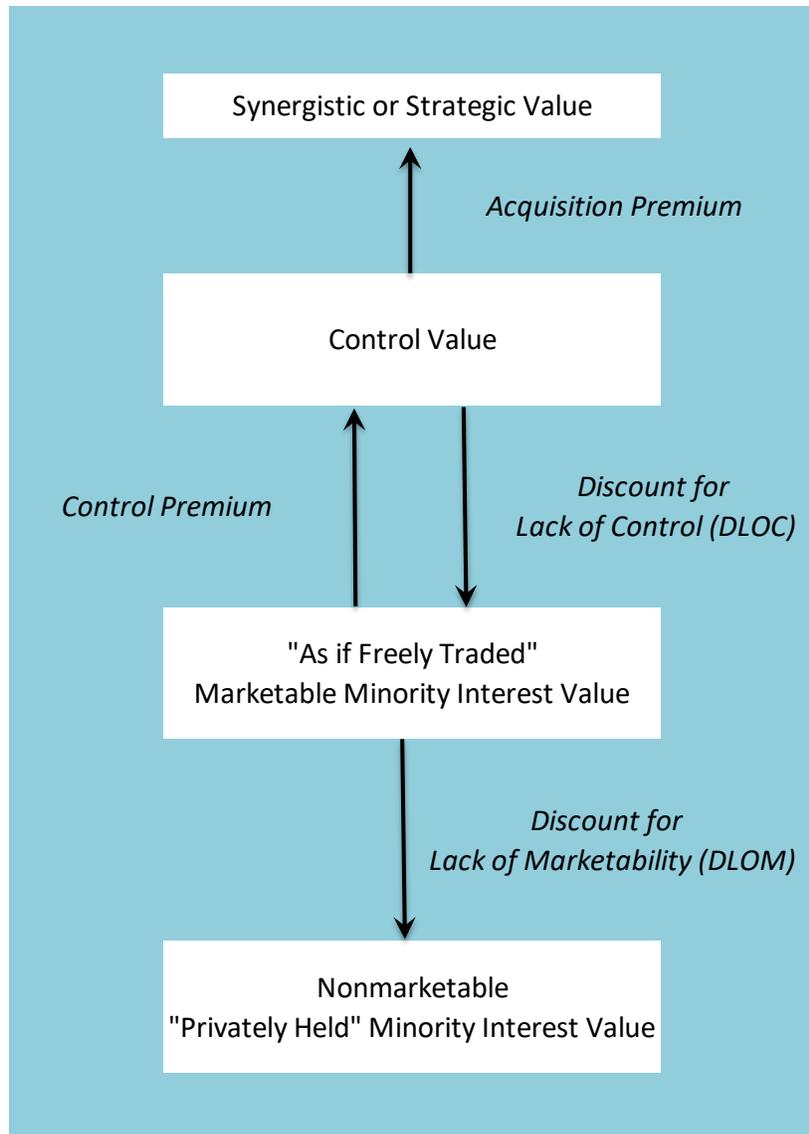
- A. The reciprocal of the capitalization rate is the market capitalization multiple. Both the income and market approaches are based upon this relationship. The income approach specifically forecasts future financial performance and then prices that future earnings stream by “discounting to present value,” while the market approach applies a risk and growth adjusted “market capitalization rate” to price normalized earnings (single period model).

## Section B. Premise of Value

1. Going Concern Premise – assumes that the business will continue to operate in the indefinite future and therefore the valuation analyst looks first to the ability of the enterprise's basket of assets to generate returns to capital. The majority of business valuation assignments use a going-concern premise.
2. Liquidation Premise – assumes that a company will not continue to operate in the short to medium-term future. The owner is better off selling the assets than to continue generating cash flow that does not support the asset investment (i.e., “better off dead than alive”).
  - A. The valuer may consider a liquidation premise of value if the value that is derived from other approaches is at or below the value of the net assets of the business. The assets are sold piecemeal, not as part of a going concern. That is, the value of each asset is not equivalent to its cash flow generating ability in the existing company.
  - B. A liquidation premise may take one of two forms, *orderly liquidation* or *forced liquidation*.
    - (1) Under an orderly liquidation premise, the owner has enough time to sell the assets in an orderly fashion and earn the highest price possible in the market.
    - (2) Under a forced liquidation, due to the circumstances of the seller, the assets must be sold with some expediency, probably to satisfy imminent debt obligations. Therefore the seller has limited options and time, a fact which becomes known to the market. Hence, buyers use the seller's limitations against him in negotiation. The seller may be limited to an auction scenario.
    - (3) Both the orderly and forced liquidation premise may require the services of a real estate appraiser and/or a machinery and equipment appraiser.

## Section C. Levels of Value

1. Levels of Value – refers essentially to whether or not the securities being valued have control ownership rights. It also takes into account at the control level whether or not there exists a synergistic or strategic premium, and on a minority basis whether or not a “discount for lack of marketability” must be applied to a privately owned minority interest.



- A. Synergistic or strategic value – Value to a particular buyer who has the ability to create additional benefits of ownership not available to a financial buyer through synergies unique to that buyer
  - B. Control value – the interest has control of operations and the ability to market and sell the business at any time.
  - C. Minority, marketable value – the interest has little or no power, but high liquidity.
  - D. Minority, nonmarketable – the interest has little or no power and limited liquidity due to the absence of a free and open market.
2. Valuation method affects level of value – it is important to recognize the level of value resulting from each valuation method before applying any discounts or premiums.

Valuation Approach/Method	Assumptions	Resulting Level of Value
Income Approach	Control cash flows Minority cash flows	Control (synergies could indicate investment value) Minority, marketable
Merger & acquisition	Control transacted	Control (synergies could indicate investment value)
Guideline public company	Control cash flows Minority cash flows	Control (synergies could indicate investment value) Minority, marketable
Net asset method Excess earnings method	Control over assets Control over assets	Control Control

- A. Income approach – the level of value yielded by income approach methods is considered to depend on the character of the income stream discounted or capitalized.
- (1) If adjustments have been made to reflect the cash flow that only a controlling shareholder can access, then the value derived is control.
  - (2) If the cash flow is only what is actually available to a minority shareholder, then the value derived is minority.
- B. Market approach – the level of value yielded by market approach methods is considered to depend on both the character of the income stream discounted or capitalized and whether the Merger and Acquisition or Guideline Public Company methods were used.
- (1) If the Merger and Acquisition method is used, the market data primarily constitutes “control transactions” and therefore the analyst should make control adjustments to the earnings before capitalizing them.
  - (2) If the Guideline Public Company method is used, then the level of value yielded is considered to depend on the control or minority character of the income stream capitalized.
- C. Asset approach – the asset approach will always result in a control value. When using the traditional Excess Earnings method, the analyst should make control adjustments to the earnings before capitalizing the excess earnings.
- D. Relationship between control premium and discount for lack of control:

$$\text{DLOC} = \frac{\text{CP}}{(1+\text{CP})}$$

- (1) Where DLOC = Discount for lack of control
- (2) CP = Control premium
- E. The DLOC and DLOM should be applied sequentially; they are not additive. Below we present an example of such a calculation:

Control Value =	\$100
- DLOC ( @30%x\$100 )	-30
= Minority Marketable	70
- DLOM ( @20%X\$70 )	-14
= Non-marketable minority	<u>\$56</u>
= Combined Discount	<u>-44%</u>

### Section D. The Asset Approach to Value

1. Asset approach – The asset approach considers the market value of the company’s assets less the market value of its liabilities, which equals net equity. It is also known as the net asset value method or the adjusted balance sheet method.
  - A. This approach is essentially a balance sheet analysis, usually involving separate valuations of each item on the balance sheet, adjusting them all to their “market values.” However the market values of the assets/liabilities are dependent upon the premise of value – going concern or liquidation (orderly or forced).
  - B. Without modification, the asset approach will not capture the cash-flow generating ability of a business, nor does it provide a basis for determining the value of the majority of the enterprise’s intangible assets (the “excess earnings method” is such a modification that purports to value going concern intangible values).
    - (1) The asset approach is most appropriate for:
      - (a) Holding companies
      - (b) Finance companies and other asset-intensive enterprises
      - (c) Industries where ownership of tangible assets is a key determinant of success

- (d) Marginally profitable companies
- (e) Valuing controlling interests because control shareholders control the underlying disposition of the assets
- (f) Very early stage companies
- (2) Less appropriate for:
  - (a) Profitable operating companies with significant intangible value
  - (b) Valuing minority interests because minority shareholders do not control the underlying assets

## Section E. The Market Approach to Value

1. The Market Approach – is based on the concept that the value of an asset can be derived by observing the values of similar assets that have been sold in the market. The market approach is discussed in IFRS 13 as follows:

*“The market approach uses prices and other relevant information generated by market transactions involving identical or comparable (i.e. similar) assets, liabilities, or a group of assets and liabilities such as a business.”*

- A. This is known as the *Principle of Substitution*, which states that a prudent investor will pay no more for an asset than it would cost to acquire a similar asset with the same utility.
  - B. For closely-held businesses, there are two sources of data for the sale of similar assets:
    - (1) the per-share trading prices of publicly-held companies on public exchanges; and
    - (2) the transaction prices of public and private companies which are available through company acquisition data providers.
  - C. These two sources define the two methodologies under the market approach, the Guideline Public Company Method and the Guideline Transaction Method.
2. The Guideline Public Company Method (also referred to as the “Comparable Public Company Method”) – as defined in the International Glossary of Business Valuation Terms:

**“Guideline Public Company Method** – A method within the market approach whereby market multiples are derived from prices of stocks of companies that are engaged in the same or similar lines of business and that are actively traded on a free and open market.”

- A. Required elements and basic methodology to use the guideline public company method:
- (1) A reliable and applicable public stock exchange(s) is identified
  - (2) A selection of publicly-held companies that are similar to the closely-held subject and that are driven by similar economic forces
  - (3) Active trading prices and historical financial data for each comparable company
  - (4) Financial data for each comparable is analysed, and relevant market multiples are developed.
  - (5) A comparative financial analysis is conducted between the subject and each comparable company to determine which subset of comparables is most relevant.
  - (6) Depending on the analysis, adjustments may be made to the multiples prior to applying them to the Subject Company's operating metrics to derive value.
- B. Advantages and Disadvantages of the Guideline Public Company Method:
- (1) Advantages:
    - (a) The information is objective, current market based and usually plentiful
    - (b) The method is easy for users to understand and apply
  - (2) Disadvantages:
    - (a) It may be difficult to find publicly-held companies that are sufficiently similar to closely-held companies, especially if the Subject Company is small
    - (b) Some regions of the world do not have actively-trading public stock markets with a robust source of publicly trading companies
    - (c) The method can be easily manipulated by omitting comparables that do not support a desired result given hidden assumptions regarding risk and growth
    - (d) The method may be expensive as extensive research and analysis is required

3. The Guideline Transaction Method (also called the Precedent Transactions Method, or the Merger and Acquisition Method) – as defined in the International Glossary:

**Guideline Transaction Method** – “A method within the market approach whereby pricing multiples are derived from transactions of significant interests in companies engaged in the same or similar lines of business.”

- A. Transactions are one of four types:
- (1) Public company buying public
  - (2) Public company buying private
  - (3) Private company buying public
  - (4) Private company buying private
- B. Transaction data is available from either:
- (1) Companies that compile transaction data and make it available usually by subscriptions online
- C. Required elements and basic methodology to use the comparable transaction method are similar to the guideline public company method:
- (1) A reliable and applicable source of company transaction data is identified
  - (2) A selection of recently sold companies that are similar to the closely-held subject and that are driven by similar economic forces
  - (3) Control prices and historical financial data for each comparable company
  - (4) Financial data for each comparable is analyzed, and relevant market multiples are developed.
  - (5) A comparative financial analysis is conducted between the subject and each comparable company to determine which subset of comparables is most relevant.
  - (6) Depending on the analysis, adjustments may be made to the multiples prior to applying them to the Subject Company’s operating metrics.
- D. Advantages and Disadvantages of the Guideline Transaction Method:
- (1) Advantages:
    - (a) The information is objective
    - (b) The method is easy for users to understand.

- (2) Disadvantages:
  - (a) It may be difficult to find transactions that are sufficiently similar and sufficiently recent to be reasonably comparable to the Subject Company.
  - (b) It may also be difficult to obtain sufficient financial data to appropriate price the transaction and provide a basis for comparison to the Subject Company.
  - (c) Private companies are not required to make the details of their transactions public, hence, perhaps the most relevant transactions for a Subject Company cannot always be analysed
  - (d) Errors or omission of date, or insufficient data, may undermine its validity.
  - (e) The method can be easily manipulated by omitting comparables that do not support a desired result.
  - (f) The method may be expensive as extensive research and analysis is required

4. Prior transactions of the Subject Company's stock

- A. A prior arm's-length transaction of the Subject Company's stock could provide an indication of value.
  - (1) The transaction should be timely. If significant time has passed between the transaction and the valuation date, the transaction multiple may not be relevant.
  - (2) The transaction should be arm's length. Many transactions are completed according to a contractually set formula or some ulterior motive which may not represent fair market value.

5. Rules of Thumb – as defined in the International Glossary:

***“Rules of Thumb*** – A mathematical formula developed from the relationship between price and certain variables based on experience, observation, hearsay or a combination of these; usually industry-specific.”

- A. Market participants often develop multiples of operating metrics based on general market or general industry transaction activity over time. These rules are commonly used by business brokers and other intermediaries for a preliminary estimate of transaction value of saleable business segments (such as fixed assets and goodwill) that are going to be sold.

- B. Rules of thumb are often industry-specific and represent means, medians or “most common” conditions. According to ASA’s business valuation standard BVS-V:

*“Rules of thumb may provide insight on the value of a business, business ownership interest, or security. However, value indications derived from use of rules of thumb should not be given substantial weight unless supported by other valuation methods and it can be established that knowledgeable buyers and sellers place substantial reliance on them.”*

- C. Typical Rules of Thumb Multiples

- (1) Multiple of sales (gross income)
- (2) Multiples of cash flow, usually referred to as seller’s discretionary cash flow (SDCF) or owner’s cash flow (OCF) or seller’s discretionary earnings (SDE) – SDCF is usually calculated as operating income before interest, depreciation and other noncash charges, one owner’s salary and perquisites, and excluding any non-operational and non-recurring expenses
- (3) Multiple of some level of assets.

- D. Advantages and Disadvantages of Rules of Thumb:

- (1) Advantages:
  - (a) The information is widely recognized within particular industries
  - (b) The method is easy for users to understand
- (2) Disadvantages:
  - (a) Based on averages – not every Subject Company is average
  - (b) No access to the companies that were transacted
  - (c) No access to the terms of the transactions

6. Other Market Approach Methods:

- A. *Buy-sell or Shareholder Agreement* – legal agreement between owners which stipulates the price, and terms under which an owner can sell his ownership interest. It is considered part of the market approach since, for the agreement to be applicable it must be based on arm’s-length negotiated terms

- (1) Must have been negotiated at “arm’s-length” and must apply to voluntary withdrawal of the owner as well as the usual death, disability or termination (“DDT”).
  - (2) The price must be fixed and unambiguous within the agreement
  - (3) The agreement must be binding. If remaining shareholders can reject the price, then it is not relevant.
  - (4) The price must be based on an arm’s-length, informed, economic formula that reflects current conditions. If the formula is not updated or is based on book value, then it is usually less reliable
- B. *Bona Fide Offers to Buy* – bona fide offer is viewed as a good faith, authentic, genuine offer from a qualified buyer who has the intention and capacity of consummating the offer at the level proposed.
- (1) May or may not provide an arm’s-length basis
  - (2) Must be timely and relatively recent
  - (3) Most offers from outside buyers reflect whole company (control) situations and often reflect investment (or strategic) value considerations, such as synergies and potential economies of scale
  - (4) Offers for privately held companies are often not consummated terms are often variable, and may incorporate employment agreements and agreements not to compete
- C. *Prior Acquisitions Made by the Company* – Subject companies often make acquisitions of similar companies during periods of expansion. The terms and multiples provide an indication of value reflecting the Subject Company’s owner/management view of similar property value, but may not be conclusive evidence of current value of the Subject Company as a whole.
- (1) Economies of scale and synergies are often the result of acquisitions
  - (2) Must have been relatively recent in time since prior acquisitions reflect different economic and industry circumstances
  - (3) Incorporation of the new divisions or operations may require time to absorb

## Section F. The Income Approach to Value

1. The Income Approach – is based on the concept that the value of an asset can be derived by converting an anticipated benefit stream into present value. The income approach is discussed in IFRS 13 as follows:

*“Valuation techniques that convert future amounts (e.g., cash flows or income and expenses) to a single current (i.e., discounted) amount. The fair value measurement is determined on the basis of the value indicated by current market expectations about those future amounts.”*

- A. Under the income approach, the valuer forecasts some measure of economic benefit into the future and calculates the present value of that stream of benefits by discounting it at a rate which reflects its risk profile in comparison to similar risky investments available in the capital markets (i.e., the *Principal of Substitution* in regards to future expectations).
- B. There are two basic methodologies under the income approach, (1) the capitalization of earnings method (single period model), and (2) the discounted future earnings method (the multi-period model).

- C. Capitalization of Earnings Method – defined in the International Glossary as

**“Capitalization of Earnings Method** – A method within the income approach whereby economic benefits for a representative single period are converted to value through division by a capitalization rate.”

- (1) The capitalization of earnings method is used when the company or security being valued is expected to generate “stable” cash flows that grow at a reasonably stable rate into the future.
- (2) The capitalization of earnings method or single period model is essentially the Fundamental Value Equation as follows:

$$\text{Present Value} = \frac{\text{Cash Flow-yr1}}{(k - g)} \quad \text{"Gordon Dividend Discount" model}$$

Cash Flow-yr1 = "Normalized" cash flow projected for the next year

" k " = Market derived risk adjusted discount rate ("cost of capital")

" g " = Long-term growth rate in cash flow (present value weighted)

" k - g " = Market based capitalization rate (single period model)

- (3) In the capitalization of earnings value equation, the economic benefit is the numerator and the capitalization rate is in the denominator.

- (4) The capitalization rate is the difference between the market derived risk adjusted discount rate (k) and the long-term present value weighted growth rate (g).
- (5) Therefore both of the two fundamental value drivers, **risk** and **growth**, are accounted for in the denominator.
- (6) The reciprocal of the capitalization rate is the “**market capitalization multiple**” which is the primary market factor used under the market approach.
- (7) Advantages of the capitalization of earnings method are:
  - (a) Like the application of market multiples under the market approach, the capitalization of earnings method is simple and easy to understand
  - (b) Unlike the market capitalization method, the valuer makes a separate assessment of the two basic value drivers **growth** (“g”) and **risk** (“k”).
- (8) Disadvantage of the capitalization of earnings method is
  - (a) While simple and easy to understand, the method lacks transparency regarding the valuer’s basis of the key valuation assumptions, especially regarding expected future growth

D. Discounted Future Earnings Method – defined in the International Glossary as

**“Discounted Future Earnings Method** – A method within the income approach whereby the present value of future expected economic benefits is calculated using a discount rate.”

- (1) This method explicitly takes future varying earnings or cash flows into account. If sales and cash flows are expected to vary during a discrete period, those cash flows are specifically forecast for each year until operations are expected to stabilize. After stabilization, a “terminal value” is assessed usually using the single period model (but the analyst can also use other methods such as using an estimated market capitalization rate or using a liquidation value).
- (2) The basic formula for the discounted future earnings method is below:

$$\text{Present Value} = \frac{\text{CF-yr1}}{(1+k)^1} + \frac{\text{CF-yr2}}{(1+k)^2} + \frac{\text{CF-yr3}}{(1+k)^3} + \dots + \frac{\text{CF-yrN}}{(1+k)^N} + \frac{\left( \frac{\text{CF-yrN+1}}{(k-g)} \right)}{(1+k)^N}$$

- (3) *Mid-year convention* – the formula above mathematically assumes the enterprise's cash flow is entirely realized at the end of each year. The mid-year convention simply subtracts one-half year (-0.5 year) from every exponent, thereby moving the realization of cash flow to the middle of each period. The relationship between end-of-year discounting and mid-year discounting is:

$$\text{PV mid-year} = \sqrt{1+k} \times \text{PV end-of-year} = (1+k)^{-0.5} \times \text{PV end-of-year}$$

- (4) Advantages of the discounted future earnings method:
- (a) The discounted future earnings method requires an explicit analysis of both growth and risk.
  - (b) Users of the valuation can evaluate the analysis by identifying specific elements of the forecast that are overstated or understated.
  - (c) The approach captures the earnings generating ability of the company and therefore encompasses all of the tangible and intangible assets of the subject.
  - (d) The method is flexible, can consider multiple scenarios
  - (e) It can be used as an analytical tool through "sensitivity analysis" by identifying the value drivers that most affect value
- (5) Disadvantage of the discounted future earnings method:
- (a) Since the quantification of growth and risk require the valuer's judgment, users may suspect the results are disconnected from reality and dismiss the valuation as a subjective opinion
  - (b) The method also is complex and can allow the valuer's bias to be hidden the complexity of the model



# Chapter 5. Guideline Public Company Method

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This chapter applies to valuation of a control interest on an invested capital basis. Valuation of a minority interest or an equity basis would require modifications to the method.

## Section A. Introduction

1. Valuer uses share price multiples of comparable publicly traded (i.e., listed) companies in conjunction with fundamental balance sheet or income statement variables (such as invested capital earnings, cash flow, book value, etc.) to create a *market capitalization multiple*, which is applied to the Subject Company's corresponding financial performance metric after adjusting for differences in risk and growth to arrive at a value.

A. Occasionally, and depending upon the industry and size of the company, one can utilize market capitalization multiples based upon other enterprise performance metrics such as managed capacity, employees, physical units sold, etc. (this is most often encountered under "rules of thumb" pricing). The International Glossary of Business Valuation Terms defines a "market multiple" as follows:

*"Market Multiple – The market value of a company's stock or invested capital divided by a company measure (such as economic benefits, number of customers)."*

B. Therefore, a *market capitalization multiple* is a ratio that uses a comparable company's market value of equity or the market value of its invested capital (MIVIC or enterprise value EV) as the numerator and as the denominator one of the company's performance metrics such as net sales, operating profit, EBIT, net income, gross cash flow, financial position and the like. The International Glossary of Business Valuation Terms further defines a "market capitalization of equity" and "market capitalization of invested capital" as follows:

*"Market Capitalization of Equity (MVE) – The share price of a publicly traded stock multiplied by the number of shares outstanding."*

*"Market Capitalization of Invested Capital (MVIC) – The market capitalization of equity plus the market value of the debt component of invested capital."*

C. The market value of invested capital may be defined differently:

- (1) common + preferred equity + long-term debt + current portion of long-term debt
- (2) common + preferred equity + all interest-bearing debt (where you can't separate interest on LT and ST debt)

- (3) common + preferred equity + all interest-bearing debt less cash and cash equivalents – so the computation is more comparable among companies with differing cash positions (often called market value of enterprise value)
2. Comparability – for the market approach to be properly applied, the Subject Company must be “similar” to the companies that it will be compared to using qualitative and quantitative factor analysis.

### **Section B. Steps in the Guideline Public Company Method**

1. Identify Guideline Publicly-traded Companies (GPCs) that are similar to the Subject Company.
2. Normalize GPC financial statements.
3. Select and calculate the appropriate GPC market capitalization multiples.
4. Perform qualitative and quantitative comparison of GPCs to the Subject Company.
5. Select the GPC multiples to fit the Subject Company for differences in risk and growth.
6. Apply the adjusted multiples to the Subject Company and reconcile the values.
7. Consider the necessity of applying appropriate premiums or discounts.

### **Section C. Key Advantages and Disadvantages of the GPC Method**

1. Key Advantages:
  - A. Objective and empirical
  - B. Data is relatively easy to obtain
  - C. Data is easy to understand and apply
  - D. Data typically includes all assets (tangible and intangible)
  - E. Does not usually rely on subjective forecasts
  - F. Incorporates current market conditions – reflecting investor growth and risk expectations
2. Key Disadvantages:
  - A. It may be difficult to identify valid comparable publicly-held companies that are sufficiently similar to the Subject Company.

- B. Guideline publicly traded companies that are infrequently traded or are traded in erratic markets may provide a poor indication of value.
- C. Some countries do not have active capital markets.
- D. This method is can be manipulated by unknown or hidden assumptions regarding risk or growth.

### Section D. Step 1 – Identify GPCs Similar to Subject Company

1. Search available **actively traded** publicly traded company data sources for guideline companies within the Subject Company’s jurisdiction (e.g., Chinese subject companies should be compared with other Chinese based comparable publicly traded companies). There are various enterprise industry indices such as:
  - (1) NAICS/SIC (US North American Industrial Classification System),
  - (2) UKSIC (UK Standard Industrial Classification),
  - (3) NACE (EU Nomenclature Statistique des Activités Economiques),
  - (4) ISIC (UN International Standard Industrial Classification), etc.:
  - A. Primary comparable factors (“I S G L P T L R“):
    - (1) **I**ndustry
    - (2) **S**ize (sales, total assets, market capitalization)
    - (3) **G**rowth of sales and earnings, both historical and expected
    - (4) **L**iquidity of the Subject Company (short-term financial risk)
    - (5) **P**rofitability (profit margins)
    - (6) **T**urnover of assets (asset utilization efficiency)
    - (7) **L**everage of financial capital and long-term financial risk (debt/equity)
    - (8) **R**eturn on investments (ROE, ROIC, DuPont analysis, etc.)
  - B. Suggested secondary comparable factors:
    - (1) Share price history
    - (2) Quality of management

- (3) Length of time in operation
  - (4) Stability of past earnings and dividend rates and records
  - (5) Competitive position (market penetration, geographic dispersion)
  - (6) General types of goods or services produced
  - (7) Number and type of different business segments
  - (8) Labor versus capital employed and amount of investment in plant and equipment
  - (9) Level of technology employed, and the skill requirements of the workforce
- C. CICBV advanced business & securities valuation course breaks the considerations into qualitative and quantitative. For consideration, the factors that they indicate are:
- (1) Qualitative (Considerations and/or Adjustments)
    - (a) Industry;
    - (b) Management experience, depth, commitment, etc.;
    - (c) Accounting and risk management practices;
    - (d) Growth prospects (analysis of growth prospects must be based on historical growth, as well as on the industry's and the company's growth
    - (e) prospects);
    - (f) Size (differences in size do not automatically mean incomparability). Also, also large companies can be less efficient than smaller ones;
    - (g) Geographical benefits, constraints, degree of diversification, prospects;
    - (h) Technological advancement;
    - (i) Nature, type, uniqueness, and diversification of products and services;
    - (j) Customer loyalty;
    - (k) Market share;
    - (l) Ability to protect intellectual property;

- (m) Maturity of the business and/or relative stage of development;
  - (n) Nature of type of customers and suppliers;
  - (o) Relationships with lenders;
  - (p) Political environment;
  - (q) Regulatory compliance;
  - (r) Degree of control;
  - (s) Degree of marketability and liquidity;
  - (t) Timing differences between the market information and the valuation date;
  - (u) Dividend-paying ability; and
  - (v) Strategic risk.
- (2) Quantitative (Considerations and/or Adjustments)
- (a) Non-recurring items;
  - (b) Accounting policies and differences (i.e., different asset capitalization policies);
  - (c) Growth trends in revenue and profits;
  - (d) Gross margins;
  - (e) Profitability (e.g., EBIT, EBITDA, free cash flow, net earnings, etc.);
  - (f) Price differences;
  - (g) Quantity discount and other efficiencies;
  - (h) Tangible asset backing;
  - (i) Return on tangible capital employed;
  - (j) Relative size of capital;
  - (k) Capital structure (e.g., debt versus equity);
  - (l) Financial risk, as estimated by the level of debt included in the capital structure;
  - (m) Operational risk;

- (n) Liquidity of the company (e.g., quick and current ratios);
  - (o) Dividend-paying ability (e.g., free cash flow from operations, less cash flow needed or financing and investment activities); and
  - (p) Off-balance sheet assets and liabilities.
2. The comparable company selection process is iterative, beginning with a large list based upon a few of the primary selection factors, then narrowing the list as the analyst gathers more data and expands the level of detail and comparable factor analysis.

**QUESTION: How many guideline companies should be selected (i.e., how would 2 to 3 guideline companies compare with say 10 – 15 companies)? What would the consequence be of using fewer guideline companies?**

3. Whatever comparable public companies are selected, they must be **actively traded** so that their price reflects a broad consensus opinion of market value. If the search results in only a large number of companies that are thinly traded, it may be better than having no guideline companies at all.

**QUESTION: How does one assess whether a share is actively traded? One must analyse the trading volumes of guideline companies and review their average daily volumes per public float and shares outstanding.**

### Section E. Step 2 – Normalize GPC Financial Statements

1. As with the Subject Company, the historical financial performance statements of the comparable public companies may need to be adjusted in order to make them more “economic” and predictive of future financial performance. The following types of “normalization” adjustments may be required:
- A. *Translation of the accounting system* – put guideline companies and the Subject Company on the same basis by restating certain line items to correspond in accounting methodology with that which will enable a reasonable comparison (e.g., LIFO to FIFO depreciation method, US to EU accounting, change small Subject Company accounting from cash to accrual, etc.).
  - B. *Elimination of unusual and non-recurring items* – identify such items, understand why they happened, and eliminate them from historical statements in order to make the past more predictive of the future (e.g., discontinued operations, factory fire, etc.).

- C. *Removal of “non-operating” elements (rare for publicly traded companies)* – identify and eliminate non-operating assets/liabilities and corresponding income statement effects.
- D. *Elimination of discretionary “non-essential” revenues and expenses (rare for publicly traded companies)* – isolate such items as excess management compensation, related party transactions not at market value (can be more or less than FMV), etc. and remove them.

### **Section F. Step 3 – Select and Calculate the Market Capitalization Multiples:**

1. A market capitalization multiple is a ratio that uses a comparable company’s market value of equity or its enterprise value (MVIC) as the numerator and as the denominator one of the company’s performance metrics such as net sales, operating profit, EBIT, net income, gross cash flow, financial position and the like.
2. Select the appropriate market capitalization multiples to use for the Subject Company. Factors that affect this selection:
  - A. The analyst must decide whether to perform an equity valuation, an invested capital valuation or both:
    - (1) The choice affects the selection of the numerator “price”,
      - (a) “Market Value of Equity” (MVE), or
      - (b) “Market Value of Invested Capital (MVIC) also termed “Enterprise Value.”
    - (2) The choice also affects the selection of the denominator “performance metric” (see table below),
      - (a) Equity metrics such as EBT, NIAT, GCFe, Bve, etc.
      - (b) Invested Capital metrics such as EBIT, EBITDA, NOPAT, GCfic, BVic, etc.
    - (3) Equity multiples are more appropriate when the subject and guideline companies have similar capital structures.
    - (4) Enterprise value multiples are more appropriate when there is dissimilarity in capital structure between the subject and guideline companies.
    - (5) When an enterprise value method is used, the appraiser will arrive at a final conclusion of equity value by subtracting the debt portion of the invested capital.

- (6) A sample of commonly-used equity and enterprise value multiples and their most appropriate uses are reflected in the tables below.

Equity Variables	Invested Capital Variables	Description of Market Multiple Variables
<u>Multiple Numerators</u>		
MVE		= Market Value of equity (Price/share X Number of Shares)
	MVIC	= Market Value of invested capital ("enterprise value") Equals the market value of debt + market value of equity
<u>Multiple Denominators</u>		
Sales	Sales	= Company's "net sales" after returns and allowances
EBT		= "Earnings Before Taxes" (earnings have deducted interest)
	EBIT	= "Earnings Before Taxes and Interest" (earnings include interest)
	EBITDA	= "Earnings Before Taxes, Interest and Depreciation" - <b>MOST COMMON</b>
NIAT		= "Net Income After Tax" (earnings have deducted interest after tax)
	NOPAT	= "Net Operating Profit After Tax" (earnings include interest after tax)
GCFe		= "Gross Cash Flow" (NIAT + Depreciation and Amortization)
	GCFic	= "Gross Cash Flow" (NOPAT + Depreciation and Amortization)
BVe		= "Book Value" of equity
	BVic	= "Book Value" of invested capital
Dividends		= Dividend distributions to equity owners

Equity Multiples	Invested Capital Multiples	Appropriate Use of Market Capitalization Multiples
$\frac{\text{MVE}}{\text{Sales}}$	$\frac{\text{MVIC}}{\text{Sales}}$	<p>&gt; When sales are highly predictive of earnings. In other words, earnings margins are similar across the industry.</p> <ul style="list-style-type: none"> <li>-smaller businesses which are cash-driven</li> <li>-service companies and companies that are light in tangible assets</li> <li>-when net income or other measures of earnings are negative</li> </ul>
$\frac{\text{MVE}}{\text{EBT}}$	$\frac{\text{MVIC}}{\text{EBIT}}$	<p>&gt; When company has high income compared to depreciation, or when depreciation reflects actual or economic physical wear and tear, and company has "abnormal" tax rates (e.g., smaller companies, which generally try to minimize taxes).</p>
<i>Not normally utilized</i>	$\frac{\text{MVIC}}{\text{EBITDA}}$	<p>&gt; This is the most common MVIC multiple used. It can be used when income is high relative to depreciation, and when depreciation is a significant portion of cash flow or does not reflect a low level of physical, functional, or economic obsolescence.</p>
$\frac{\text{MVE}}{\text{NIAT}}$	$\frac{\text{MVIC}}{\text{NOPAT}}$	<p>&gt; When company has high income compared to depreciation, or when depreciation reflects actual or economic physical wear and tear, and company has "normal" tax rates.</p> <p>&gt; When investment and debt are more closely related to operations than to pure financing activities</p>
$\frac{\text{MVE}}{\text{GCFe}}$	$\frac{\text{MVIC}}{\text{GCFic}}$	<p>&gt; When company has low income compared to depreciation, or when depreciation reflects a low level of physical, functional, or economic obsolescence.</p>
$\frac{\text{MVE}}{\text{BVe}}$	$\frac{\text{MVIC}}{\text{BVic}}$	<p>&gt; When the level of capital employed is highly predictive of earnings. In other words, returns on capital are similar across the industry and there is a strong correlation between book value and return on that capital (i.e., where tangible assets are an important to value), and when data for a specific date is available rather than over a period in time.</p>
$\frac{\text{MVE}}{\text{Dividends}}$	<i>Not normally utilized</i>	<p>&gt; When company regularly pays dividends, or has the "capacity" to regularly pay dividends (i.e., the ability to fund dividends after financing current operations and growth).</p> <p>&gt; For valuation of a minority interest, actual dividends are more important than capacity, since minority cannot force dividends be paid.</p>

- (7) When a valuer appraises a company based on the total enterprise value some modifications are generally made during the valuation process, including the following:
- (a) Assess MVIC – Add the market value of the comparable company's equity (price per share times the number of shares outstanding) to the comparable company's market value of the interest-paying debt. The sum of these two items is commonly called “enterprise value”, “total invested capital”, or “market value of invested capital.”
  - (b) Add Back Interest – Interest expense is added back to the earnings (or cash flow) used in the denominator of the various multiples. If the valuer is using an after-tax basis, interest expense is added back, net of taxes, since there is a tax benefit that is derived from the deductibility of interest expense.
  - (c) Subtract Debt – Once an estimate of value has been reached on an enterprise value basis, the valuer then deducts the market value of the appraised subject's debt to determine the value of the company's equity.
- B. Measurement of time period for the market multiple denominator – the company performance metric (usually an earnings metric of some type):
- (1) *Projected next twelve months* (NTM) or next fiscal year (NFY) – Matches the capitalization formula for value and is particularly important when industry or company conditions are changing materially. **As an example:**
    - (a) Company A's EBIT multiple was 27.2 as of 12/31/xx.
    - (b) LTM operating margin was 3.5% but EPS is projected to increase 100% next year.
    - (c) If EBIT increases proportionately, the market is actually pricing the company at a 13.6 multiple based on projected NTM.
    - (d) The 27.2 multiple is meaningless except as an indication of what a similar company expecting a 100 percent increase in earnings would be worth.
  - (2) The Liu/Nissim/Thomas research finds that *two-year earnings projections* result in more accurate values than one-year projections.
  - (3) *Latest twelve months* (LTM) – most common temporal metric used. Almost all equity market reporting services calculate the “P/E” ratio using latest twelve months (also termed “trailing twelve months”)

- (4) *Last fiscal year (LFY)* – common with small companies which produce validated financial statements only on an annual basis, primarily for tax purposes.
  - (5) *Historical averages or weighted averages* are less often used today because they mix together the impact of margins and growth rates, making them difficult to interpret.
- C. Subject company circumstances may eliminate the use of certain ratios.
- (1) If the Subject Company has had net losses in recent years, then a price/earnings multiple cannot be used.
  - (2) Recent company expansion may reduce net earnings due to excess capacity depreciation thereby indicating cash flow multiples may be more useful.
  - (3) Other company or industry circumstances that eliminate the validity of certain market multiples – depends on facts and circumstances.
- D. Industry practices – owners and key management are likely to be familiar with how companies in their industry are valued.
- (1) Industry practices may be an important source of information about which value measures are most important (articles about recent acquisitions).
  - (2) Rules of thumb, if they exist, may be used as a check for other approaches.
- E. Identification of market multiple “clustering” – no two guideline companies will have the same level of market multiples. Hence, for each type of market multiple, our sample of guideline companies will display a range, a median, an average, a coefficient of variation and a harmonic mean (assuming we have at least two or more in the sample).
- (1) *Close clustering* – calculation of various statistics on the sample of guideline companies and their market multiples.
    - (a) Range, percentiles, median, average, coefficient of variation.
    - (b) Observe the range and clustering of the multiples generated by the selected sample of guideline companies. A good statistic to use that measures clustering is the coefficient of variation (standard deviation/mean). When this statistic shows a small reading, this means that data points are relatively closer to the mean and the level of dispersion is smaller.

- (c) Closely clustered multiples are multiples that investors tend to use to make their buy/sell decisions, and therefore may be more reliable or should be given the most weight as indications of value.

### Section G. Step 4 – Perform Qualitative and Quantitative Comparison to GPCs

1. Next, the valuer needs to compare the Subject Company to the guideline companies in terms of **relative** risk and **relative** growth, which is accomplished through:
  - A. Qualitative comparative analysis such as SWOT.
  - B. Quantitative comparative analysis using the “I S G L P T L R” and secondary comparable factors.
2. Each comparative factor should be evaluated by three analytical elements:
  - A. Is the particular comparable factor, such as profitability, **relevant**? Does it materially affect value?
    - (1) For example, consider a service company such as a tax preparation enterprise. Factors such as growth of sales and profitability are relevant factors that materially affect value. However, inventory turnover probably is not a relevant factor.
  - B. How does the particular comparable factor affect overall investment **risk** (k).
  - C. How does the particular comparable factor affect overall investment **growth** (g).
3. The steps in the process include:
  - A. Identify key differences between the subject and the comparable group.
  - B. Identify differences within the guideline companies themselves.
  - C. Discover if any single comparable company or subset of guideline companies is more similar to the subject than the group overall.
  - D. Provide support for the selection of each multiple, whether it is a mean, median or something other than a central tendency measurement.
4. Primary risk factors:
  - A. *Economic risk* – how the company is affected by changes in the economic environment in which it operates.
  - B. *Business risk* – the risk inherent in business operations (e.g., volatility in sales or growth).

- 
- C. *Operating risk* – factors such as the fixed versus variable cost structure.
  - D. *Financial risk* – pertains to the amount of leverage used and the company's ability to cover its debt payments.
    - (1) Companies that are over-capitalized or under-capitalized are not necessarily "comparable" to companies that have a normal capital structure.
5. Secondary risk factors (may be a subset of the primary risk factors)
- A. *Asset risk* – the age and condition of the company's assets
  - B. *Product risk* – the amount of diversification in the product or service line
  - C. *Market risk* – the geographical diversification of the company
  - D. *Technological risk* – the importance of technology to the company's operations, and the ability to improve the current technology
  - E. *Regulatory risk* – effects of actions of regulatory agencies
  - F. *Legal risk* – ability to survive through a litigation process
6. Summary factors to consider when researching and analysing guideline companies:
- A. Which multiple or benchmarks are most relevant for the Subject Company and its industry? Why?
  - B. Is there uniformity or clustering among the ratios within the comparable group?
  - C. As a result of the financial analysis, can any of the guideline companies be discarded?
  - D. Are any of the guideline companies more similar to the Subject Company?
  - E. Is there a variance between the average ratios within the comparable group and the averages expressed in an industry-wide survey (such as RMA, Integra, etc.)?
  - F. What information from the economic and industry research can explain the financial performance of the comparable company ratios?
    - (1) Is there a trend in the implied growth rates in the market multiples?
    - (2) How does that implied growth rate compare to the growth rate that was used in the income approach?
    - (3) What are the key differences in **risk** between the guideline companies and the subject?
-

- (4) What are the key differences in **growth** prospects between the guideline companies and the subject?

## Section H. Step 5 – Select the GPC Multiples to Fit Subject Company

### Risk/Growth:

1. From an array of pricing multiples the valuator should select or decide on the appropriate multiples before they are applied to the Subject Company to calculate initial indications of value.
2. The selection of the market multiples to be applied to the Subject Company is the key valuation judgment the valuer must make under this method.
3. The key concept underlying the comparable company multiple is the recognition that market multiples are essentially the inverse of capitalization rates. Hence, embedded within each market multiple is the investment market's estimate of both a risk-adjusted cost of capital and a present-value-weighted expected growth in the value of the investment (i.e. both k and g). This concept is discussed further in more advanced courses.
4. In selecting the appropriate multiples, consider the following:

$$\frac{\text{Market Price}}{\text{Operating Performance}} = \frac{1}{(k - g)} \quad \text{"PE" ratio equals } 1 / \text{market capitalization rate}$$

- A. Don't simply use the average or median. Analysis must accompany any conclusion.
  - (1) Should the 25th percentile, median, 90th percentile, average, etc., multiple be chosen? This must be based on comparison of the Subject Company to the guideline companies. Subject companies that are stronger than comparable companies might be valued higher by way of higher multiples.
  - (2) Be careful not to double-count. Examples:
    - (a) Using a lower pricing multiple to account for the small size of the Subject Company when the multiples have already been adjusted for size
    - (b) Using a higher multiple to account for high growth of the subject when the multiples have been adjusted for growth
    - (c) Using a high price/earnings multiple to account for the subject's higher than average profitability (the advantage of the higher

profitability is captured by using an earnings-based pricing multiple).

- (3) Always remember to consider **relative** risk and **relative** growth.

B. Qualitative basis for market multiple selection:

- (1) If the outlook for the Subject Company relative to the guideline companies is for less risk and/or more growth, we will choose a multiple somewhat higher than the median. If the outlook is for average risk and/or future growth, we will choose a multiple at the median. If the outlook is for higher risk and/or lower growth, we will choose a multiple below the median.
- (2) Most valuers use “informed judgment” when making their choice as to the amount of adjustment they apply to the guideline companies’ market multiples. There is nothing wrong with this, but there are some quantitative techniques that add precision to the direction and amount of market multiple adjustments.

C. Quantitative models for market multiple selection and adjustments:

- (1) Selecting multiples based upon an analysis of the correlation of changes in a financial performance metric and changes in the market multiples (e.g., correlation between profit margin and price/sales).
- (2) Adjusting the multiples for differences in size or other risk factors
  - (a) Assume the original market value of equity/after-tax profit multiple is 15.0x, the comparable company is in the 6<sup>th</sup> decile for size (discussed further in more advanced courses), and the Subject Company is in the 10<sup>th</sup>. The steps in adjusting the comparable company multiple for the size of the subject are:
    - ◆ Compute the benefit/value ratio (which is just the reciprocal of the pricing multiple and equals the capitalization rate):  
 $1/15.0 = 6.67\%$ .
    - ◆ Add the size differential between the comparable company and the subject (as computed above):  $6.67\% + 6.26\%$  (this is given in this course – it is discussed further in more advanced courses) =  $12.93\%$ .
    - ◆ Take the reciprocal to get the new pricing multiple adjusted for size:  $1/0.1293 = 7.7x$ , which is the comparable company pricing multiple to be applied to the subject.
- (3) Adjusting the multiples for differences in the outlook for growth

- (a) The same basic approach can also be used to adjust for growth. For example: assume the original pricing multiple is 15.0x, the perpetual growth of the comparable company is 5.0% and that of the subject is 7.0%. The steps in the calculation are as follows:
- ◆ Compute the benefit/value ratio (which is just the reciprocal of the pricing multiple and equals the capitalization rate):  
 $1/15.0 = 6.67\%$ .
  - ◆ Add the growth differential between the comparable company and the subject:  $6.67\% + (5.0\% - 7.0\%) = 4.67\%$ . This is the adjusted benefit/value ratio.
  - ◆ Take the reciprocal to get the new pricing multiple adjusted for growth:  $1/0.0467 = 21.4x$ , which is the comparable company pricing multiple to be applied to the subject.
- (4) Such quantitative adjustments for size and growth are illustrative of the observation that the market capitalization multiples can be viewed as the reciprocal of the market capitalization rate (k-g) which is the difference between risk (k) and the present value weighted future expected growth (g).
- (5) These size and growth quantitative adjustments should not be employed without consideration of all of the other qualitative and quantitative factors relevant to this market valuation method.

### Section I. Step 6 – Apply Multiples to Subject Company and Reconcile Values

1. When using more than one selected market multiple there will be more than one resultant indicated value for the Subject Company. Therefore the valuer must decide which indicated values will be given the most weight.
  - A. Instead of giving the indicated values different weightings, the valuer may decide that one particular multiple is most appropriate (the “primary” multiple), and therefore the other multiples (the “secondary” multiples) are used to confirm the value arrived at using the primary multiple.
2. Reconciliation of differing value indications derived from the same method (or even from different methods/approaches) relies upon the valuer’s judgment:
  - A. The weighting should be the result of informed judgment and clearly explained in the report. Often a numerical percentage weighting may be applied. The “weights” are dependent on the valuer’s sense of relative confidence in the value indication from each type of market multiple.

- B. Confidence in the value indication derived from a particular market multiple depends upon both a theoretical and practical understanding of the key determinants of value for the type of industry and the specific characteristics of the Subject Company.
- C. The factors considered in selecting multiples are also considered in the reconciliation of values and the choice of weighting method(s).
- D. If using the invested capital or enterprise value method, then subsequent to reconciling the indicated values of the Subject Company to a final conclusion, the valuer must subtract the debt (and “debt like” equity such as preferred stock) to arrive at a conclusion of equity value.
- E. Finally, any non-operating and/or contingent assets or liabilities that were originally eliminated from the financial statements must be analysed on their own (including minority versus control implications) and then added to, or subtracted from, the conclusion above to arrive at a final opinion of value.

### **Section J. Step 7 – Consider the Necessity of Applying Discounts/Premiums**

1. A variety of different types of discounts and premiums may apply to the Subject Company (e.g., minority discount, marketability discount, key person discount, etc.)
2. After reconciling the various value indications and arriving at an indication of value (or a range of indicated values), the application of any appropriate premiums or discounts finishes the valuer’s tasks under this method.
3. A discount or premium for country risk may be warranted if guideline companies are located in different countries.
4. Discounts and premiums are discussed further in the more advanced iiBV courses.

### **Section K. Exercise 5-1: Initial Selection of Guideline Companies**

**Exhibit 5A** – Provides the following:

An index of 42 publicly traded companies in the auto parts manufacturing industry

(US-SIC 3714, NAICS 3363) obtained from YAHOO FINANCE, a free publicly available financial markets resource.

“Summary Descriptions of the Initial Selection of 42 Publicly Traded Companies” Each summary description contains the following:

An alphabetical listing of the initial selection of comparable publicly traded companies with their ticker symbols and headquarters location.

A summary description of their business activities.

Financial highlights describing

- the month of their fiscal year-end (FYE),
- their latest fiscal year (FY) revenues in millions of US dollars (USD), revenue and employee growth in the latest FY

Market performance describing

- Current price
- 52-week high price
- 52-week low price
- Average daily volume (average over past 3 months)
- Yahoo calculated P/E ratio

**Exercise 5-1:** Review the information so far provided to you concerning Auto Parts Superior (APS – India) and get together with your fellow team members and answer the following:

**Problem 5-1.1:** Are there any companies that are based outside the United States and/or have substantial markets outside the United States? If so, would these make better or worse candidates as guideline companies for Auto Parts Superior (APS – India)? Why?

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**Problem 5-1.2:** Review the summary information provided for each company and ***select which GPCs you want as “second cut” candidates***. Justify your answer by discussing which factors were most relevant to your valuation process.

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- Six market capitalization multiples for equity and six multiples for invested capital



- Growth
- Liquidity
- Profitability
- Turnover
- Leverage
- Return on Investment
- Equity market analysis which are also ranked:
  - Presents average daily trading volume (3-month basis), that measure as a percent of ending shares, and average annual turnover of shares
  - Six market capitalization multiples for equity and six multiples for invested capital

**Use Exhibits 5B & 5C:**

**Problem 5-3.1:** Given your “final cut” selections, ***compare the GPC’s financial performance to APS-India’s financial performance.*** Then given this analysis, and what you have gathered from your economic/industry and company analyses, ***provide both a “qualitative” and “quantitative” comparative analysis.*** Justify your answer by discussing which factors were most relevant to your valuation process.

Size:  

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Growth:  

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Profitability:  

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Turnover:  

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Leverage & Liquidity:  

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ROE & ROI:  

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Investment Risk:  

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Conclusion:  

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## Exercise 5-4: Selection of “Best” Market Multiples

**Use Exhibits 5B & 5C:**

**Problem 5-4.1:** Given your “final cut” selections and your comparative analysis between the GPCs and APS-India, **select which TYPES of market multiples would “best”** to use to value APS-India under both the “*direct to equity method*” and the “*invested capital method*.” (i.e., which type of denominator – sales, earnings, cash flow, etc. as well as timing – latest twelve months, 5-year average, etc.). Justify your answer by discussing which factors were most relevant to your valuation process.

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**Problem 5-4.2:** Given your “final cut” selections, your comparative analysis between the GPCs and APS-India, and your selection of best types of market multiples , **decide what should be the “best” LEVEL of market multiple** to apply to APS-India under both the “*direct to equity method*” and the “*invested capital method*.” Justify your answer by discussing which factors were most relevant to your valuation process.

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## Exercise 5-5: Reconcile indications of value



## Exhibit 5A – Initial Selection of Publicly Traded Companies

<b>YAHOO FINANCE</b>			
<b>Industry Center - Auto Parts (Publicly Traded Only)</b>			
<a href="http://biz.yahoo.com/ic/333_cl_pub.html">http://biz.yahoo.com/ic/333_cl_pub.html</a>			
Accessed 06 October 2013			
<b>A</b>	1. Allison Transmission Holdings, Inc. [ALSN]	<b>L</b>	22. Lear Corporation [LEA]
	2. American Axle & Manufacturing Holdings, Inc. [AXL]		
	3. Autoliv, Inc. [ALV]	<b>M</b>	23. Meritor, Inc. [MTOR]
			24. Miller Industries, Inc. [MLR]
<b>B</b>	4. BorgWarner Inc. [BWA]		25. Modine Manufacturing Company [MOD]
			26. Monro Muffler Brake, Inc. [MNRO]
<b>C</b>	5. China Automotive Systems, Inc. [CAAS]		27. Motorcar Parts of America, Inc. [MPAA]
	6. China Zenix Auto International Limited [ZX]		
	7. Coates International, Ltd. [COTE]	<b>P</b>	28. Puradyn Filter Technologies Incorporated [PFTI]
	8. Cooper-Standard Holdings Inc. [COSH]		
		<b>Q</b>	29. Quantum Fuel Systems Technologies Worldwide, Inc. [QTWW]
<b>D</b>	9. Dana Holding Corporation [DAN]		
	10. Delphi Automotive PLC [DLPH]	<b>R</b>	30. Remy International, Inc. [REMY]
	11. Dorman Products, Inc. [DORM]		
	12. Douglas Dynamics, Inc. [PLOW]	<b>S</b>	31. Shiloh Industries, Inc. [SHLO]
			32. Standard Motor Products, Inc. [SMP]
<b>E</b>	13. Enova Systems, Inc. [ENA]		33. Stoneridge, Inc. [SRI]
			34. STRATTEC SECURITY CORPORATION [STRT]
<b>F</b>	14. Federal Signal Corporation [FSS]		35. Superior Industries International, Inc. [SUP]
	15. Federal-Mogul Corporation [FDML]		
	16. Fox Factory Holding Corp. [FOXF]	<b>T</b>	36. Tenneco Inc. [TEN]
	17. Fuel Systems Solutions, Inc. [FSYS]		37. Torvec, Inc. [TOVC]
			38. TRW Automotive Holdings Corp. [TRW]
<b>G</b>	18. Gentex Corporation [GNTX]		
	19. Gentherm Incorporated [THRM]	<b>V</b>	39. Visteon Corporation [VC]
<b>I</b>	20. Icahn Enterprises L.P. [IEP]	<b>W</b>	40. WABCO Holdings Inc. [WBC]
			41. Westport Innovations Inc. [WPRT]
<b>J</b>	21. Johnson Controls, Inc. [JCI]		42. Wonder Auto Technology, Inc. [WATG]

Auto Parts Superior (APS) - INDIA					
Summary Descriptions of the Initial Selection of 42 Publicly Traded Companies					
Auto Parts Manufacturing Industry - US-SIC 3714 & NAICS 3363					
<b>1.</b>	<b>Allison Transmission Holdings, Inc. (ALSN)</b>	<b>Indianapolis, Indiana, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	<p>In the world of automatics, Allison Transmission has pull. The company builds automatic transmissions for commercial-duty vehicles. Allison's customers include OEMs of garbage trucks and city transit buses, military transports, and dump trucks. The company also makes electric drives for buses and shuttles (it is the world's #1 heavy-duty hybrid producer), and remanufactures transmissions for aftermarket customers. Private equity firms The Carlyle Group and Onex Corp. each owned about half of the company until they took it public in 2012.</p>		Fiscal Year End:	December	<b>Price</b> <u><b>24.740</b></u>
			<b>Revenue (2012):</b>	<b>2141.80 M</b>	52wk Hi 27.48
			Revenue Growth (1 yr):	(-1.00%)	52wk Lo 17.95
			Employees (2012):	2,800	Avg Vol (3m) 487,725
			Employee Growth (1 yr):	0.00%	P/E (ttm) 38.48 x
<b>2.</b>	<b>American Axle &amp; Manufacturing Holdings, Inc. [AXL]</b>	<b>Detroit, Michigan, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	<p>American Axle &amp; Manufacturing (AAM) is GM's right-hand man for driveline systems and forged products. AAM manufactures axles, driveshafts, and chassis components, mainly for light trucks and SUVs, but also for cars and crossover vehicles. Axles and driveshafts account for more than 80% of AAM's sales; chassis components, forged products, and other components make up the rest. The Tier 1 supplier gets nearly three-quarters of its business from GM; other customers include PACCAR, Chrysler, Harley-Davidson, VW, and Ford. AAM operates more than 30 manufacturing facilities around the world and earns more than 80% of its revenue from sales in North America.</p>		Fiscal Year End:	December	<b>Price</b> <u><b>18.190</b></u>
			<b>Revenue (2012):</b>	<b>2930.90 M</b>	52wk Hi 21.41
			Revenue Growth (1 yr):	13.4%	52wk Lo 9.27
			Employees (2012):	11,300	Avg Vol (3m) 1,260,038
			Employee Growth (1 yr):	22.80%	P/E (ttm) 4.02 x
<b>3.</b>	<b>Autoliv, Inc. [ALV]</b>	<b>Stockholm, Sweden</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	<p>Autoliv puts some drive behind the Bee Gees' jive about stayin' alive. The world's #1 manufacturer of car safety equipment aims to save lives by increasing the survivability statistics of traffic accidents. It makes components such as seat belts, airbags, anti-whiplash systems, and safety electronics. Other products include rollover protection systems, steering wheels (with airbags), night vision systems, radar systems, and child seats. The company caters to about every car maker in the industry and has more than 100 locations around the globe.</p>		Fiscal Year End:	December	<b>Price</b> <u><b>86.700</b></u>
			<b>Revenue (2012):</b>	<b>8266.70 M</b>	52wk Hi 90.19
			Revenue Growth (1 yr):	0.4%	52wk Lo 54.72
			Employees (2012):	51,000	Avg Vol (3m) 342,992
			Employee Growth (1 yr):	6.50%	P/E (ttm) 16.03 x
<b>4.</b>	<b>BorgWarner Inc. [BWA]</b>	<b>Auburn Hills, Michigan, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	<p>If suburbanites need four-wheel-drive vehicles to turbocharge their urban drive, that's OK with BorgWarner. The company is a leading maker of engine and drivetrain products for the world's major automotive manufacturers. Products include turbochargers, air pumps, timing chain systems, four-wheel-drive and all-wheel-drive transfer cases (primarily for light trucks and SUVs), and transmission components. Its largest customers include Volkswagen, Ford, and Daimler. The company nets around 75% of sales from outside the US; more than half comes from its European operations.</p>		Fiscal Year End:	December	<b>Price</b> <u><b>98.320</b></u>
			<b>Revenue (2012):</b>	<b>7183.20 M</b>	52wk Hi 104.18
			Revenue Growth (1 yr):	1.0%	52wk Lo 60.53
			Employees (2012):	19,100	Avg Vol (3m) 710,609
			Employee Growth (1 yr):	(-0.80%)	P/E (ttm) 21.40 x
<b>5.</b>	<b>China Automotive Systems, Inc. [CAAS]</b>	<b>Jing Zhou, Hubei, China</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	<p>The Road to Hong Kong is a lot easier to navigate thanks to China Automotive Systems. Through its involvement in seven Chinese auto parts joint ventures, China Automotive Systems manufactures components primarily for the rapidly growing Chinese automotive market. China Automotive Systems has also created Henglong USA (HLUSA) for the purpose of marketing automotive parts in North America. The multinational company is focused on making power steering components and systems. Products include wheel automatic steering assemblies, power steering assemblies, columns assemblies, power steering pumps and hoses, power steering rack and pinion gears, and steering columns.</p>		Fiscal Year End:	December	<b>Price</b> <u><b>7.140</b></u>
			<b>Revenue (2012):</b>	<b>336.00 M</b>	52wk Hi 10.05
			Revenue Growth (1 yr):	(-3.80%)	52wk Lo 3.94
			Employees (2012):	3,617	Avg Vol (3m) 190,360
			Employee Growth (1 yr):	(-3.40%)	P/E (ttm) 10.27 x
<b>6.</b>	<b>China Zenix Auto International Limited [ZX]</b>	<b>Zhangzhou, Fujian, China</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	<p>China Zenix Auto International knows a thing or two about wheelin' and dealin'. The company is one of the country's largest manufacturers of wheels for commercial vehicles (by sales volume), offering more than 230 models of tubed steel wheels, tubeless steel wheels, and off-road steel wheels. It also exports its products worldwide. Five manufacturing plants in China produce 14 million wheels a year; the wheels are made for commercial trucks, off-road vehicles, and buses (it does not make the lighter aluminum or alloy wheels common for passenger cars). The company operates through a handful of subsidiaries in China, where it is known as the Zhengxing Group. China Zenix entered the US stock market in 2011.</p>		Fiscal Year End:	December	<b>Price</b> <u><b>3.980</b></u>
			<b>Revenue (2012):</b>	<b>591.70 M</b>	52wk Hi 4.11
			Revenue Growth (1 yr):	(-8.00%)	52wk Lo 2.41
			Employees (2012):	5,070	Avg Vol (3m) 34,402
			Employee Growth (1 yr):	(-2.70%)	P/E (ttm) 5.94 x

Auto Parts Superior (APS) - INDIA					
Initial Selection of Publicly Traded Companies					
Auto Parts Manufacturing Industry - US-SIC 3714 & NAICS 3363					
			Financial Highlights	Market Performance	
<b>7.</b>	<b>Coates International, Ltd. [COTE]</b>	<b>Wall Township, New Jersey, USA</b>			
	Coates International Ltd. (CIL) may be sparking the next industrial revolution. CEO George J. Coates founded CIL to develop his many patents, the most noteworthy being the Coates Spherical Rotary Valve (CSRV). The CSRV is designed to replace the century-old technology of the internal combustion engine's camshaft and poppet valve system. An engine equipped with the CSRV can run on different fuels while reducing emissions and increasing efficiency; the need for maintenance is also reduced. CIL licenses its CSRV engine technology to makers of heavy-duty vehicles, automobiles, and industrial engines. Major customer Almont Energy (Canada) took first delivery of CSRV engines in 2010.		Fiscal Year End: December <b>Revenue (2012): 0.00 M</b> Revenue Growth (1 yr): (-93.40%) Employees (2012): 7 Employee Growth (1 yr): 0.00%	Price <b>0.076</b> 52wk Hi 0.12 52wk Lo 0.01 Avg Vol (3m) 311,845 P/E (ttm) N/A	
<b>8.</b>	<b>Cooper-Standard Holdings Inc. [COSH]</b>	<b>Novi, Michigan, USA</b>			
	Nothing standard about Cooper-Standard Automotive (CSA); it is the world's largest maker of auto body sealing systems, as well as one of the largest of anti-vibration system (AVS) and fluid handling products. Its body and chassis lines, which protect interiors from noise, dust, and weather, include brackets, mounts, and seals sold under brands StanPro, Tecalemit, and Metzeler. CSA fluid handling products (sensors, tubes, and hoses) are used in heating/cooling, braking, fuel, and emissions systems. CSA sells to such major OEMs as Ford, GM, Chrysler, and Fiat, and some suppliers. After a brief bankruptcy, the company emerged from Chapter 11 in mid-2010, owned largely by Silver Point Capital and Oak Hill Advisors.		Fiscal Year End: December <b>Revenue (2012): 2880.90 M</b> Revenue Growth (1 yr): 0.01 Employees (2012): 22,400 Employee Growth (1 yr): 4.20%	Price <b>50.500</b> 52wk Hi 53.00 52wk Lo 32.00 Avg Vol (3m) 9,249 P/E (ttm) 25.48 x	
<b>9.</b>	<b>Dana Holding Corporation [DAN]</b>	<b>Maumee, Ohio, USA</b>			
	When it comes to building cars, it starts with the parts, and Dana makes the parts that carmakers use to piece together new vehicles. In addition to its core offerings, which include driveline products (axles, driveshafts, transmissions), it provides power technologies (sealing, thermal-management products) and service parts. It makes products for vehicles in the light, medium/heavy (commercial), and off-highway markets. The company's products carry brand names that include Spicer, Victor Reinz, and Long. Dana also supplies companies that make commercial and off-highway vehicles, such as Deere, Navistar, Ford, PACCAR, and Sandvik.		Fiscal Year End: December <b>Revenue (2012): 7224.00 M</b> Revenue Growth (1 yr): (-4.80%) Employees (2012): 23,300 Employee Growth (1 yr): (-4.90%)	Price <b>21.620</b> 52wk Hi 22.45 52wk Lo 12.35 Avg Vol (3m) 3,060,162 P/E (ttm) 16.63 x	
<b>10.</b>	<b>Delphi Automotive PLC [DLPH]</b>	<b>Gillingham, Medway, United Kingdom</b>			
	Delphi Automotive PLC predicts a profitable future. The UK-based company formed in May 2011 as a holding company for US-based automotive parts manufacturer Delphi Automotive LLP. Delphi Automotive LLP is the successor to the former Delphi Corporation, which went bankrupt in 2009 after its former parent and top customer GM went through its own financial restructuring. Delphi Automotive PLC plans to acquire all of the outstanding shares of Delphi Automotive LLP from its investors, Elliott Management and Silver Point Capital. (It paid off GM for its shares in March 2011.) At the time of its formation, Delphi Automotive PLC went public in a \$530 million initial public offering.		Fiscal Year End: December <b>Revenue (2012): 15519.00 M</b> Revenue Growth (1 yr): (-3.30%) Employees (2012): 118,000 Employee Growth (1 yr): 13.50%	Price <b>55.880</b> 52wk Hi 59.54 52wk Lo 30.00 Avg Vol (3m) 1,790,300 P/E (ttm) 16.86 x	
<b>11.</b>	<b>Dorman Products, Inc. [DORM]</b>	<b>Colmar, Pennsylvania, USA</b>			
	Got parts? Dorman does. From its stock of more than 120,000 products, Dorman Products (formerly R&B, Inc.) is a leading supplier of automotive replacement parts, fasteners, and service line products to the automotive aftermarket. It also provides household hardware and organization items to mass merchants. About 85% of revenue comes from parts sold under Dorman's sub-brands, which include AutoGrade, FirstStop, and OE Solutions. Dorman sells to auto aftermarket retailers and warehouse distributors (such as AutoZone, CARQUEST) as well as to parts manufacturers for resale under private labels.		Fiscal Year End: December <b>Revenue (2012): 570.40 M</b> Revenue Growth (1 yr): 7.8% Employees (2012): 1,321 Employee Growth (1 yr): 4.40%	Price <b>47.150</b> 52wk Hi 52.43 52wk Lo 28.90 Avg Vol (3m) 151,571 P/E (ttm) 23.25 x	
<b>12.</b>	<b>Douglas Dynamics, Inc. [PLOW]</b>	<b>Milwaukee, Wisconsin, USA</b>			
	"Let it snow, Let it snow, Let it snow!" It's a song made to order for Douglas Dynamics. The company, operating through Douglas Dynamics LLC, makes snowplows and sand-and-salt spreading equipment for light trucks. One of the biggest manufacturers in its industry, the company sells its lineup under brand names Western, Fisher, and Blizzard via some 710 equipment distributors. It also supplies related parts and accessories. End customers are mainly snowplowers in the business of removing snow and ice for municipalities and commercial and private owners in the Midwest, East, and Northeast US, as well as throughout Canada. Douglas Dynamics traces its roots back to the 1970s; it made its public debut in 2010.		Fiscal Year End: December <b>Revenue (2012): 140.00 M</b> Revenue Growth (1 yr): (-32.90%) Employees (2012): 465 Employee Growth (1 yr): (-11.40%)	Price <b>14.470</b> 52wk Hi 15.67 52wk Lo 12.65 Avg Vol (3m) 48,719 P/E (ttm) 90.44 x	
<b>13.</b>	<b>Enova Systems, Inc. [ENA]</b>	<b>Torrance, California, USA</b>			
	Enova Systems makes commercial digital power management systems for controlling and monitoring electric power in automobiles and stationary power generators. Products include hybrid-electric drive systems, electric drive motors, electric motor controllers, hybrid drive systems, battery care units, safety disconnect units, generator units, fuel cell management units, and fuel cell power conditioning units. The company counts EDO, First Auto Works of China, Ford Motor, Hyundai Motor, Navistar International, and Volvo/Mack among its customers. Enova gets more than half of its sales outside the US, primarily in China.		Fiscal Year End: December <b>Revenue (2012): 1.10 M</b> Revenue Growth (1 yr): (-83.30%) Employees (2012): 2 Employee Growth (1 yr): (-93.30%)	Price <b>0.106</b> 52wk Hi N/A 52wk Lo N/A Avg Vol (3m) N/A P/E (ttm) N/A	
<b>14.</b>	<b>Federal Signal Corporation [FSS]</b>	<b>Oak Brook, Illinois, USA</b>			
	Federal Signal likes to believe it keeps people, property, and the environment safe. Through segments include environmental solutions, safety and security systems, fire rescue, the company designs and manufactures products for municipal, governmental, industrial, and commercial customers. Offerings include street sweepers, vacuum trucks, and water blasters for environmental cleanup; emergency communications and public warning systems for public safety; aerial platforms for firefighting and utility maintenance. In 2012 Federal Signal sold its Federal Signal Technologies (FSTech) segment to 3M for about \$110 million.		Fiscal Year End: December <b>Revenue (2012): 803.20 M</b> Revenue Growth (1 yr): 1.0% Employees (2012): 2,558 Employee Growth (1 yr): (-11.80%)	Price <b>12.770</b> 52wk Hi 13.17 52wk Lo 5.08 Avg Vol (3m) 290,403 P/E (ttm) 7.49 x	

Auto Parts Superior (APS) - INDIA					
Initial Selection of Publicly Traded Companies					
Auto Parts Manufacturing Industry - US-SIC 3714 & NAICS 3363					
			Financial Highlights		Market Performance
<b>15.</b>	<b>Federal-Mogul Corporation [FDML]</b>	<b>Southfield, Michigan, USA</b>			
	For Federal-Mogul, the sum of the parts is greater than the whole. The company makes components used in cars, trucks, and commercial vehicles, as well as in energy, industrial, and other transportation equipment. Its products include pistons, spark plugs, ignition coils, bearings, gaskets, seals, and brake pads sold under brand names such as Champion, Federal-Mogul, Fel-Pro, Glyco, and Moog. Federal-Mogul has manufacturing and distribution facilities in 34 countries worldwide; customers include global automakers BMW, Ford, General Motors, and Volkswagen. Federal-Mogul also distributes its own and other company's auto parts to aftermarket customers. About 60% of sales come from outside the US.		Fiscal Year End: December <b>Revenue (2012): 6664.00 M</b> Revenue Growth (1 yr): (-3.60%) Employees (2012): 45,000 Employee Growth (1 yr): 0.00%	December <b>Price 14.970</b> 52wk Hi 17.60 52wk Lo 4.80 Avg Vol (3m) 463,220 P/E (ttm) N/A	
<b>16.</b>	<b>Fox Factory Holding Corp. [FOXF]</b>	<b>Scotts Valley, California, USA</b>			
	Talk about shock value. Fox Factory makes suspension products -- i.e., shocks -- for high-performance mountain bikes and other powered vehicles that give riders a smooth ride over rough terrain. Some two-thirds of sales are for shocks for bicycles, but the other third of revenue comes from shocks for ATVs, motorcycles, snowmobiles, and off-road vehicles and trucks. Fox Factory sells its shocks to original equipment manufacturers (OEMs) such as Specialized and Trek (bikes) and Ford and Polaris (powered vehicles). It also sells branded apparel such as T-shirts, sweatshirts, and hats. Majority-owned by Compass Diversified Holdings, Fox Factory went public in 2013.		Fiscal Year End: December <b>Revenue (2012): 235.90 M</b> Revenue Growth (1 yr): 19.30%	December <b>Price 17.850</b> 52wk Hi 20.75 52wk Lo 16.36 Avg Vol (3m) 342,974 P/E (ttm) 37.11 x	
<b>17.</b>	<b>Fuel Systems Solutions, Inc. [FSYS]</b>	<b>New York, New York, USA</b>			
	Fuel Systems Solutions was going green before green was the way to go. Founded in 1957, the holding company operates through two subsidiaries, BRC and IMPCO Technologies, as a designer and manufacturer of alternative fuel components that allow engines in vehicles and industrial equipment to operate on cleaner burning gaseous fuels, such as propane and compressed natural gas (CNG). BRC's customers include some of the world's largest automotive OEMs, and IMPCO's customers include some of the leading engine OEMs. Products include fuel injectors, electronic controls, compressors, and auxiliary power systems. The group also offers services ranging from system integration to environmental certification.		Fiscal Year End: December <b>Revenue (2012): 393.90 M</b> Revenue Growth (1 yr): (-5.80%) Employees (2012): 1,700 Employee Growth (1 yr): 0.00%	December <b>Price 18.020</b> 52wk Hi 21.44 52wk Lo 13.34 Avg Vol (3m) 133,225 P/E (ttm) N/A	
<b>18.</b>	<b>Gentex Corporation [GNTX]</b>	<b>Zeland, Michigan, USA</b>			
XX	Gentex would agree that competitors never look better than when they are in the rearview. The company focuses on designing, making, and marketing interior and exterior auto-dimming rearview mirrors and camera-based driver-assist systems for the automotive market. It serves customers worldwide, but its largest base includes big carmakers such as Toyota, General Motors, and Volkswagen. Its products are found as standard or optional features on hundreds of vehicle models. To a lesser degree, Gentex also makes dimmable aircraft windows found on commercial aircraft and fire protection products -- including smoke detectors, fire alarms, and signaling devices -- primarily for commercial buildings.		Fiscal Year End: December <b>Revenue (2012): 1099.60 M</b> Revenue Growth (1 yr): 7.4% Employees (2012): 3,605 Employee Growth (1 yr): 3.60%	December <b>Price 25.360</b> 52wk Hi 26.25 52wk Lo 15.25 Avg Vol (3m) 976,688 P/E (ttm) 20.29 x	
<b>19.</b>	<b>Gentherm Incorporated [THRM]</b>	<b>Northville, Michigan, USA</b>			
	If Bob, Carol, TED, and Alice are in your bed, chances are TED is keeping the mattress cool ... or warm. Gentherm (formerly Amerigon) developed thermoelectric device (TED) technology and has incorporated it into the company's branded Climate-Control Seat (CCS), which allows year-round temperature control and ventilation of car seats on more than 40 vehicle models available in North America and Asia that are made by Ford, General Motors, and Nissan; the three customers collectively account for more than 70% of the company's sales. Gentherm provides the CCS under contracts with auto industry suppliers such as Lear and NHK Spring. In late 2012 the company changed its name from Amerigon to Gentherm.		Fiscal Year End: December <b>Revenue (2012): 555.00 M</b> Revenue Growth (1 yr): 50.2% Employees (2012): 6,387 Employee Growth (1 yr): 17.50%	December <b>Price 19.400</b> 52wk Hi 20.70 52wk Lo 10.95 Avg Vol (3m) 255,871 P/E (ttm) 34.95 x	
<b>20.</b>	<b>Icahn Enterprises L.P. [IEP]</b>	<b>New York, New York, USA</b>			
	Icahn Enterprises has a can-do attitude when it comes to making money. The holding company has stakes in firms in a diverse array of industries, including metals, manufacturing, energy, real estate, gaming, and home fashion. Holdings include car parts maker Federal-Mogul; PSC Metals, one of the largest scrap yard operators in the US; residential developer Bayswater, which is active in Florida and Massachusetts; and WestPoint International, a maker of bed, bath, and other home products. In 2010 Icahn Enterprises acquired control of American Railcar Industries, Viskase, and Tropicana Entertainment. Billionaire corporate raider Carl Icahn and his affiliates control his namesake firm.		Fiscal Year End: December <b>Revenue (2012): 15654.00 M</b> Revenue Growth (1 yr): 32.0% Employees (2012): 61,495 Employee Growth (1 yr): (-0.30%)	December <b>Price 81.000</b> 52wk Hi 90.75 52wk Lo 37.22 Avg Vol (3m) 81,994 P/E (ttm) 21.43 x	
<b>21.</b>	<b>Johnson Controls, Inc. [JCI]</b>	<b>Milwaukee, Wisconsin, USA</b>			
	Johnson Controls (JC) wants to put you in the driver's seat -- an environmentally conscious one. The company makes car batteries and interior parts for combustion engine and hybrid electric vehicles, as well as energy-efficient HVAC systems for commercial buildings. Products include seating, instrument panels, and a slew of electronics. OEM customers include GM, Daimler, and Ford. The battery unit supplies car batteries for retailers such as Advance Auto Parts, AutoZone, Pep Boys, and Wal-Mart. The building efficiency unit makes, installs, and services mechanical equipment that controls HVAC, lighting, security, and fire systems in commercial buildings. The unit also offers on-site facility management.		Fiscal Year End: September <b>Revenue (2012): 41955.00 M</b> Revenue Growth (1 yr): 2.7% Employees (2012): 170,000 Employee Growth (1 yr): 4.90%	September <b>Price 39.890</b> 52wk Hi 43.49 52wk Lo 24.75 Avg Vol (3m) 3,575,920 P/E (ttm) 25.74 x	

Auto Parts Superior (APS) - INDIA					
Initial Selection of Publicly Traded Companies					
Auto Parts Manufacturing Industry - US-SIC 3714 & NAICS 3363					
<b>22.</b>	<b>Lear Corporation [LEA]</b>	<b>Southfield, Michigan, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	Lear doesn't take a back seat to anyone when it comes to manufacturing automotive seats. The company's Seating business, by far its most lucrative segment, is a leader in the global market for manufacturing car seat systems and their components. The company's Electrical Power Management Systems (EPMS) segment produces automotive electronics, including the manufacture of wire harnesses, junction boxes, terminals and connectors, and body control modules. It operates from some 220 facilities in 35 countries. Its largest customers include BMW, Ford, and General Motors, Fiat, and Volkswagen.		Fiscal Year End:	December	<b>Price</b> <b>70.580</b>
			<b>Revenue (2012):</b>	<b>14567.00 M</b>	52wk Hi 73.99
			Revenue Growth (1 yr):	2.9%	52wk Lo 39.43
			Employees (2012):	113,400	Avg Vol (3m) 900,351
			Employee Growth (1 yr):	16.00%	P/E (ttm) 5.34 x
<b>23.</b>	<b>Meritor, Inc. [MTOR]</b>	<b>Troy, Michigan, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	Whether it's building axles or drum brakes for big rigs or buses, this company's products are meritorious. Meritor (formerly AvinMeritor) makes axles, brakes, drivelines, suspension systems, undercarriages, and aftermarket transmissions for commercial truck, trailer, off-highway, construction, military, bus, and specialty vehicle manufacturers. It also makes U-joints, shafts, clutches, and ABS and stability control systems. The company divides its operations across three primary segments: Commercial Truck; Industrial; and Aftermarket & Trailer. Meritor operates around the globe through operations in roughly 20 countries, including Canada, China, France, India, Mexico, Sweden, and South America.		Fiscal Year End:	September	<b>Price</b> <b>7.650</b>
			<b>Revenue (2012):</b>	<b>4418.00 M</b>	52wk Hi 8.50
			Revenue Growth (1 yr):	(-4.40%)	52wk Lo 3.83
			Employees (2012):	9,300	Avg Vol (3m) 1,129,000
			Employee Growth (1 yr):	(-11.40%)	P/E (ttm) N/A
<b>24.</b>	<b>Miller Industries, Inc. [MLR]</b>	<b>Ooltewah, Tennessee, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	This body builder wants to pump up your chassis. Miller Industries makes bodies for light- and heavy-duty wreckers, along with car carriers and multi-vehicle trailers. It serves as the official recovery team at some of the NASCAR races (including Talladega), as well as the Indy 500 races. Miller makes its recovery and towing vehicles at plants in the US and Europe. Its multi-vehicle transport trailers can carry as many as eight vehicles and loads up to 75 tons. Miller Industries' US brand names include Century, Challenger, Champion, Chevron, Eagle, Holmes, Titan, and Vulcan. The company's European brands are Jige (France) and Boniface (UK). Miller and rival Jerr-Dan dominate the US market for wrecker bodies.		Fiscal Year End:	December	<b>Price</b> <b>16.770</b>
			<b>Revenue (2012):</b>	<b>342.70 M</b>	52wk Hi 17.25
			Revenue Growth (1 yr):	(-17.00%)	52wk Lo 14.00
			Employees (2012):	750	Avg Vol (3m) 21,255
			Employee Growth (1 yr):	(-1.30%)	P/E (ttm) 21.25 x
<b>25.</b>	<b>Modine Manufacturing Company [MOD]</b>	<b>Racine, Wisconsin, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	Modine Manufacturing runs hot and cold but not when it comes to the products it makes for vehicles. Founded in 1916, the company designs and makes highly engineered heating and cooling systems and components for a range of customers worldwide: automotive OEMs, agricultural and construction OEMs, heating and cooling equipment OEMs, construction contractors, wholesalers of plumbing and heating equipment, and fuel cell manufacturers. Products include heat transfer modules, oil coolers, radiators, and vehicular air conditioning systems. With operations in some 14 countries and technical centers in the US and Germany, more than half of Modine's revenues are generated outside of the US.		Fiscal Year End:	March	<b>Price</b> <b>13.720</b>
			<b>Revenue (2013):</b>	<b>1376.00 M</b>	52wk Hi 14.95
			Revenue Growth (1 yr):	(-12.80%)	52wk Lo 6.14
			Employees (2013):	6,500	Avg Vol (3m) 182,205
			Employee Growth (1 yr):	(-3.20%)	P/E (ttm) N/A
<b>26.</b>	<b>Monro Muffler Brake, Inc. [MNRO]</b>	<b>Rochester, New York, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	If you can't stop, point your car toward Monro Muffler Brake and coast on in. The company provides a full range of brake, tire, exhaust system, suspension, and steering and alignment services at more than 800 automotive repair shops. Its operations span nearly 20 states in the Northeast and Midwest and include Monro Muffler Brake & Service, Mr. Tire, Tread Quarters, Autotire Car Care Center, and Tire Warehouse. Along with under-car work, the company offers air conditioning maintenance, state inspections, and scheduled maintenance services, including fleet maintenance. Tire replacements and service account for more than 35% of sales. Monro Muffler Brake services more than 4.4 million vehicles annually.		Fiscal Year End:	March	<b>Price</b> <b>44.650</b>
			<b>Revenue (2013):</b>	<b>732.00 M</b>	52wk Hi 51.12
			Revenue Growth (1 yr):	6.6%	52wk Lo 30.72
			Employees (2013):	5,850	Avg Vol (3m) 182,060
			Employee Growth (1 yr):	14.40%	P/E (ttm) 32.40 x
<b>27.</b>	<b>Motorcar Parts of America, Inc. [MPAA]</b>	<b>Torrance, California, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	Motorcar Parts of America (MPA) is always ready for a fresh start. The company is a remanufacturer of alternators and starters for cars and all-weight trucks. MPA sells the remanufactured products to retailers and warehouse distributors, which sell to do-it-yourself (DIY) consumers and to repair shops (DIFM or do-it-for-me), primarily in the US and Canada. Some of its top customers include retail chains AutoZone (48% of sales), Advance, Genuine Parts, Pep Boys, and O'Reilly Automotive. Although most of MPA's products are sold under its customers' private labels (about 90%), the company does market alternators and starters with its Quality-Built, Reliance, Talon, and Xtreme brands.		Fiscal Year End:	March	<b>Price</b> <b>12.790</b>
			<b>Revenue (2013):</b>	<b>406.30 M</b>	52wk Hi 13.02
			Revenue Growth (1 yr):	11.7%	52wk Lo 4.25
			Employees (2013):	2,756	Avg Vol (3m) 128,205
			Employee Growth (1 yr):	(-17.50%)	P/E (ttm) 9.57 x
<b>28.</b>	<b>Puradyn Filter Technologies Incorporated [PFTI]</b>	<b>Boynton Beach, Florida, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	Check your oil? Puradyn Filter Technologies would like to. The company has developed a bypass oil filtration system that can be used in internal combustion engines and pieces of hydraulic equipment that rely on lubricating oil. The Puradyn system works in conjunction with a standard oil filter to remove solids as small as a micron (1/39 millionth of an inch), along with liquid and gaseous contaminants. Puradyn markets its filtration systems worldwide; target customers include OEMs, commercial trucking fleets, and operators of construction machinery. Puradyn has not been profitable, however, and the company's auditors have questioned whether it can stay in business.		Fiscal Year End:	December	<b>Price</b> <b>0.190</b>
			<b>Revenue (2012):</b>	<b>2.60 M</b>	52wk Hi 0.28
			Revenue Growth (1 yr):	(-4.10%)	52wk Lo 0.10
			Employees (2012):	21	Avg Vol (3m) 4,752
			Employee Growth (1 yr):	(-4.50%)	P/E (ttm) N/A

Auto Parts Superior (APS) - INDIA					
Initial Selection of Publicly Traded Companies					
Auto Parts Manufacturing Industry - US-SIC 3714 & NAICS 3363					
<b>29.</b>	<b>Quantum Fuel Systems Technologies Worldwide, Inc. [QTWW]</b>	<b>Irvine, California, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	If you're ready to make a quantum leap to a new fuel source, then Quantum Fuel Systems Technologies Worldwide is the place to land. Quantum makes fuel storage, delivery devices, and electronic control systems for alternative-fueled vehicles. It serves the military with its branded HyHauler Plus, a transportable hydrogen refueling station that powers battlefield vehicles. Fisker Automotive, a joint venture between Quantum and Fisker Coachbuild, is developing the Karma, an environmentally friendly luxury sports sedan, using Quantum's plug-in-hybrid engine technology. Its customer base also includes aerospace and government entities.		Fiscal Year End:	April	<b>Price</b> <b>3.910</b>
			<b>Revenue (2012):</b>	<b>22.70 M</b>	52wk Hi 4.44
			Revenue Growth (1 yr):	12.0%	52wk Lo 1.85
			Employees (2012):	122	Avg Vol (3m) 239,465
			Employee Growth (1 yr):	8.90%	P/E (ttm) N/A
<b>30.</b>	<b>Remy International, Inc. [REMY]</b>	<b>Pendleton, Indiana, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	Remy International (formerly Delco Remy International) revs up cars and light- and heavy-duty trucks. The manufacturer and distributor offers starter motors, alternators, hybrid electric motors, and transmission components. Most parts are sold under the Delco Remy brand, which debuted in 1918. The company holds the top spot for remanufacturing starters and alternators for the automotive aftermarket in North America. Its roster of customers includes OEMs (General Motors is largest customer generating almost 25% of annual sales) and aftermarket businesses, such as Advance Auto Parts and AutoZone. Fidelity National, a title insurance company, owns 49% of Remy, which filed to go public in 2011.		Fiscal Year End:	December	<b>Price</b> <b>21.090</b>
			<b>Revenue (2011):</b>	<b>1195.00 M</b>	52wk Hi 21.81
			Revenue Growth (1 yr):	8.3%	52wk Lo 15.34
			Employees (2011):	6,231	Avg Vol (3m) 55,851
			Employee Growth (1 yr):	9.00%	P/E (ttm) 5.28 x
<b>31.</b>	<b>Shiloh Industries, Inc. [SHLO]</b>	<b>Valley City, Ohio, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	When Shiloh Industries draws a blank, it's a good thing. The company produces stampings, modular assemblies, and steel and welded blanks for the automotive, heating and air-conditioning, and lawn and garden equipment industries. It also makes tools and assembly equipment for its own use and to sell to OEMs and other suppliers. Shiloh's largest customer is General Motors, accounting for about 34% of sales. Other customers include Ford, Chrysler, and Toyota, as well as home appliance manufacturers, construction companies, and steel producers. Its nine manufacturing plants are located in Georgia, Michigan, Ohio, and Tennessee, as well as Mexico. The company was founded in 1950 as Shiloh Tool & Die Manufacturing.		Fiscal Year End:	October	<b>Price</b> <b>13.580</b>
			<b>Revenue (2012):</b>	<b>586.10 M</b>	52wk Hi 13.81
			Revenue Growth (1 yr):	13.2%	52wk Lo 7.45
			Employees (2012):	1,430	Avg Vol (3m) 313,109
			Employee Growth (1 yr):	12.60%	P/E (ttm) 12.33 x
<b>32.</b>	<b>Standard Motor Products, Inc. [SMP]</b>	<b>Long Island, New York, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	Standard Motor Products (SMP) is going for gold as a manufacturer and distributor of replacement parts for the automotive industry. The company is organized into two major operating segments. Its largest segment, Engine Management, makes ignition and emission parts, ignition wires, battery cables, and fuel system parts. Its Temperature Control segment manufactures and remanufactures air conditioning compressors, heating parts, engine cooling system parts, power window accessories, and windshield washer parts. Customers include warehouse distributors CARQUEST and NAPA Auto Parts and retail chains Advance Auto Parts and AutoZone. North America is SMP's core market, but a small portion of sales comes from Europe.		Fiscal Year End:	December	<b>Price</b> <b>32.700</b>
			<b>Revenue (2012):</b>	<b>948.90 M</b>	52wk Hi 38.05
			Revenue Growth (1 yr):	8.5%	52wk Lo 16.57
			Employees (2012):	3,500	Avg Vol (3m) 177,494
			Employee Growth (1 yr):	2.90%	P/E (ttm) 15.76 x
<b>33.</b>	<b>Stoneridge, Inc. [SRI]</b>	<b>Warren, Ohio, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	Stoneridge makes sure your vehicle's electrical system can send power to all the places where it needs to go -- whether it's an automobile, medium- or heavy-duty truck, or agricultural/off-highway vehicle. The company's wiring segment makes wiring harnesses and connectors, and its electronics unit makes electronic control units, instrumentation displays, and driver information and electrical distribution systems. Its control devices segment products monitor and measure specific functions of a vehicle, using switches, control actuation devices, and sensors. Stonebridge also has a PST segment that makes vehicle security alarms and tracking devices.		Fiscal Year End:	December	<b>Price</b> <b>11.250</b>
			<b>Revenue (2012):</b>	<b>938.50 M</b>	52wk Hi 13.63
			Revenue Growth (1 yr):	22.6%	52wk Lo 4.51
			Employees (2012):	8,700	Avg Vol (3m) 192,258
			Employee Growth (1 yr):	(-19.40%)	P/E (ttm) 23.89 x
<b>34.</b>	<b>STRATTEC SECURITY CORPORATION [STRT]</b>	<b>Milwaukee, Wisconsin, USA</b>	<b>Financial Highlights</b>		<b>Market Performance</b>
	STRATTEC SECURITY has your car under lock and key. The company designs and manufactures mechanical security locks, electro-mechanical locks and keys, and ignition lock housings primarily for global automakers. It also makes access control products, including door handles, latches, power sliding doors, and power lift gates. Chrysler, Ford, and General Motors account for the majority of STRATTEC's annual sales. In addition to cars and light trucks, its products are used in the heavy truck and recreational vehicle markets, as well as in precision die castings. With facilities in the US and Mexico, STRATTEC delivers products mainly in North America, but also abroad in Asia, Europe, and South America.		Fiscal Year End:	June	<b>Price</b> <b>40.450</b>
			<b>Revenue (2013):</b>	<b>298.20 M</b>	52wk Hi 42.30
			Revenue Growth (1 yr):	6.8%	52wk Lo 21.25
			Employees (2013):	2,670	Avg Vol (3m) 8,400
			Employee Growth (1 yr):	6.50%	P/E (ttm) 14.87 x

Auto Parts Superior (APS) - INDIA					
Initial Selection of Publicly Traded Companies					
Auto Parts Manufacturing Industry - US-SIC 3714 & NAICS 3363					
			Financial Highlights	Market Performance	
<b>35.</b>	<b>Superior Industries International, Inc. [SUP]</b>	<b>Van Nuys, California, USA</b>			
	Superior Industries International plays its own version of Wheel of Fortune. The company is one of the world's largest makers of aluminum road wheels for passenger cars and light trucks. It operates five manufacturing facilities; nearly 70% of Superior Industries' wheels are made in Mexico. Remaining production is primarily in the US and, to a small extent, through an investment in India. Superior Industries sells roughly 80% of its wheels to OEMs General Motors, Ford Motor, and Chrysler, for factory installation or as optional or standard items on some models. Other customers include BMW, Nissan, and Toyota. North America is its core market; sales to international OEMs supply assembly plants mainly in the US.		Fiscal Year End: December <b>Revenue (2012): 821.50 M</b> Revenue Growth (1 yr): (-0.10%) Employees (2012): 3,900 Employee Growth (1 yr): 2.60%	December 52wk Hi 52wk Lo Avg Vol (3m) P/E (ttm)	<b>Price 17.500</b> 22.09 16.51 84,037 16.53 x
<b>36.</b>	<b>Tenneco Inc. [TEN]</b>	<b>Lake Forest, Illinois, USA</b>			
	Tenneco ensures vehicles are riding steady without exhausting a lot of smoke. The auto parts maker designs and distributes ride-control equipment (including shock absorbers, struts, and suspensions) under the Monroe brand, and emissions-control systems (catalytic converters, exhaust pipes, and mufflers) under the Walker brand. It also makes Clevite elastomer products (bushings, mounts, and springs) for vibration control in cars and heavy trucks. It supplies both OEMs and aftermarket wholesalers and retailers. Major customers include GM, Ford, Advance Auto Parts, and Uni-Select. Tenneco operates on six continents and is growing its presence in key Asia/Pacific markets.		Fiscal Year End: December <b>Revenue (2012): 7363.00 M</b> Revenue Growth (1 yr): 2.2% Employees (2012): 25,000 Employee Growth (1 yr): 4.20%	December 52wk Hi 52wk Lo Avg Vol (3m) P/E (ttm)	<b>Price 49.410</b> 52.93 26.72 521,603 10.96 x
<b>37.</b>	<b>Torvec, Inc. [TOVC]</b>	<b>Rochester, New York, USA</b>			
	A development-stage company, Torvec hopes to bring its Torvec FTV (full-terrain vehicle) to the markets of developing nations. The FTV has the body of a truck, but has tracks similar to those of a tank. The tracks enable the FTV to venture where a mere wheeled vehicle would fear to tread. Several technologies developed by the late Vernon Gleasman and members of his family, including an infinitely variable transmission and a steering drive and suspension system for tracked vehicles, are being incorporated into the FTV. The company is working with Ford Motor to develop a version of the FTV to be manufactured and distributed in the US initially and then marketed globally.		Fiscal Year End: December <b>Revenue (2012): 0.10 M</b> Revenue Growth (1 yr): 100.0% Employees (2012): 11 Employee Growth (1 yr): 10.00%	December 52wk Hi 52wk Lo Avg Vol (3m) P/E (ttm)	<b>Price 0.350</b> 0.87 0.30 18,205 N/A
<b>38.</b>	<b>TRW Automotive Holdings Corp. [TRW]</b>	<b>Livonia, Michigan, USA</b>			
	TRW Automotive makes cars stop and go around the globe, in addition to keeping passengers and pedestrians safe. The company designs and makes systems, components, and modules primarily for major automakers. Product lines range from chassis systems (brake, steering, and suspension systems) to safety systems, such as airbags, seat belts, and security and safety electronics (crash and occupant weight sensors). Other products include body controls and engine valves. TRW Automotive has about 190 facilities in more than two dozen countries worldwide, netting nearly 70% of its sales outside North America.		Fiscal Year End: December <b>Revenue (2012): 16444.00 M</b> Revenue Growth (1 yr): 1.2% Employees (2012): 75,200 Employee Growth (1 yr): 3.40%	December 52wk Hi 52wk Lo Avg Vol (3m) P/E (ttm)	<b>Price 71.320</b> 74.42 43.86 1,066,440 9.10 x
<b>39.</b>	<b>Visteon Corporation [VC]</b>	<b>Van Buren Township, Michigan, USA</b>			
	Visteon is the visionary-sounding name Ford Motor bestowed on its automotive components unit when it was spun off in 2000. One of the largest auto parts makers in the US, the company has evolved to operate three business groups: Climate Control (climate systems, powertrain cooling systems); Electronic Products (audio systems, driver control systems, infotainment systems, powertrain and feature control modules); and Interior Products (cockpits, door modules, consoles). Ford represents about 25% of sales; Visteon also provides products and services to aftermarket customers. More than 80% of its sales are made outside the US.		Fiscal Year End: December <b>Revenue (2012): 6857.00 M</b> Revenue Growth (1 yr): (-14.80%) Employees (2012): 22,000 Employee Growth (1 yr): (-15.40%)	December 52wk Hi 52wk Lo Avg Vol (3m) P/E (ttm)	<b>Price 72.950</b> 77.60 42.48 526,169 20.27 x
<b>40.</b>	<b>WABCO Holdings Inc. [WBC]</b>	<b>Brussels, Belgium</b>			
	There are no wacky wabbits at WABCO, only products to make you stable and in control. The global auto parts maker designs and sells braking, stability, suspension, and transmission control and air compressing systems for commercial trucks, trailers, buses, SUVs, and passenger cars, such as AUDI and Mercedes-Benz. It also makes shock absorbers, cruise control components, and tire pressure monitors. The company's products are sold directly to auto and component manufacturers, including Ford, GMC, Nissan, Volvo, and Volkswagen, while spare parts are sold through independent aftermarket dealers. WABCO derives the majority of its sales outside the US.		Fiscal Year End: December <b>Revenue (2012): 2477.40 M</b> Revenue Growth (1 yr): (-11.30%) Employees (2012): 10,657 Employee Growth (1 yr): (-2.20%)	December 52wk Hi 52wk Lo Avg Vol (3m) P/E (ttm)	<b>Price 81.750</b> 86.76 55.54 381,965 17.87 x
<b>41.</b>	<b>Westport Innovations Inc. [WPRT]</b>	<b>Vancouver, British Columbia, Canada</b>			
	Wouldn't it be great if engines ran on air? That's sort of the idea behind Westport Innovations. The company makes fuel systems and components that let engines run on gaseous forms of fuel rather than liquid petroleum. Working through partnerships and joint ventures (JVs), it has sold more than 30,000 truck and bus engines to manufacturers in about 20 countries. Major subsidiary Westport Power, through a JV with Cummins, makes liquefied natural gas (LNG) and liquefied petroleum gas (LPG) engines for transit and commercial vehicles. Juniper Engines, the other key subsidiary, makes natural gas and LPG engines for automotive and industrial OEMs and offers aftermarket engine conversions. Westport was formed in 1995.		Fiscal Year End: March <b>Revenue (2012): 155.60 M</b> Revenue Growth (1 yr): 5.1% Employees (2012): 1,043 Employee Growth (1 yr): 137.00%	March 52wk Hi 52wk Lo Avg Vol (3m) P/E (ttm)	<b>Price 24.480</b> 35.40 23.01 876,411 N/A
<b>42.</b>	<b>Wonder Auto Technology, Inc. [WATG]</b>	<b>Jinzhou, Liaoning, China</b>			
	Every journey has a beginning, and Wonder Auto Technology makes products that get the journey started. Through its operating subsidiaries, Wonder Auto designs and manufactures starters, alternators, and other automotive electrical parts for passenger vehicles. It also manufactures rods and shafts, which are used in suspension and shock-absorber systems. Although the company earns some of its sales revenue from international customers, most of Wonder Auto's products are sold to OEMs operating in China. Some of its larger customers include Chery Automobile Co. and Shanghai VW, as well as Chinese subsidiaries of Mitsubishi Motors and Hyundai Motor Company.		Fiscal Year End: December	December 52wk Hi 52wk Lo Avg Vol (3m) P/E (ttm)	<b>Price 0.450</b> 1.01 0.09 0 N/A

## Exhibit 5B – Selected GPCs Financial &amp; Market Performance Data

<b>China Automotive Systems, Inc. [CAAS]</b>									
<b>Financial and Market Analysis as of October 2013</b>									
	12 Months to	FYE	FYE		<b>Using Latest Twelve Months Data</b>				
	Jun. 30, 2013	Dec. 31, 2012	Dec. 31, 2011	Averages	<b>Equity</b>		<b>Invested Capital</b>		
	(\$000s)	(\$000s)	(\$000s)	(\$000s)	(\$000s)		(\$000s)		
<b>Balance Sheet</b>					<b>Size</b>				
Cash & Equivalents	97,898	114,130	94,782	102,270	Sales	369,759	Sales	369,759	
Receivables	277,594	227,498	215,304	240,132	Assets	526,234	Assets	526,234	
Inventory	48,251	43,542	51,607	47,800	BV Equity	249,775	BV Inv Cap	296,950	
Other Current Assets	5,953	4,392	3,687	4,677	<b>Growth (latest FY's)</b>				
Total Current Assets	429,696	389,562	365,380	394,879	Sales	1.9%	Sales	1.9%	
Net Fixed Assets	83,361	81,691	84,843	83,298	Assets	4.2%	Assets	4.2%	
Other Long-term Assets	13,177	14,572	16,224	14,658	BV Equity	7.5%	BV Inv Cap	9.1%	
<b>Total Assets</b>	<b>526,234</b>	<b>485,825</b>	<b>466,447</b>	<b>492,835</b>	<b>Liquidity</b>				
Short-term Interest-bearing Debt	47,175	40,284	10,316	32,592	Current Ratio	x1.55	Current Ratio	x1.55	
Accounts Payable	183,707	170,901	171,509	175,372	EBIT / Interest	x28.45	EBIT / Interest	x28.45	
Other Current Liabilities	45,577	39,631	35,735	40,314	<b>Profitability</b>				
Total Current Liabilities	276,459	250,816	217,560	248,278	Gross Margin	18.3%	Gross Margin	18.3%	
Long-term Interest-bearing Debt	0	0	23,571	7,857	EBT Margin	8.0%	EBIT Margin	8.2%	
Other Long-term Liabilities	0	2,609	9,159	3,923	NIAT Margin	6.7%	NOPAT Margin	6.9%	
Total Liabilities	276,459	253,425	250,290	260,058			EBITDA Margin	12.0%	
Prov-Committ-Contingent-PfdStk-etc	0	0	0	0	<b>Turnover</b>				
Common Equity	249,775	232,400	216,157	232,777	Sales / Receivables	x1.33	Sales / Receiv	x1.33	
<b>Total Liabilities &amp; Equity</b>	<b>526,234</b>	<b>485,825</b>	<b>466,447</b>	<b>492,835</b>	COGS / Inventory	x6.26	COGS / Invent	x6.26	
<b>Income Statement</b>					Sales / NFA	x4.44	Sales / NFA	x4.44	
<b>Sales (net)</b>	<b>369,759</b>	<b>336,005</b>	<b>329,848</b>	<b>345,204</b>	Sales / Assets	x0.70	Sales / Assets	x0.70	
- Cost of Good Sold	(302,268)	(275,254)	(266,482)	(281,335)	<b>Leverage</b>				
Gross Profit	67,491	60,751	63,366	63,869	Equity / Assets	47.5%	IC / Assets	56.4%	
- R&D Expense	(15,660)	(14,886)	(8,993)	(13,180)	Assets / Equity	x2.11	Assets / IC	x1.77	
- Other Operating Expenses	(21,784)	(18,067)	(23,273)	(21,041)	<b>Return on investments</b>				
Operating Profit	30,047	27,798	31,100	29,648	NIAT / Sales	6.7%	NOPAT / Sales	6.9%	
- Financial Expense (net)	(1,072)	(2,175)	(3,969)	(2,405)	x Sales / Assets	x0.70	x Sales / Assets	x0.70	
+/- Other Income (-Expense)	455	1,432	22,704	8,197	x Assets / Equity	x2.11	x Assets / IC	x1.77	
Pre-tax Income (EBT)	29,430	27,055	49,835	35,440	= ROE	9.9%	= ROIC	8.6%	
- Income Taxes	(4,748)	(4,220)	(3,973)	(4,314)	Chcc calc.	9.9%		8.6%	
<b>Net Income After Tax (NIAT)</b>	<b>24,682</b>	<b>22,835</b>	<b>45,862</b>	<b>31,126</b>	<b>Equity Capital Market Analysis</b>				
+/- Discontinued Operations	0	2,651	2,041	1,564	Current Price Per Share	\$7.14			
Comprehensive Net Income	24,682	25,486	47,903	32,690	Actively Traded	Low	High	Range % Median	
Depreciation & Amortization	13,818	13,910	13,501	13,743	52 week Range	\$3.94	\$10.05	+/- 43.7%	
Ending Shares Outstanding	28,043,019				Average Daily Volume (3 months)	190,360			
Current Price Per Share	\$7.14/share				Volume as % of Ending Shares	0.679%			
Equity Market Capitalization	\$200,227				Avg Annual Turnover of Shares	2.48 x			
Invested Capital Market Value	\$247,402				<b>Market Capitalization Multiples</b>				
<b>Additional Calculations (LTM)</b>					<b>Equity</b>		<b>Invested Capital</b>		
Gross Cash Flow to Equity (GCFeq)	38,500	36,745	59,363	44,869	\$200,227		\$247,402		
Oper Net Working Capital (WC <sub>IC</sub> )	200,412	179,030	158,136	179,193	<b>Equity</b>		<b>Invested Capital</b>		
Interest-bearing Debt	47,175	40,284	33,887	40,449	<b>Market Multiples</b>		<b>Market Multiples</b>		
<b>Invested Capital</b>	<b>296,950</b>	<b>272,684</b>	<b>250,044</b>	<b>273,226</b>	Price / Sales	0.54 x	Price / Sales	0.67 x	
Earn B4 Interest & Taxes (EBIT)	30,502	29,230	53,804	37,845	Price / Gross	2.97 x	Price / Gross	3.67 x	
Net Oper Profit After Tax (NOPAT)	25,581	24,671	49,515	33,255	Price / EBT	6.80 x	Price / EBIT	8.11 x	
Earn B4 Int, Taxes & D/A (EBITDA)	44,320	43,140	67,305	51,588	Price / NIAT	8.11 x	Price / NOPAT	9.67 x	
Effective Tax Rate	16.1%	15.6%	8.0%	13.2%	Price / GCFeq	5.20 x	Price / EBITDA	5.58 x	
					Price / BVeq	0.80 x	Price / BVic	0.83 x	

<b>China Zenix Auto International Limited [ZX]</b>				
<b>Financial and Market Analysis as of October 2013</b>				
	12 Months to	FYE	FYE	
	Jun 30, 2013	Dec 31, 2012	Dec 31, 2011	Averages
	(\$000s)	(\$000s)	(\$000s)	(\$000s)
<b>Balance Sheet</b>				
Cash & Equivalents	143,257	169,846	147,894	153,666
Receivables	168,000	130,567	176,072	158,213
Inventory	59,946	58,482	87,721	68,716
Other Current Assets	1,536	1,513	1,323	1,457
Total Current Assets	372,739	360,408	413,010	382,052
Net Fixed Assets	245,019	225,605	188,239	219,621
Other Long-term Assets	72,147	78,807	68,988	73,314
<b>Total Assets</b>	<b>689,905</b>	<b>664,820</b>	<b>670,237</b>	<b>674,987</b>
Short-term Interest-bearing Debt	100,205	112,358	158,646	123,736
Accounts Payable	184,357	171,857	189,092	181,769
Other Current Liabilities	0	0	0	0
Total Current Liabilities	284,562	284,215	347,738	305,505
Long-term Interest-bearing Debt	0	0	0	0
Other Long-term Liabilities	14,745	14,688	14,959	14,797
Total Liabilities	299,307	298,903	362,697	320,302
Prov-Committ-Contingent-PfdStk-etc	0	0	0	0
Common Equity	390,598	365,917	307,540	354,685
<b>Total Liabilities &amp; Equity</b>	<b>689,905</b>	<b>664,820</b>	<b>670,237</b>	<b>674,987</b>
<b>Income Statement</b>				
<b>Sales (net)</b>	<b>565,388</b>	<b>599,985</b>	<b>650,451</b>	<b>605,275</b>
- Cost of Good Sold	(440,912)	(448,716)	(477,540)	(455,723)
Gross Profit	124,476	151,269	172,911	149,552
- R&D Expense	(13,760)	(14,578)	(13,568)	(13,969)
- Other Operating Expenses	(63,215)	(62,623)	(61,254)	(62,364)
Operating Profit	47,501	74,068	98,089	73,219
- Financial Expense (net)	(6,319)	(8,173)	(9,618)	(8,037)
+/- Other Income (-Expense)	2,278	2,887	924	2,030
Pre-tax Income (EBT)	43,460	68,782	89,395	67,212
- Income Taxes	(6,932)	(10,736)	(17,548)	(11,739)
<b>Net Income After Tax (NIAT)</b>	<b>36,528</b>	<b>58,046</b>	<b>71,847</b>	<b>55,474</b>
+/- Discontinued Operations	0	0	0	0
Comprehensive Net Income	36,528	58,046	71,847	55,474
Depreciation & Amortization	21,658	20,937	19,483	20,693
Ending Shares Outstanding	206,500,000			
Current Price Per Share	\$3.98/share			
Equity Market Capitalization	\$821,870			
Invested Capital Market Value	\$922,075			
<b>Additional Calculations (LTM)</b>				
Gross Cash Flow to Equity (GCFeq)	58,186	78,983	91,330	76,166
Oper Net Working Capital (WC <sub>IC</sub> )	188,382	188,551	223,918	200,284
Interest-bearing Debt	100,205	112,358	158,646	123,736
<b>Invested Capital</b>	<b>490,803</b>	<b>478,275</b>	<b>466,186</b>	<b>478,421</b>
Earn B4 Interest & Taxes (EBIT)	49,779	76,955	99,013	75,249
Net Oper Profit After Tax (NOPAT)	41,839	64,943	79,577	62,120
Earn B4 Int, Taxes & D/A (EBITDA)	71,437	97,892	118,496	95,942
Effective Tax Rate	16.0%	15.6%	19.6%	17.1%
<b>Using Latest Twelve Months Data</b>				
<b>Size</b>				
Sales	565,388		Sales	565,388
Assets	689,905		Assets	689,905
BV Equity	390,598		BV Inv Cap	490,803
<b>Growth (latest FY's)</b>				
Sales	-7.8%		Sales	-7.8%
Assets	-0.8%		Assets	-0.8%
BV Equity	19.0%		BV Inv Cap	2.6%
<b>Liquidity</b>				
Current Ratio	x1.31		Current Ratio	x1.31
EBIT / Interest	x7.88		EBIT / Interest	x7.88
<b>Profitability</b>				
Gross Margin	22.0%		Gross Margin	22.0%
EBT Margin	7.7%		EBIT Margin	8.8%
NIAT Margin	6.5%		NOPAT Margin	7.4%
			EBITDA Margin	12.6%
<b>Turnover</b>				
Sales / Receivables	x3.37		Sales / Receiv	x3.37
COGS / Inventory	x7.36		COGS / Invent	x7.36
Sales / NFA	x2.31		Sales / NFA	x2.31
Sales / Assets	x0.82		Sales / Assets	x0.82
<b>Leverage</b>				
Equity / Assets	56.6%		IC / Assets	71.1%
Assets / Equity	x1.77		Assets / IC	x1.41
<b>Return on investments</b>				
NIAT / Sales	6.5%		NOPAT / Sales	7.4%
x Sales / Assets	x0.82		x Sales / Assets	x0.82
x Assets / Equity	x1.77		x Assets / IC	x1.41
= ROE	9.4%		= ROIC	8.5%
Chcc calc.	9.4%			8.5%
<b>Equity Capital Market Analysis</b>				
Current Price Per Share		\$3.98		
<b>Actively Traded</b>	Low	High	<i>Range % Median</i>	
	52 week Range	\$2.41	\$4.11	+/- 26.1%
Average Daily Volume (3 months)		34,402		
Volume as % of Ending Shares		0.017%		
Avg Annual Turnover of Shares		0.06 x		
<b>Market Capitalization Multiples</b>				
<b>Equity</b>		<b>Invested Capital</b>		
<b>\$821,870</b>		<b>\$922,075</b>		
<b>Equity</b>		<b>Invested Capital</b>		
<b>Market Multiples</b>		<b>Market Multiples</b>		
Price / Sales	1.45 x	Price / Sales	1.63 x	
Price / Gross	6.60 x	Price / Gross	7.41 x	
Price / EBT	18.91 x	Price / EBIT	18.52 x	
Price / NIAT	22.50 x	Price / NOPAT	22.04 x	
Price / GCFeq	14.12 x	Price / EBITDA	12.91 x	
Price / BVEq	2.10 x	Price / BVic	1.88 x	

<b>Gentex Corporation [GNTX]</b>									
<b>Financial and Market Analysis as of October 2013</b>									
	12 Months to	FYE	FYE		Using Latest Twelve Months Data				
	Jun 30, 2013	Dec 31, 2012	Dec 31, 2011	Averages	Equity		Invested Capital		
	(\$000s)	(\$000s)	(\$000s)	(\$000s)	(\$000s)		(\$000s)		
<b>Balance Sheet</b>					<b>Size</b>				
Cash & Equivalents	93,018,974	450,482	418,795	31,296,083	Sales	1,085,070	Sales	1,085,070	
Receivables	120,187	109,580	110,390	113,385	Assets	1,366,277	Assets	1,366,277	
Inventory	116,002	159,930	188,753	154,895	BV Equity	1,207,010	BV Inv Cap	1,207,010	
Other Current Assets	(92,399,691)	24,672	34,355	(30,780,222)	<b>Growth (latest FY's)</b>				
Total Current Assets	855,472	744,663	752,293	784,143	Sales	7.4%	Sales	7.4%	
Net Fixed Assets	345,932	349,938	282,542	326,137	Assets	7.6%	Assets	7.6%	
Other Long-term Assets	164,874	171,090	141,192	159,052	BV Equity	9.1%	BV Inv Cap	9.1%	
<b>Total Assets</b>	<b>1,366,277</b>	<b>1,265,691</b>	<b>1,176,027</b>	<b>1,269,332</b>	<b>Liquidity</b>				
Short-term Interest-bearing Debt	0	0	0	0	Current Ratio	x8.23	Current Ratio	x8.23	
Accounts Payable	43,790	43,200	65,471	50,820	EBIT / Interest		EBIT / Interest		
Other Current Liabilities	60,094	44,757	35,224	46,692	<b>Profitability</b>				
Total Current Liabilities	103,884	87,957	100,695	97,512	Gross Margin	34.6%	Gross Margin	34.6%	
Long-term Interest-bearing Debt	0	0	0	0	EBT Margin	24.2%	EBIT Margin	24.2%	
Other Long-term Liabilities	55,384	56,773	48,214	53,457	NIAT Margin	16.5%	NOPAT Margin	16.5%	
Total Liabilities	159,267	144,731	148,908	150,969			EBITDA Margin	29.1%	
Prov-Committ-Contingent-PfdStk-etc	0	0	0	0	<b>Turnover</b>				
Common Equity	1,207,010	1,120,961	1,027,119	1,118,363	Sales / Receivables	x9.03	Sales / Receiv	x9.03	
<b>Total Liabilities &amp; Equity</b>	<b>1,366,277</b>	<b>1,265,691</b>	<b>1,176,027</b>	<b>1,269,332</b>	COGS / Inventory	x6.12	COGS / Invent	x6.12	
<b>Income Statement</b>					Sales / NFA	x3.14	Sales / NFA	x3.14	
<b>Sales (net)</b>	<b>1,085,070</b>	<b>1,099,560</b>	<b>1,023,762</b>	<b>1,069,464</b>	Sales / Assets	x0.79	Sales / Assets	x0.79	
- Cost of Good Sold	(709,759)	(726,741)	(662,182)	(699,561)	<b>Leverage</b>				
Gross Profit	375,311	372,819	361,580	369,903	Equity / Assets	88.3%	IC / Assets	88.3%	
- R&D Expense	(93,463)	(85,004)	(81,634)	(86,700)	Assets / Equity	x1.13	Assets / IC	x1.13	
- Other Operating Expenses	(131,047)	(149,452)	(149,734)	(143,411)	<b>Return on investments</b>				
Operating Profit	150,800	138,363	130,212	139,792	NIAT / Sales	16.5%	NOPAT / Sales	16.5%	
- Financial Expense (net)	0	0	0	0	x Sales / Assets	x0.79	x Sales / Assets	x0.79	
+/- Other Income (-Expense)	112,241	111,262	114,219	112,574	x Assets / Equity	x1.13	x Assets / IC	x1.13	
Pre-tax Income (EBT)	263,041	249,626	244,432	252,366	= ROE	14.8%	= ROIC	14.8%	
- Income Taxes	(84,038)	(81,039)	(79,764)	(81,613)	Chec calc.	14.8%		14.8%	
<b>Net Income After Tax (NIAT)</b>	<b>179,004</b>	<b>168,587</b>	<b>164,668</b>	<b>170,753</b>					
+/- Discontinued Operations	0	0	0	0					
Comprehensive Net Income	179,004	168,587	164,668	170,753					
					<b>Equity Capital Market Analysis</b>				
					Current Price Per Share		\$25.36		
Depreciation & Amortization	52,608	50,180	42,635	48,474	<b>Actively Traded</b>	<b>Low</b>	<b>High</b>	<b>Range % Median</b>	
Ending Shares Outstanding	144,260,000				52 week Range	\$15.25	\$26.25	+/- 26.5%	
Current Price Per Share	\$25.36/share				Average Daily Volume (3 months)	976,688			
Equity Market Capitalization	\$3,658,434				Volume as % of Ending Shares	0.677%			
Invested Capital Market Value	\$3,658,434				Avg Annual Turnover of Shares	2.47 x			
					<b>Market Capitalization Multiples</b>				
<b>Additional Calculations (LTM)</b>					<b>Equity</b>		<b>Invested Capital</b>		
Gross Cash Flow to Equity (GCFeq)	231,611	218,767	207,303	219,227	<b>\$3,658,434</b>		<b>\$3,658,434</b>		
Oper Net Working Capital (WC <sub>IC</sub> )	751,588	656,706	651,598	686,631	<b>Equity</b>		<b>Invested Capital</b>		
Interest-bearing Debt	0	0	0	0	<b>Market Multiples</b>		<b>Market Multiples</b>		
<b>Invested Capital</b>	<b>1,207,010</b>	<b>1,120,961</b>	<b>1,027,119</b>	<b>1,118,363</b>	Price / Sales	3.37 x	Price / Sales	3.37 x	
Earn B4 Interest & Taxes (EBIT)	263,041	249,626	244,432	252,366	Price / Gross	9.75 x	Price / Gross	9.75 x	
Net Oper Profit After Tax (NOPAT)	179,004	168,587	164,668	170,753	Price / EBT	13.91 x	Price / EBIT	13.91 x	
Earn B4 Int, Taxes & D/A (EBITDA)	315,649	299,805	287,066	300,840	Price / NIAT	20.44 x	Price / NOPAT	20.44 x	
Effective Tax Rate	31.9%	32.5%	32.6%	32.3%	Price / GCFeq	15.80 x	Price / EBITDA	11.59 x	
					Price / BVeq	3.03 x	Price / BVic	3.03 x	



<b>Shiloh Industries, Inc. [SHLO]</b>								
<b>Financial and Market Analysis as of October 2013</b>								
	12 Months to	FYE	FYE		<b>Using Latest Twelve Months Data</b>			
	<u>Jun 30, 2013</u>	<u>Oct 31, 2012</u>	<u>Oct 31, 2011</u>	<u>Averages</u>		<u>Equity</u>		<u>Invested Capital</u>
	(\$000s)	(\$000s)	(\$000s)	(\$000s)		(\$000s)		(\$000s)
<b>Balance Sheet</b>					<b>Size</b>			
Cash & Equivalents	638	174	20	277	<b>Sales</b>	<b>642,439</b>	<b>Sales</b>	<b>642,439</b>
Receivables	86,942	77,556	76,632	80,377	<b>Assets</b>	<b>321,827</b>	<b>Assets</b>	<b>321,827</b>
Inventory	41,724	44,687	33,976	40,129	<b>BV Equity</b>	<b>119,149</b>	<b>BV Inv Cap</b>	<b>203,009</b>
Other Current Assets	5,611	5,422	6,075	5,703	<b>Growth ( latest FY's)</b>			
Total Current Assets	134,915	127,839	116,703	126,486	<b>Sales</b>	<b>13.2%</b>	<b>Sales</b>	<b>13.2%</b>
Net Fixed Assets	157,719	117,101	121,467	132,096	<b>Assets</b>	<b>3.5%</b>	<b>Assets</b>	<b>3.5%</b>
Other Long-term Assets	29,193	4,162	2,504	11,953	<b>BV Equity</b>	<b>-0.2%</b>	<b>BV Inv Cap</b>	<b>-3.6%</b>
<b>Total Assets</b>	<b>321,827</b>	<b>249,102</b>	<b>240,674</b>	<b>270,534</b>	<b>Liquidity</b>			
					<b>Current Ratio</b>	<b>x1.54</b>	<b>Current Ratio</b>	<b>x1.54</b>
Short-term Interest-bearing Debt	860	447	428	578	<b>EBIT / Interest</b>	<b>x15.62</b>	<b>EBIT / Interest</b>	<b>x15.62</b>
Accounts Payable	64,344	63,633	57,214	61,730	<b>Profitability</b>			
Other Current Liabilities	22,541	21,395	23,733	22,556	<b>Gross Margin</b>	<b>9.7%</b>	<b>Gross Margin</b>	<b>9.7%</b>
Total Current Liabilities	87,745	85,475	81,375	84,865	<b>EBT Margin</b>	<b>4.5%</b>	<b>EBIT Margin</b>	<b>4.8%</b>
Long-term Interest-bearing Debt	83,000	21,150	25,700	43,283	<b>NIAT Margin</b>	<b>2.9%</b>	<b>NOPAT Margin</b>	<b>3.1%</b>
Other Long-term Liabilities	31,933	35,074	25,947	30,985			<b>EBITDA Margin</b>	<b>7.8%</b>
Total Liabilities	202,678	141,699	133,022	159,133	<b>Turnover</b>			
Prov-Committ-Contingent-PfdStk-etc		0	0	0	<b>Sales / Receivables</b>	<b>x7.39</b>	<b>Sales / Receiv</b>	<b>x7.39</b>
Common Equity	119,149	107,403	107,652	111,401	<b>COGS / Inventory</b>	<b>x13.91</b>	<b>COGS / Invent</b>	<b>x13.91</b>
<b>Total Liabilities &amp; Equity</b>	<b>321,827</b>	<b>249,102</b>	<b>240,674</b>	<b>270,534</b>	<b>Sales / NFA</b>	<b>x4.07</b>	<b>Sales / NFA</b>	<b>x4.07</b>
					<b>Sales / Assets</b>	<b>x2.00</b>	<b>Sales / Assets</b>	<b>x2.00</b>
<b>Income Statement</b>					<b>Leverage</b>			
<b>Sales (net)</b>	<b>642,439</b>	<b>586,074</b>	<b>517,743</b>	<b>582,085</b>	<b>Equity / Assets</b>	<b>37.0%</b>	<b>IC / Assets</b>	<b>63.1%</b>
- Cost of Good Sold	(580,372)	(535,339)	(478,807)	(531,506)	<b>Assets / Equity</b>	<b>x2.70</b>	<b>Assets / IC</b>	<b>x1.59</b>
Gross Profit	62,067	50,735	38,936	50,579	<b>Return on investments</b>			
- R&D Expense	0	0	0	0	<b>NIAT / Sales</b>	<b>2.9%</b>	<b>NOPAT / Sales</b>	<b>3.1%</b>
- Other Operating Expenses	(37,504)	(26,655)	(24,104)	(29,421)	<b>x Sales / Assets</b>	<b>x2.00</b>	<b>x Sales / Assets</b>	<b>x2.00</b>
Operating Profit	24,563	24,080	14,832	21,158	<b>x Assets / Equity</b>	<b>x2.70</b>	<b>x Assets / IC</b>	<b>x1.59</b>
- Financial Expense (net)	(1,981)	(1,525)	(1,711)	(1,739)	<b>= ROE</b>	<b>15.7%</b>	<b>= ROIC</b>	<b>9.9%</b>
+/- Other Income (-Expense)	6,378	(48)	(40)	2,097	<b> Chec calc.</b>	<b>15.7%</b>		<b>9.9%</b>
Pre-tax Income (EBT)	28,960	22,507	13,081	21,516				
- Income Taxes	(10,218)	(8,981)	(5,236)	(8,145)				
<b>Net Income After Tax (NIAT)</b>	<b>18,742</b>	<b>13,526</b>	<b>7,845</b>	<b>13,371</b>	<b>Equity Capital Market Analysis</b>			
+/- Discontinued Operations	0	0	0	0	<b>Current Price Per Share</b>	<b>\$13.58</b>		
Comprehensive Net Income	18,742	13,526	7,845	13,371	<b>Actively Traded</b>	<b>Low</b>	<b>High</b>	<b>Range % Median</b>
					<b>52 week Range</b>	<b>\$7.45</b>	<b>\$13.81</b>	<b>+/- 29.9%</b>
Depreciation & Amortization	18,936	19,118	22,880	20,311	<b>Average Daily Volume (3 months)</b>	<b>313,109</b>		
					<b>Volume as % of Ending Shares</b>	<b>1.841%</b>		
Ending Shares Outstanding	17,011,846				<b>Avg Annual Turnover of Shares</b>	<b>6.72 x</b>		
Current Price Per Share	\$13.58/share				<b>Market Capitalization Multiples</b>			
Equity Market Capitalization	\$231,021				<b>Equity</b>		<b>Invested Capital</b>	
Invested Capital Market Value	\$314,881				<b>\$231,021</b>		<b>\$314,881</b>	
<b>Additional Calculations (LTM)</b>					<b>Equity</b>		<b>Invested Capital</b>	
Gross Cash Flow to Equity (GCFeq)	37,678	32,644	30,725	33,682	<b>Market Multiples</b>		<b>Market Multiples</b>	
Oper Net Working Capital (WC <sub>IC</sub> )	48,030	42,811	35,756	42,199	<b>Price / Sales</b>	<b>0.36 x</b>	<b>Price / Sales</b>	<b>0.49 x</b>
Interest-bearing Debt	83,860	21,597	26,128	43,862	<b>Price / Gross</b>	<b>3.72 x</b>	<b>Price / Gross</b>	<b>5.07 x</b>
<b>Invested Capital</b>	<b>203,009</b>	<b>129,000</b>	<b>133,780</b>	<b>155,263</b>	<b>Price / EBT</b>	<b>7.98 x</b>	<b>Price / EBIT</b>	<b>10.18 x</b>
Earn B4 Interest & Taxes (EBIT)	30,941	24,032	14,792	23,255	<b>Price / NIAT</b>	<b>12.33 x</b>	<b>Price / NOPAT</b>	<b>15.73 x</b>
Net Oper Profit After Tax (NOPAT)	20,024	14,442	8,871	14,446	<b>Price / GCFeq</b>	<b>6.13 x</b>	<b>Price / EBITDA</b>	<b>6.31 x</b>
Earn B4 Int, Taxes & D/A (EBITDA)	49,877	43,150	37,672	43,566	<b>Price / BVeq</b>	<b>1.94 x</b>	<b>Price / BVic</b>	<b>1.55 x</b>
Effective Tax Rate	35.3%	39.9%	40.0%	38.4%				

<b>Standard Motor Products, Inc. [SMP]</b>									
<b>Financial and Market Analysis as of October 2013</b>									
	12 Months to	FYE	FYE		Using Latest Twelve Months Data				
	Jun 30, 2013	Dec 31, 2012	Dec 31, 2011	Averages	Equity		Invested Capital		
	(\$000s)	(\$000s)	(\$000s)	(\$000s)	(\$000s)		(\$000s)		
<b>Balance Sheet</b>					<b>Size</b>				
Cash & Equivalents	12,275	13,074	10,871	12,073	Sales	950,167	Sales	950,167	
Receivables	151,789	98,565	104,115	118,156	Assets	673,293	Assets	673,293	
Inventory	296,815	267,468	248,097	270,793	BV Equity	330,629	BV Inv Cap	399,096	
Other Current Assets	44,612	39,446	37,904	40,654	<b>Growth (latest FY's)</b>				
Total Current Assets	505,491	418,553	400,987	441,677	Sales	8.5%	Sales	8.5%	
Net Fixed Assets	64,119	64,422	64,039	64,193	Assets	4.7%	Assets	4.7%	
Other Long-term Assets	103,683	93,619	85,696	94,333	BV Equity	13.1%	BV Inv Cap	0.9%	
<b>Total Assets</b>	<b>673,293</b>	<b>576,594</b>	<b>550,722</b>	<b>600,203</b>	<b>Liquidity</b>				
Short-term Interest-bearing Debt	68,437	40,573	73,109	60,706	Current Ratio	x1.70	Current Ratio	x1.70	
Accounts Payable	90,157	62,283	50,880	67,773	EBIT / Interest	x29.02	EBIT / Interest	x29.02	
Other Current Liabilities	138,012	119,316	104,892	120,740	<b>Profitability</b>				
Total Current Liabilities	296,606	222,172	228,881	249,220	Gross Margin	28.2%	Gross Margin	28.2%	
Long-term Interest-bearing Debt	30	75	190	98	EBT Margin	7.6%	EBIT Margin	7.9%	
Other Long-term Liabilities	46,028	46,760	49,698	47,495	NIAT Margin	4.8%	NOPAT Margin	5.0%	
Total Liabilities	342,664	269,007	278,769	296,813			EBITDA Margin	9.7%	
Prov-Committ-Contingent-PfdStk-etc	0	0	0	0	<b>Turnover</b>				
Common Equity	330,629	307,587	271,953	303,390	Sales / Receivables	x6.26	Sales / Receiv	x6.26	
<b>Total Liabilities &amp; Equity</b>	<b>673,293</b>	<b>576,594</b>	<b>550,722</b>	<b>600,203</b>	COGS / Inventory	x2.30	COGS / Invent	x2.30	
<b>Income Statement</b>						Sales / NFA	x14.82	Sales / NFA	x14.82
<b>Sales (net)</b>	<b>950,167</b>	<b>948,916</b>	<b>874,625</b>	<b>924,569</b>	Sales / Assets	x1.41	Sales / Assets	x1.41	
- Cost of Good Sold	(682,046)	(689,247)	(645,478)	(672,257)	<b>Leverage</b>				
Gross Profit	268,121	259,669	229,147	252,312	Equity / Assets	49.1%	IC / Assets	59.3%	
- R&D Expense	0	0	0	0	Assets / Equity	x2.04	Assets / IC	x1.69	
- Other Operating Expenses	(192,160)	(188,238)	(164,248)	(181,549)	<b>Return on investments</b>				
Operating Profit	75,961	71,431	64,899	70,764	NIAT / Sales	4.8%	NOPAT / Sales	5.0%	
- Financial Expense (net)	(2,592)	(2,788)	(3,821)	(3,067)	x Sales / Assets	x1.41	x Sales / Assets	x1.41	
+/- Other Income (-Expense)	(736)	(696)	3,370	646	x Assets / Equity	x2.04	x Assets / IC	x1.69	
Pre-tax Income (EBT)	72,633	67,947	64,448	68,343	= ROE	13.8%	= ROIC	11.8%	
- Income Taxes	(26,985)	(24,978)	(121)	(17,361)	Chcc calc.	13.8%		11.8%	
<b>Net Income After Tax (NIAT)</b>	<b>45,648</b>	<b>42,969</b>	<b>64,327</b>	<b>50,981</b>	<b>Equity Capital Market Analysis</b>				
+/- Discontinued Operations	(1,656)	(1,616)	(1,926)	(1,733)	Current Price Per Share	\$32.70			
Comprehensive Net Income	43,992	41,353	62,401	49,249	Actively Traded	Low	High	Range % Median	
					52 week Range	\$16.57	\$38.05	+/- 39.3%	
Depreciation & Amortization	17,075	16,466	14,145	15,895	Average Daily Volume (3 months)	177,494			
Ending Shares Outstanding	23,936,036				Volume as % of Ending Shares	0.742%			
Current Price Per Share	\$32.70/share				Avg Annual Turnover of Shares	2.71 x			
Equity Market Capitalization	\$782,708				<b>Market Capitalization Multiples</b>				
Invested Capital Market Value	\$851,175				Equity		Invested Capital		
<b>Additional Calculations (LTM)</b>					\$782,708		\$851,175		
Gross Cash Flow to Equity (GCFeq)	62,723	59,435	78,472	66,877	Equity		Invested Capital		
Oper Net Working Capital (WC <sub>IC</sub> )	277,322	236,954	245,215	253,164	Market Multiples		Market Multiples		
Interest-bearing Debt	68,467	40,648	73,299	60,805	Price / Sales	0.82 x	Price / Sales	0.90 x	
<b>Invested Capital</b>	<b>399,096</b>	<b>348,235</b>	<b>345,252</b>	<b>364,194</b>	Price / Gross	2.92 x	Price / Gross	3.17 x	
Earn B4 Interest & Taxes (EBIT)	75,225	70,735	68,269	71,410	Price / EBT	10.78 x	Price / EBIT	11.32 x	
Net Oper Profit After Tax (NOPAT)	47,277	44,732	68,141	53,383	Price / NIAT	17.15 x	Price / NOPAT	18.00 x	
Earn B4 Int, Taxes & D/A (EBITDA)	92,300	87,201	82,414	87,305	Price / GCFeq	12.48 x	Price / EBITDA	9.22 x	
Effective Tax Rate	37.2%	36.8%	0.2%	24.7%	Price / BVeq	2.37 x	Price / BVic	2.13 x	

<b>Stoneridge, Inc. [SRI]</b>								
<b>Financial and Market Analysis as of October 2013</b>								
	12 Months to	FYE	FYE		Using Latest Twelve Months Data			
	Jun 30, 2013	Dec 31, 2012	Dec 31, 2011	Averages		Equity		Invested Capital
	(\$000s)	(\$000s)	(\$000s)	(\$000s)		(\$000s)		(\$000s)
<b>Balance Sheet</b>					<b>Size</b>			
Cash & Equivalents	37,023	44,555	78,731	53,436	Sales	920,476	Sales	920,476
Receivables	158,371	141,503	162,354	154,076	Assets	594,406	Assets	594,406
Inventory	109,812	96,032	120,482	108,775	BV Equity	188,092	BV Inv Cap	387,379
Other Current Assets	30,293	28,964	27,897	29,051	<b>Growth (latest FY's)</b>			
Total Current Assets	335,499	311,054	389,464	345,339	Sales	22.6%	Sales	22.6%
Net Fixed Assets	112,236	119,147	124,944	118,776	Assets	-14.8%	Assets	-14.8%
Other Long-term Assets	146,671	162,490	181,087	163,416	BV Equity	7.3%	BV Inv Cap	-11.7%
<b>Total Assets</b>	<b>594,406</b>	<b>592,691</b>	<b>695,495</b>	<b>627,531</b>	<b>Liquidity</b>			
Short-term Interest-bearing Debt	10,858	20,085	83,427	38,123	Current Ratio	x2.14	Current Ratio	x2.14
Accounts Payable	85,759	76,303	83,509	81,857	EBIT / Interest	x1.89	EBIT / Interest	x1.89
Other Current Liabilities	60,345	57,081	90,994	69,473	<b>Profitability</b>			
Total Current Liabilities	156,962	153,469	257,930	189,454	Gross Margin	24.4%	Gross Margin	24.4%
Long-term Interest-bearing Debt	188,429	181,311	183,711	184,484	EBT Margin	1.8%	EBIT Margin	3.8%
Other Long-term Liabilities	60,923	64,077	73,215	66,072	NIAT Margin	1.5%	NOPAT Margin	3.2%
Total Liabilities	406,314	398,857	514,856	440,009			EBITDA Margin	7.7%
Prov-Committ-Contingent-PfdStk-etc	0	0	0	0	<b>Turnover</b>			
Common Equity	188,092	193,834	180,639	187,522	Sales / Receivables	x5.81	Sales / Receiv	x5.81
<b>Total Liabilities &amp; Equity</b>	<b>594,406</b>	<b>592,691</b>	<b>695,495</b>	<b>627,531</b>	COGS / Inventory	x6.34	COGS / Invent	x6.34
<b>Income Statement</b>					Sales / NFA	x8.20	Sales / NFA	x8.20
<b>Sales (net)</b>	<b>920,476</b>	<b>938,513</b>	<b>765,373</b>	<b>874,787</b>	Sales / Assets	x1.55	Sales / Assets	x1.55
- Cost of Good Sold	(695,680)	(713,869)	(618,596)	(676,048)	<b>Leverage</b>			
Gross Profit	224,796	224,644	146,777	198,739	Equity / Assets	31.6%	IC / Assets	65.2%
- R&D Expense	0	0	0	0	Assets / Equity	x3.16	Assets / IC	x1.53
- Other Operating Expenses	(187,416)	(195,915)	(133,251)	(172,194)	<b>Return on investments</b>			
Operating Profit	37,380	28,729	13,526	26,545	NIAT / Sales	1.5%	NOPAT / Sales	3.2%
- Financial Expense (net)	(18,665)	(20,033)	(17,234)	(18,644)	x Sales / Assets	x1.55	x Sales / Assets	x1.55
+/- Other Income (-Expense)	(2,119)	(4,136)	75,350	23,032	x Assets / Equity	x3.16	x Assets / IC	x1.53
Pre-tax Income (EBT)	16,596	4,560	71,642	30,933	= ROE	7.4%	= ROIC	7.7%
- Income Taxes	(2,622)	(812)	(26,105)	(9,846)	Chcc calc.	7.4%		7.7%
<b>Net Income After Tax (NIAT)</b>	<b>13,974</b>	<b>3,748</b>	<b>45,537</b>	<b>21,086</b>	<b>Equity Capital Market Analysis</b>			
+/- Discontinued Operations	(1,054)	1,613	3,820	1,460	Current Price Per Share	\$11.25		
Comprehensive Net Income	12,920	5,361	49,357	22,546	Actively Traded	Low	High	Range % Median
					52 week Range	\$4.51	\$13.63	+/- 50.3%
Depreciation & Amortization	35,293	35,321	19,960	30,191	Average Daily Volume (3 months)	192,258		
Ending Shares Outstanding	28,433,000				Volume as % of Ending Shares	0.676%		
Current Price Per Share	\$11.25/share				Avg Annual Turnover of Shares	2.47 x		
Equity Market Capitalization	\$319,871				<b>Market Capitalization Multiples</b>			
Invested Capital Market Value	\$519,158				Equity		Invested Capital	
<b>Additional Calculations (LTM)</b>					\$319,871		\$519,158	
Gross Cash Flow to Equity (GCFeq)	49,267	39,069	65,497	51,278	Equity		Invested Capital	
Oper Net Working Capital (WC <sub>IC</sub> )	189,395	177,670	214,961	194,009	Market Multiples		Market Multiples	
Interest-bearing Debt	199,287	201,396	267,138	222,607	Price / Sales	0.35 x	Price / Sales	0.56 x
<b>Invested Capital</b>	<b>387,379</b>	<b>395,230</b>	<b>447,777</b>	<b>410,129</b>	Price / Gross	1.42 x	Price / Gross	2.31 x
Earn B4 Interest & Taxes (EBIT)	35,261	24,593	88,876	49,577	Price / EBT	19.27 x	Price / EBIT	14.72 x
Net Oper Profit After Tax (NOPAT)	29,690	20,214	56,491	35,465	Price / NIAT	22.89 x	Price / NOPAT	17.49 x
Earn B4 Int, Taxes & D/A (EBITDA)	70,554	59,914	108,836	79,768	Price / GCFeq	6.49 x	Price / EBITDA	7.36 x
Effective Tax Rate	15.8%	17.8%	36.4%	23.3%	Price / BVeq	1.70 x	Price / BVic	1.34 x

<b>Strattec Security Corporation [STRT]</b>								
<b>Financial and Market Analysis as of October 2013</b>								
	12 Months to	FYE	FYE		Using Latest Twelve Months Data			
	Jun 30, 2013	Jul 1, 2012	Jul 3, 2011	Averages	Equity		Invested Capital	
	(\$000s)	(\$000s)	(\$000s)	(\$000s)	(\$000s)		(\$000s)	
<b>Balance Sheet</b>					<b>Size</b>			
Cash & Equivalents	20,307	17,487	17,250	18,348	Sales	298,179	Sales	298,179
Receivables	47,514	44,496	39,649	43,886	Assets	169,500	Assets	169,500
Inventory	24,312	21,236	22,135	22,561	BV Equity	111,880	BV Inv Cap	114,130
Other Current Assets	14,366	18,072	15,368	15,935	<b>Growth (latest FY's)</b>			
Total Current Assets	106,499	101,291	94,402	100,731	Sales	7.0%	Sales	7.0%
Net Fixed Assets	51,415	46,330	40,636	46,127	Assets	12.1%	Assets	12.1%
Other Long-term Assets	11,586	18,417	13,050	14,351	BV Equity	-3.0%	BV Inv Cap	-4.9%
<b>Total Assets</b>	<b>169,500</b>	<b>166,038</b>	<b>148,088</b>	<b>161,209</b>	<b>Liquidity</b>			
Short-term Interest-bearing Debt	2,250	0	1,850	1,367	Current Ratio	x2.10	Current Ratio	x2.10
Accounts Payable	25,543	24,149	22,851	24,181	EBIT / Interest	x497.44	EBIT / Interest	x497.44
Other Current Liabilities	22,932	32,824	26,287	27,348	<b>Profitability</b>			
Total Current Liabilities	50,725	56,973	50,988	52,895	Gross Margin	18.1%	Gross Margin	18.1%
Long-term Interest-bearing Debt	0	0	0	0	EBT Margin	5.7%	EBIT Margin	5.7%
Other Long-term Liabilities	6,895	21,667	7,036	11,866	NIAT Margin	3.9%	NOPAT Margin	3.9%
Total Liabilities	57,620	78,640	58,024	64,761			EBITDA Margin	8.2%
Prov-Committ-Contingent-PfdStk-etc	0	0	0	0	<b>Turnover</b>			
Common Equity	111,880	87,398	90,064	96,447	Sales / Receivables	x6.28	Sales / Receiv	x6.28
<b>Total Liabilities &amp; Equity</b>	<b>169,500</b>	<b>166,038</b>	<b>148,088</b>	<b>161,209</b>	COGS / Inventory	x10.05	COGS / Invent	x10.05
<b>Income Statement</b>					Sales / NFA	x5.80	Sales / NFA	x5.80
<b>Sales (net)</b>	<b>298,179</b>	<b>279,234</b>	<b>260,933</b>	<b>279,449</b>	Sales / Assets	x1.76	Sales / Assets	x1.76
- Cost of Good Sold	(244,313)	(228,971)	(218,770)	(230,685)	<b>Leverage</b>			
Gross Profit	53,866	50,263	42,163	48,764	Equity / Assets	66.0%	IC / Assets	67.3%
- R&D Expense	0	0	0	0	Assets / Equity	x1.52	Assets / IC	x1.49
- Other Operating Expenses	(37,078)	(33,920)	(33,443)	(34,814)	<b>Return on investments</b>			
Operating Profit	16,788	16,343	8,720	13,950	NIAT / Sales	3.9%	NOPAT / Sales	3.9%
- Financial Expense (net)	(34)	(81)	(175)	(97)	x Sales / Assets	x1.76	x Sales / Assets	x1.76
+/- Other Income (-Expense)	125	(420)	1,585	430	x Assets / Equity	x1.52	x Assets / IC	x1.49
Pre-tax Income (EBT)	16,879	15,842	10,130	14,284	= ROE	10.3%	= ROIC	10.1%
- Income Taxes	(5,366)	(3,589)	(2,540)	(3,832)	Chcc calc.	10.3%		10.1%
<b>Net Income After Tax (NIAT)</b>	<b>11,513</b>	<b>12,253</b>	<b>7,590</b>	<b>10,452</b>	<b>Equity Capital Market Analysis</b>			
+/- Discontinued Operations	(2,138)	(3,460)	(2,172)	(2,590)	Current Price Per Share	\$40.45		
Comprehensive Net Income	9,375	8,793	5,418	7,862	Actively Traded	Low	High	Range % Median
					52 week Range	\$21.25	\$42.30	+/- 33.1%
Depreciation & Amortization	7,490	6,809	6,619	6,973	Average Daily Volume (3 months)	8,400		
Ending Shares Outstanding	6,998,702				Volume as % of Ending Shares	0.120%		
Current Price Per Share	\$40.45/share				Avg Annual Turnover of Shares	0.44 x		
Equity Market Capitalization	\$283,097				<b>Market Capitalization Multiples</b>			
Invested Capital Market Value	\$285,347				Equity		Invested Capital	
<b>Additional Calculations (LTM)</b>					\$283,097		\$285,347	
Gross Cash Flow to Equity (GCFeq)	19,003	19,062	14,209	17,425	Equity		Invested Capital	
Oper Net Working Capital (WC <sub>IC</sub> )	58,024	44,318	45,264	49,202	Market Multiples		Market Multiples	
Interest-bearing Debt	2,250	0	1,850	1,367	Price / Sales	0.95 x	Price / Sales	0.96 x
<b>Invested Capital</b>	<b>114,130</b>	<b>87,398</b>	<b>91,914</b>	<b>97,814</b>	Price / Gross	5.26 x	Price / Gross	5.30 x
Earn B4 Interest & Taxes (EBIT)	16,913	15,923	10,305	14,380	Price / EBT	16.77 x	Price / EBIT	16.87 x
Net Oper Profit After Tax (NOPAT)	11,536	12,316	7,721	10,524	Price / NIAT	24.59 x	Price / NOPAT	24.73 x
Earn B4 Int, Taxes & D/A (EBITDA)	24,403	22,732	16,924	21,353	Price / GCFeq	14.90 x	Price / EBITDA	11.69 x
Effective Tax Rate	31.8%	22.7%	25.1%	26.5%	Price / BVeq	2.53 x	Price / BVic	2.50 x

Superior Industries International, Inc. [SUP]								
Financial and Market Analysis as of October 2013								
	12 Months to	FYE	FYE		Using Latest Twelve Months Data			
	Jun 30, 2013	Dec 31, 2012	Dec 31, 2011	Averages	Equity		Invested Capital	
	(\$000s)	(\$000s)	(\$000s)	(\$000s)	(\$000s)		(\$000s)	
<b>Balance Sheet</b>					<b>Size</b>			
Cash & Equivalents	206,506	207,334	192,921	202,254	Sales	809,378	Sales	809,378
Receivables	106,582	98,467	119,895	108,315	Assets	610,172	Assets	610,172
Inventory	70,198	71,948	66,933	69,693	BV Equity	479,007	BV Inv Cap	479,007
Other Current Assets	25,530	27,159	24,534	25,741	<b>Growth (latest FY's)</b>			
Total Current Assets	408,816	404,908	404,283	406,002	Sales	-0.1%	Sales	-0.1%
Net Fixed Assets	149,804	147,544	145,747	147,698	Assets	1.1%	Assets	1.1%
Other Long-term Assets	51,552	47,149	43,201	47,301	BV Equity	1.4%	BV Inv Cap	1.4%
<b>Total Assets</b>	<b>610,172</b>	<b>599,601</b>	<b>593,231</b>	<b>601,001</b>	<b>Liquidity</b>			
Short-term Interest-bearing Debt	0	0	0	0	Current Ratio	x6.67	Current Ratio	x6.67
Accounts Payable	32,245	32,400	29,018	31,221	EBIT / Interest	-x18.81	EBIT / Interest	-x18.81
Other Current Liabilities	29,005	34,178	39,532	34,238	<b>Profitability</b>			
Total Current Liabilities	61,250	66,578	68,550	65,459	Gross Margin	7.1%	Gross Margin	7.1%
Long-term Interest-bearing Debt	0	0	0	0	EBT Margin	3.9%	EBIT Margin	3.7%
Other Long-term Liabilities	69,915	66,118	64,166	66,733	NIAT Margin	3.6%	NOPAT Margin	3.4%
Total Liabilities	131,165	132,696	132,716	132,192			EBITDA Margin	6.9%
Prov-Committ-Contingent-PfdStk-etc	0	0	0	0	<b>Turnover</b>			
Common Equity	479,007	466,905	460,515	468,809	Sales / Receivables	x7.59	Sales / Receiv	x7.59
<b>Total Liabilities &amp; Equity</b>	<b>610,172</b>	<b>599,601</b>	<b>593,231</b>	<b>601,001</b>	COGS / Inventory	x10.71	COGS / Invent	x10.71
<b>Income Statement</b>					Sales / NFA	x5.40	Sales / NFA	x5.40
<b>Sales (net)</b>	<b>809,378</b>	<b>821,454</b>	<b>822,172</b>	<b>817,668</b>	Sales / Assets	x1.33	Sales / Assets	x1.33
- Cost of Good Sold	(751,840)	(760,847)	(755,112)	(755,933)	<b>Leverage</b>			
Gross Profit	57,538	60,607	67,060	61,735	Equity / Assets	78.5%	IC / Assets	78.5%
- R&D Expense	0	0	0	0	Assets / Equity	x1.27	Assets / IC	x1.27
- Other Operating Expenses	(27,651)	(27,727)	(27,225)	(27,534)	<b>Return on investments</b>			
Operating Profit	29,887	32,880	39,835	34,201	NIAT / Sales	3.6%	NOPAT / Sales	3.4%
- Financial Expense (net)	1,612	1,252	1,101	1,322	x Sales / Assets	x1.33	x Sales / Assets	x1.33
+/- Other Income (-Expense)	434	357	990	594	x Assets / Equity	x1.27	x Assets / IC	x1.27
Pre-tax Income (EBT)	31,933	34,489	41,926	36,116	= ROE	6.1%	= ROIC	5.7%
- Income Taxes	(2,931)	(3,598)	25,243	6,238	Chcc calc.	6.1%		5.7%
<b>Net Income After Tax (NIAT)</b>	<b>29,002</b>	<b>30,891</b>	<b>67,169</b>	<b>42,354</b>	<b>Equity Capital Market Analysis</b>			
+/- Discontinued Operations	0	0	0	0	Current Price Per Share	\$17.50		
Comprehensive Net Income	29,002	30,891	67,169	42,354	Actively Traded	Low	High	Range % Median
					52 week Range	\$16.51	\$22.09	+/- 14.5%
Depreciation & Amortization	25,799	26,362	27,538	26,566	Average Daily Volume (3 months)	84,037		
Ending Shares Outstanding	27,322,363				Volume as % of Ending Shares	0.308%		
Current Price Per Share	\$17.50/share				Avg Annual Turnover of Shares	1.12 x		
Equity Market Capitalization	\$478,141				<b>Market Capitalization Multiples</b>			
Invested Capital Market Value	\$478,141				Equity		Invested Capital	
<b>Additional Calculations (LTM)</b>					\$478,141		\$478,141	
Gross Cash Flow to Equity (GCFeq)	54,801	57,253	94,707	68,920	Equity		Invested Capital	
Oper Net Working Capital (WC <sub>IC</sub> )	347,566	338,330	335,733	340,543	Market Multiples		Market Multiples	
Interest-bearing Debt	0	0	0	0	Price / Sales	0.59 x	Price / Sales	0.59 x
<b>Invested Capital</b>	<b>479,007</b>	<b>466,905</b>	<b>460,515</b>	<b>468,809</b>	Price / Gross	8.31 x	Price / Gross	8.31 x
Earn B4 Interest & Taxes (EBIT)	30,321	33,237	40,825	34,794	Price / EBT	14.97 x	Price / EBIT	15.77 x
Net Oper Profit After Tax (NOPAT)	27,538	29,770	65,405	40,904	Price / NIAT	16.49 x	Price / NOPAT	17.36 x
Earn B4 Int, Taxes & D/A (EBITDA)	56,120	59,599	68,363	61,361	Price / GCFeq	8.73 x	Price / EBITDA	8.52 x
Effective Tax Rate	9.2%	10.4%	-60.2%	-13.5%	Price / BVeq	1.00 x	Price / BVic	1.00 x

AVERAGES & MEDIANS OF 9 COMPARABLE COMPANIES					Financial and Market Analysis as of October 2013			
Calculated As Averages of Financial Performance Metrics	12 Months to	FYE	FYE	Averages	Calculated As Medians of Ratio Metrics			
	Jun 30, 2013 (\$000s)	Dec 31, 2012 (\$000s)	Dec 31, 2011 (\$000s)		Equity (\$000s)		Invested Capital (\$000s)	
<b>Balance Sheet</b>					<b>Size</b>			
Cash & Equivalents	10,398,475	119,470	109,456	3,542,467	Sales	642,439	Sales	642,439
Receivables	136,756	114,499	120,756	124,004	Assets	594,406	Assets	594,406
Inventory	85,229	90,787	96,228	90,748	BV Equity	249,775	BV Inv Cap	387,379
Other Current Assets	(10,242,888)	19,735	19,582	(3,401,191)	<b>Growth ( latest FY's)</b>			
Total Current Assets	377,572	344,491	346,021	356,028	Sales	7.4%	Sales	7.4%
Net Fixed Assets	141,590	134,088	121,917	132,531	Assets	4.2%	Assets	4.2%
Other Long-term Assets	80,625	81,372	78,262	80,086	BV Equity	7.5%	BV Inv Cap	1.4%
<b>Total Assets</b>	<b>599,787</b>	<b>559,951</b>	<b>546,200</b>	<b>568,646</b>	<b>Liquidity</b>			
Short-term Interest-bearing Debt	36,055	32,995	48,907	39,319	Current Ratio	x1.81	Current Ratio	x1.81
Accounts Payable	85,429	76,359	79,120	80,303	EBIT / Interest	x12.64	EBIT / Interest	x12.64
Other Current Liabilities	40,272	37,853	34,800	37,641	<b>Profitability</b>			
Total Current Liabilities	161,756	147,207	162,826	157,263	Gross Margin	22.0%	Gross Margin	22.0%
Long-term Interest-bearing Debt	67,865	48,454	58,970	58,430	EBT Margin	5.7%	EBIT Margin	6.1%
Other Long-term Liabilities	6,300	17,619	11,457	11,792	NIAT Margin	4.5%	NOPAT Margin	5.0%
Total Liabilities	235,920	213,280	233,253	227,484			EBITDA Margin	
Prov-Committ-Contingent-PfdStk-etc	3,405	7,490	16,699	9,198	<b>Turnover</b>			
Common Equity	363,110	344,174	307,380	338,222	Sales / Receivables	x6.26	Sales / Receiv	x6.26
<b>Total Liabilities &amp; Equity</b>	<b>602,435</b>	<b>564,944</b>	<b>557,333</b>	<b>574,904</b>	COGS / Inventory	x6.85	COGS / Invent	x6.85
<b>Income Statement</b>					Sales / NFA	x5.40	Sales / NFA	x5.40
<b>Sales (net)</b>	<b>690,005</b>	<b>684,969</b>	<b>623,833</b>	<b>666,269</b>	Sales / Assets	x1.34	Sales / Assets	x1.34
- Cost of Good Sold	(536,410)	(532,448)	(488,621)	(519,160)	<b>Leverage</b>			
Gross Profit	153,595	152,520	135,212	147,109	Equity / Assets	49.1%	IC / Assets	65.2%
- R&D Expense	(40,650)	(39,414)	(33,715)	(37,926)	Assets / Equity	x2.04	Assets / IC	x1.53
- Other Operating Expenses	(63,205)	(63,134)	(54,939)	(60,426)	<b>Return on investments</b>			
Operating Profit	49,740	49,972	46,558	48,757	NIAT / Sales	4.5%	NOPAT / Sales	5.0%
- Financial Expense (net)	(4,179)	(4,707)	(4,867)	(4,585)	x Sales / Assets	x1.34	x Sales / Assets	x1.34
+/- Other Income (-Expense)	13,857	12,900	25,060	17,272	x Assets / Equity	x2.04	x Assets / IC	x1.53
Pre-tax Income (EBT)	59,418	58,164	66,751	61,444	= ROE	12.2%	= ROIC	10.2%
- Income Taxes	(16,649)	(16,256)	(12,746)	(15,217)	Check calc.	10.3%		9.9%
<b>Net Income After Tax (NIAT)</b>	<b>42,769</b>	<b>41,908</b>	<b>54,005</b>	<b>46,228</b>	<b>MEDIAN Equity Capital Market Analysis</b>			
+/- Discontinued Operations	(1,546)	(1,996)	(1,144)	(1,562)	Current Price Per Share	\$17.50		
Comprehensive Net Income	41,223	39,912	52,861	44,665	Actively Traded	Low	High	Range % Median
					52 week Range	\$10.95	\$20.70	+/- 30.8%
					Average Daily Volume (3 months)	248,069		
					Volume as % of Ending Shares	0.525%		
					Avg Annual Turnover of Shares	1.92 x		
					<b>MEDIAN Market Capitalization Multiples</b>			
					Equity		Invested Capital	
					\$478,141		\$519,158	
					Equity		Invested Capital	
					<b>Market Multiples</b>			
<b>Additional Calculations (LTM)</b>					Price / Sales	0.82 x	Price / Sales	0.90 x
Gross Cash Flow to Equity (GCFeq)	67,697	66,323	75,121	69,714	Price / Gross	4.28 x	Price / Gross	5.07 x
Oper Net Working Capital (WC <sub>IC</sub> )	251,871	230,279	232,102	238,084	Price / EBT	14.97 x	Price / EBIT	14.72 x
Interest-bearing Debt	103,919	81,449	107,876	97,748	Price / NIAT	20.44 x	Price / NOPAT	18.00 x
<b>Invested Capital</b>	<b>467,030</b>	<b>425,623</b>	<b>415,257</b>	<b>435,970</b>	Price / GCFeq	11.41 x	Price / EBITDA	9.22 x
Earn B4 Interest & Taxes (EBIT)	63,597	62,872	71,618	66,029	Price / BVeq	2.10 x	Price / BVic	1.88 x
Net Oper Profit After Tax (NOPAT)	45,777	45,300	57,943	49,674				
Earn B4 Int, Taxes & D/A (EBITDA)	88,524	87,286	92,734	89,515				
Effective Tax Rate	28.0%	27.9%	19.1%	25.0%				

<b>Auto Parts Superior (APS) - INDIA</b>									
<b>Financial and Market Analysis as of October 2013</b>									
	<b>V SAME V</b>				<b>Using Latest Twelve Months Data</b>				
	<b>12 Months to</b>	<b>FYE</b>	<b>FYE</b>						
	<b>Dec 31, 2012</b>	<b>Dec 31, 2012</b>	<b>Dec 31, 2011</b>	<b>Averages</b>					
	(\$000s)	(\$000s)	(\$000s)	(\$000s)					
					<b>Equity</b>				
					<b>Invested Capital</b>				
					(\$000s)				
<b>Balance Sheet</b>					<b>Size</b>				
Cash & Equivalents	547	547	528	541	<b>Sales</b>	<b>60,214</b>	<b>Sales</b>	<b>60,214</b>	
Receivables	9,936	9,936	9,424	9,765	<b>Assets</b>	40,837	<b>Assets</b>	40,837	
Inventory	13,126	13,126	12,251	12,834	<b>BV Equity</b>	18,231	<b>BV Inv Cap</b>	31,503	
Other Current Assets	0	0	0	0	<b>Growth (latest FY's)</b>				
Total Current Assets	23,609	23,609	22,202	23,140	<b>Sales</b>	-2.3%	<b>Sales</b>	-2.3%	
Net Fixed Assets	12,397	12,397	14,135	12,976	<b>Assets</b>	1.9%	<b>Assets</b>	1.9%	
Other Long-term Assets	4,831	4,831	3,751	4,471	<b>BV Equity</b>	15.6%	<b>BV Inv Cap</b>	3.2%	
<b>Total Assets</b>	<b>40,837</b>	<b>40,837</b>	<b>40,088</b>	<b>40,587</b>	<b>Liquidity</b>				
Short-term Interest-bearing Debt	10,538	10,538	11,911	10,995	<b>Current Ratio</b>	<b>x1.22</b>	<b>Current Ratio</b>	<b>x1.22</b>	
Accounts Payable	8,787	8,787	8,952	8,842	<b>EBIT / Interest</b>	x3.83	<b>EBIT / Interest</b>	x3.83	
Other Current Liabilities	0	0	0	0	<b>Profitability</b>				
Total Current Liabilities	19,325	19,325	20,864	19,838	<b>Gross Margin</b>	32.9%	<b>Gross Margin</b>	32.9%	
Long-term Interest-bearing Debt	2,735	2,735	2,827	2,765	<b>EBT Margin</b>	7.1%	<b>EBIT Margin</b>	9.6%	
Other Long-term Liabilities	273	273	339	295	<b>NIAT Margin</b>	<b>5.1%</b>	<b>NOPAT Margin</b>	<b>6.9%</b>	
Total Liabilities	22,333	22,333	24,030	22,899			<b>EBITDA Margin</b>	13.8%	
Prov-Committ-Contingent-PfdStk-etc	273	273	283	277	<b>Turnover</b>				
Common Equity	18,231	18,231	15,775	17,412	<b>Sales / Receivables</b>	x6.06	<b>Sales / Receiv</b>	x6.06	
<b>Total Liabilities &amp; Equity</b>	<b>40,837</b>	<b>40,837</b>	<b>40,088</b>	<b>40,587</b>	<b>COGS / Inventory</b>	x3.08	<b>COGS / Invent</b>	x3.08	
<b>Income Statement</b>					<b>Sales / NFA</b>	x4.86	<b>Sales / NFA</b>	x4.86	
<b>Sales (net)</b>	<b>60,214</b>	<b>60,214</b>	<b>61,652</b>	<b>60,693</b>	<b>Sales / Assets</b>	<b>x1.47</b>	<b>Sales / Assets</b>	<b>x1.47</b>	
- Cost of Good Sold	(40,404)	(40,404)	(41,492)	(40,766)	<b>Leverage</b>				
Gross Profit	19,810	19,810	20,160	19,927	<b>Equity / Assets</b>	44.6%	<b>IC / Assets</b>	77.1%	
- R&D Expense	0	0	0	0	<b>Assets / Equity</b>	<b>x2.24</b>	<b>Assets / IC</b>	<b>x1.30</b>	
- Other Operating Expenses	(14,059)	(14,059)	(14,883)	(14,334)	<b>Return on investments</b>				
Operating Profit	5,752	5,752	5,277	5,593	<b>NIAT / Sales</b>	5.1%	<b>NOPAT / Sales</b>	6.9%	
- Financial Expense (net)	(1,501)	(1,501)	(1,506)	(1,503)	<b>x Sales / Assets</b>	x1.47	<b>x Sales / Assets</b>	x1.47	
+/- Other Income (-Expense)	0	0	0	0	<b>x Assets / Equity</b>	x2.24	<b>x Assets / IC</b>	x1.30	
Pre-tax Income (EBT)	4,250	4,250	3,771	4,091	<b>= ROE</b>	<b>16.8%</b>	<b>= ROIC</b>	<b>13.1%</b>	
- Income Taxes	(1,190)	(1,190)	0	(793)	<b>Check calc.</b>	<b>16.8%</b>		<b>13.1%</b>	
<b>Net Income After Tax (NIAT)</b>	<b>3,060</b>	<b>3,060</b>	<b>3,771</b>	<b>3,297</b>	<b>Resultant Market Capitalization Values</b>				
+/- Discontinued Operations	0	0	0	0					
Comprehensive Net Income	3,060	3,060	3,771	3,297					
Depreciation & Amortization	2,533	2,533	2,367	2,478	<b>Equity Market Capitalization</b>		<b>Invested Capital Market Capital.</b>		
Ending Shares Outstanding	1,000,000				<b>#VALUE!</b>		<b>#VALUE!</b>		
Current Price Per Share	#VALUE!								
Equity Market Capitalization	#VALUE!				<b>Resultant Market Capitalization Multiples</b>				
Invested Capital Market Value	#VALUE!				<b>Equity</b>		<b>Invested Capital</b>		
<b>Additional Calculations (LTM)</b>					<b>#VALUE!</b>		<b>#VALUE!</b>		
Gross Cash Flow to Equity (GCFeq)	5,594	5,594	6,138	5,775	<b>Equity</b>		<b>Invested Capital</b>		
Oper Net Working Capital (WC <sub>IC</sub> )	14,822	14,822	13,249	14,298	<b>Market Multiples</b>		<b>Market Multiples</b>		
Interest-bearing Debt	13,272	13,272	14,738	13,761	<b>Price / Sales</b>	#VALUE!	<b>Price / Sales</b>	#VALUE!	
<b>Invested Capital</b>	<b>31,503</b>	<b>31,503</b>	<b>30,513</b>	<b>31,173</b>	<b>Price / Gross</b>	#VALUE!	<b>Price / Gross</b>	#VALUE!	
Earn B4 Interest & Taxes (EBIT)	5,752	5,752	5,277	5,593	<b>Price / EBT</b>	#VALUE!	<b>Price / EBIT</b>	#VALUE!	
Net Oper Profit After Tax (NOPAT)	4,141	4,141	5,277	4,520	<b>Price / NIAT</b>	#VALUE!	<b>Price / NOPAT</b>	#VALUE!	
Earn B4 Int, Taxes & D/A (EBITDA)	8,285	8,285	7,644	8,071	<b>Price / GCFeq</b>	#VALUE!	<b>Price / EBITDA</b>	#VALUE!	
Effective Tax Rate	28.0%	28.0%	0.0%	18.7%	<b>Price / BVe</b>	#VALUE!	<b>Price / BVic</b>	#VALUE!	

## Exhibit 5C – Financial Performance Rankings

<b>Auto Parts Superior (APS) - INDIA</b>						
<i>Comparable Publicly Traded Companies Market Method</i>						
<b><u>EQUITY</u> - Financial Performance Ranking Comparison With Subject Company</b>						
<i>All Rankings Provided in Descending Order</i>						
<b><u>Equity Financial Performance Metrics</u></b>						
<b>Size</b>	<b>Sales</b>	<b>Rank</b>	<b>Assets</b>	<b>Rank</b>	<b>BV Equity</b>	<b>Rank</b>
<b><u>Comparables Medians</u></b>	<b>642,439</b>		<b>594,406</b>		<b>249,775</b>	
ChinaAutomotiveSystems	369,759	8	526,234	6	249,775	5
ChinaZenix	565,388	7	689,905	2	390,598	3
GentexCorp	1,085,070	1	1,366,277	1	1,207,010	1
Gentherm	597,910	6	446,467	7	191,851	6
ShilohIndustries	642,439	5	321,827	8	119,149	8
StandardMotorProducts	950,167	2	673,293	3	330,629	4
Stoneridge	920,476	3	594,406	5	188,092	7
StrattecSecurityCorp	298,179	9	169,500	9	111,880	9
SuperiorIndustries	809,378	4	610,172	4	479,007	2
<b>APS-India</b>	<b>60,214</b>	<b>10</b>	<b>40,837</b>	<b>10</b>	<b>18,231</b>	<b>10</b>
<b>Growth ( latest FY's)</b>	<b>Sales</b>	<b>Rank</b>	<b>Assets</b>	<b>Rank</b>	<b>BV Equity</b>	<b>Rank</b>
<b><u>Comparables Medians</u></b>	<b>7.4%</b>		<b>4.2%</b>		<b>7.5%</b>	
ChinaAutomotiveSystems	1.9%	7	4.2%	5	7.5%	6
ChinaZenix	-7.8%	10	-0.8%	9	19.0%	2
GentexCorp	7.4%	5	7.6%	3	9.1%	5
Gentherm	50.2%	1	17.2%	1	105.3%	1
ShilohIndustries	13.2%	3	3.5%	6	-0.2%	9
StandardMotorProducts	8.5%	4	4.7%	4	13.1%	4
Stoneridge	22.6%	2	-14.8%	10	7.3%	7
StrattecSecurityCorp	7.0%	6	12.1%	2	-3.0%	10
SuperiorIndustries	-0.1%	8	1.1%	8	1.4%	8
<b>APS-India</b>	<b>-2.3%</b>	<b>9</b>	<b>1.9%</b>	<b>7</b>	<b>15.6%</b>	<b>3</b>
<b>Liquidity &amp; Coverage</b>	<b>Current Ratio</b>	<b>Rank</b>	<b>EBIT / Interest</b>	<b>Rank</b>		
<b><u>Comparables Medians</u></b>	<b>x1.81</b>		<b>x12.64</b>			
ChinaAutomotiveSystems	x1.55	7	x28.45	3		
ChinaZenix	x1.31	9	x7.88	6		
GentexCorp	x8.23	1		na		
Gentherm	x1.81	5	x9.66	5		
ShilohIndustries	x1.54	8	x15.62	4		
StandardMotorProducts	x1.70	6	x29.02	2		
Stoneridge	x2.14	3	x1.89	8		
StrattecSecurityCorp	x2.10	4	x497.44	1		
SuperiorIndustries	x6.67	2	-x18.81	9		
<b>APS-India</b>	<b>x1.22</b>	<b>10</b>	<b>x3.83</b>	<b>7</b>		

<b>Auto Parts Superior (APS) - INDIA</b>								
<i>Comparable Publicly Traded Companies Market Method</i>								
<b><u>EQUITY</u> - Financial Performance Ranking Comparison With Subject Company</b>								
All Rankings Provided in Descending Order								
<b><u>Equity Financial Performance Metrics</u></b>								
<b>Profitability</b>	<b>Gross Margin</b>	<b>Rank</b>	<b>EBT Margin</b>	<b>Rank</b>	<b>NIAT Margin</b>	<b>Rank</b>		
<b><u>Comparables Medians</u></b>	<b>22.0%</b>		<b>5.7%</b>		<b>4.5%</b>			
ChinaAutomotiveSystems	18.3%	7	8.0%	2	6.7%	2		
ChinaZenix	22.0%	6	7.7%	3	6.5%	3		
GentexCorp	34.6%	1	24.2%	1	16.5%	1		
Gentherm	25.8%	4	5.5%	7	4.5%	6		
ShilohIndustries	9.7%	9	4.5%	8	2.9%	9		
StandardMotorProducts	28.2%	3	7.6%	4	4.8%	5		
Stoneridge	24.4%	5	1.8%	10	1.5%	10		
StrattecSecurityCorp	18.1%	8	5.7%	6	3.9%	7		
SuperiorIndustries	7.1%	10	3.9%	9	3.6%	8		
<b>APS-India</b>	<b>32.9%</b>	<b>2</b>	<b>7.1%</b>	<b>5</b>	<b>5.1%</b>	<b>4</b>		
<b>Turnover</b>	<b>Sales / Receivables</b>	<b>Rank</b>	<b>COGS / Inventory</b>	<b>Rank</b>	<b>Sales / NFA</b>	<b>Rank</b>	<b>Sales / Assets</b>	<b>Rank</b>
<b><u>Comparables Medians</u></b>	<b>x6.26</b>		<b>x6.85</b>		<b>x5.40</b>		<b>x1.34</b>	
ChinaAutomotiveSystems	x1.33	10	x6.26	6	x4.44	7	x0.70	10
ChinaZenix	x3.37	9	x7.36	4	x2.31	10	x0.82	8
GentexCorp	x9.03	1	x6.12	7	x3.14	9	x0.79	9
Gentherm	x5.25	8		na	x9.24	2	x1.34	6
ShilohIndustries	x7.39	3	x13.91	1	x4.07	8	x2.00	1
StandardMotorProducts	x6.26	5	x2.30	9	x14.82	1	x1.41	5
Stoneridge	x5.81	7	x6.34	5	x8.20	3	x1.55	3
StrattecSecurityCorp	x6.28	4	x10.05	3	x5.80	4	x1.76	2
SuperiorIndustries	x7.59	2	x10.71	2	x5.40	5	x1.33	7
<b>APS-India</b>	<b>x6.06</b>	<b>6</b>	<b>x3.08</b>	<b>8</b>	<b>x4.86</b>	<b>6</b>	<b>x1.47</b>	<b>4</b>
<b>Leverage</b>	<b>Equity / Assets</b>	<b>Rank</b>	<b>Assets / Equity</b>	<b>Rank</b>				
<b><u>Comparables Medians</u></b>	<b>49.1%</b>		<b>x2.04</b>					
ChinaAutomotiveSystems	47.5%	6	x2.11	5				
ChinaZenix	56.6%	4	x1.77	7				
GentexCorp	88.3%	1	x1.13	10				
Gentherm	43.0%	8	x2.33	3				
ShilohIndustries	37.0%	9	x2.70	2				
StandardMotorProducts	49.1%	5	x2.04	6				
Stoneridge	31.6%	10	x3.16	1				
StrattecSecurityCorp	66.0%	3	x1.52	8				
SuperiorIndustries	78.5%	2	x1.27	9				
<b>APS-India</b>	<b>44.6%</b>	<b>7</b>	<b>x2.24</b>	<b>4</b>				

<b>Auto Parts Superior (APS) - INDIA</b>								
<i>Comparable Publicly Traded Companies Market Method</i>								
<b><u>EQUITY</u> - Financial Performance Ranking Comparison With Subject Company</b>								
<i>All Rankings Provided in Descending Order</i>								
<b><u>Equity Financial Performance Metrics</u></b>								
<b>Return on investments</b>	<b><u>NIAT / Sales</u></b>	<b><u>Rank</u></b>	<b><u>Sales / Assets</u></b>	<b><u>Rank</u></b>	<b><u>Assets / Equity</u></b>	<b><u>Rank</u></b>	<b><u>ROE</u></b>	<b><u>Rank</u></b>
<b><u>Comparables Medians</u></b>	<b><u>4.5%</u></b>		<b><u>x1.34</u></b>		<b><u>x2.04</u></b>		<b><u>10.3%</u></b>	
ChinaAutomotiveSystems	6.7%	2	x0.70	10	x2.11	5	9.9%	7
ChinaZenix	6.5%	3	x0.82	8	x1.77	7	9.4%	8
GentexCorp	16.5%	1	x0.79	9	x1.13	10	14.8%	3
Gentherm	4.5%	6	x1.34	6	x2.33	3	14.0%	4
ShilohIndustries	2.9%	9	x2.00	1	x2.70	2	15.7%	2
StandardMotorProducts	4.8%	5	x1.41	5	x2.04	6	13.8%	5
Stoneridge	1.5%	10	x1.55	3	x3.16	1	7.4%	9
StrattecSecurityCorp	3.9%	7	x1.76	2	x1.52	8	10.3%	6
SuperiorIndustries	3.6%	8	x1.33	7	x1.27	9	6.1%	10
<b>APS-India</b>	<b>5.1%</b>	<b>4</b>	<b>x1.47</b>	<b>4</b>	<b>x2.24</b>	<b>4</b>	<b>16.8%</b>	<b>1</b>

<b>Auto Parts Superior (APS) - INDIA</b>						
<i>Comparable Publicly Traded Companies Market Method</i>						
<b><u>EQUITY MARKET ANALYSIS</u></b>						
<i>All Rankings Provided in Descending Order</i>						
<b><u>Equity Financial Performance Metrics</u></b>						
	<b><u>Avg Daily</u></b>		<b><u>Avg Annual</u></b>		<b><u>Annual</u></b>	
	<b><u>Volume %</u></b>	<b><u>Rank</u></b>	<b><u>Shs Traded</u></b>	<b><u>Rank</u></b>	<b><u>Price Range</u></b>	<b><u>Rank</u></b>
<b>Actively Traded</b>	<b><u>End Shares</u></b>		<b><u>Turnover</u></b>		<b><u>+/-% Med</u></b>	
<b><u>Comparables Medians</u></b>	<b>0.7%</b>		<b>x2.47</b>		<b>30.8%</b>	
ChinaAutomotiveSystems	0.7%	4	x2.48	4	43.7%	2
ChinaZenix	0.0%	9	x0.06	9	26.1%	8
GentexCorp	0.7%	5	x2.47	5	26.5%	7
Gentherm	0.8%	2	x2.74	2	30.8%	5
ShilohIndustries	1.8%	1	x6.72	1	29.9%	6
StandardMotorProducts	0.7%	3	x2.71	3	39.3%	3
Stoneridge	0.7%	6	x2.47	6	50.3%	1
StrattecSecurityCorp	0.1%	8	x0.44	8	33.1%	4
SuperiorIndustries	0.3%	7	x1.12	7	14.5%	9
<b>APS-India</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>
	<b><u>Price /</u></b>	<b><u>Rank</u></b>	<b><u>Price /</u></b>	<b><u>Rank</u></b>	<b><u>Price /</u></b>	<b><u>Rank</u></b>
<b>Market Multiples</b>	<b><u>Sales</u></b>		<b><u>Gross Prof</u></b>		<b><u>EBT</u></b>	
<b><u>Comparables Medians</u></b>	<b>0.82 x</b>		<b>4.28 x</b>		<b>14.97 x</b>	
ChinaAutomotiveSystems	0.54 x	7	2.97 x	7	6.80 x	9
ChinaZenix	1.45 x	2	6.60 x	3	18.91 x	3
GentexCorp	3.37 x	1	9.75 x	1	13.91 x	6
Gentherm	1.10 x	3	4.28 x	5	20.05 x	1
ShilohIndustries	0.36 x	8	3.72 x	6	7.98 x	8
StandardMotorProducts	0.82 x	5	2.92 x	8	10.78 x	7
Stoneridge	0.35 x	9	1.42 x	9	19.27 x	2
StrattecSecurityCorp	0.95 x	4	5.26 x	4	16.77 x	4
SuperiorIndustries	0.59 x	6	8.31 x	2	14.97 x	5
<b>APS-India</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>
	<b><u>Price /</u></b>	<b><u>Rank</u></b>	<b><u>Price /</u></b>	<b><u>Rank</u></b>	<b><u>Price /</u></b>	<b><u>Rank</u></b>
<b>Market Multiples</b>	<b><u>NIAT</u></b>		<b><u>GCFeq</u></b>		<b><u>BVeq</u></b>	
<b><u>Comparables Medians</u></b>	<b>20.44 x</b>		<b>11.41 x</b>		<b>2.10 x</b>	
ChinaAutomotiveSystems	8.11 x	9	5.20 x	9	0.80 x	9
ChinaZenix	22.50 x	4	14.12 x	3	2.10 x	5
GentexCorp	20.44 x	5	15.80 x	1	3.03 x	2
Gentherm	24.64 x	1	11.41 x	5	3.44 x	1
ShilohIndustries	12.33 x	8	6.13 x	8	1.94 x	6
StandardMotorProducts	17.15 x	6	12.48 x	4	2.37 x	4
Stoneridge	22.89 x	3	6.49 x	7	1.70 x	7
StrattecSecurityCorp	24.59 x	2	14.90 x	2	2.53 x	3
SuperiorIndustries	16.49 x	7	8.73 x	6	1.00 x	8
<b>APS-India</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>

<b>Auto Parts Superior (APS) - INDIA</b>						
<b>Comparable Publicly Traded Companies Market Method</b>						
<b><u>INVESTED CAPITAL</u> - Financial Performance Ranking Comparison With Subject Company</b>						
<b>All Rankings Provided in Descending Order</b>						
<b><u>Invested Capital Financial Performance Metrics</u></b>						
<b>Size</b>	<b>Sales</b>	<b>Rank</b>	<b>Assets</b>	<b>Rank</b>	<b>BV Inv Cap</b>	<b>Rank</b>
<b><u>Comparables Medians</u></b>	<b>642,439</b>		<b>594,406</b>		<b>387,379</b>	
ChinaAutomotiveSystems	369,759	8	526,234	6	296,950	6
ChinaZenix	565,388	7	689,905	2	490,803	2
GentexCorp	1,085,070	1	1,366,277	1	1,207,010	1
Gentherm	597,910	6	446,467	7	214,449	7
ShilohIndustries	642,439	5	321,827	8	203,009	8
StandardMotorProducts	950,167	2	673,293	3	399,096	4
Stoneridge	920,476	3	594,406	5	387,379	5
StrattecSecurityCorp	298,179	9	169,500	9	114,130	9
SuperiorIndustries	809,378	4	610,172	4	479,007	3
<b>APS-India</b>	<b>60,214</b>	<b>10</b>	<b>40,837</b>	<b>10</b>	<b>31,503</b>	<b>10</b>
<b>Growth ( latest FY's)</b>	<b>Sales</b>	<b>Rank</b>	<b>Assets</b>	<b>Rank</b>	<b>BV Inv Cap</b>	<b>Rank</b>
<b><u>Comparables Medians</u></b>	<b>7.4%</b>		<b>4.2%</b>		<b>1.4%</b>	
ChinaAutomotiveSystems	1.9%	7	4.2%	5	9.1%	3
ChinaZenix	-7.8%	10	-0.8%	9	2.6%	5
GentexCorp	7.4%	5	7.6%	3	9.1%	2
Gentherm	50.2%	1	17.2%	1	50.3%	1
ShilohIndustries	13.2%	3	3.5%	6	-3.6%	8
StandardMotorProducts	8.5%	4	4.7%	4	0.9%	7
Stoneridge	22.6%	2	-14.8%	10	-11.7%	10
StrattecSecurityCorp	7.0%	6	12.1%	2	-4.9%	9
SuperiorIndustries	-0.1%	8	1.1%	8	1.4%	6
<b>APS-India</b>	<b>-2.3%</b>	<b>9</b>	<b>1.9%</b>	<b>7</b>	<b>3.2%</b>	<b>4</b>
<b>Liquidity &amp; Coverage</b>	<b>Current Ratio</b>	<b>Rank</b>	<b>EBIT / Interest</b>	<b>Rank</b>		
<b><u>Comparables Medians</u></b>	<b>x1.81</b>		<b>x12.64</b>			
ChinaAutomotiveSystems	x1.55	7	x28.45	3		
ChinaZenix	x1.31	9	x7.88	6		
GentexCorp	x8.23	1		na		
Gentherm	x1.81	5	x9.66	5		
ShilohIndustries	x1.54	8	x15.62	4		
StandardMotorProducts	x1.70	6	x29.02	2		
Stoneridge	x2.14	3	x1.89	8		
StrattecSecurityCorp	x2.10	4	x497.44	1		
SuperiorIndustries	x6.67	2	-x18.81	9		
<b>APS-India</b>	<b>x1.22</b>	<b>10</b>	<b>x3.83</b>	<b>7</b>		

<b>Auto Parts Superior (APS) - INDIA</b>								
<i>Comparable Publicly Traded Companies Market Method</i>								
<b><u>INVESTED CAPITAL</u> - Financial Performance Ranking Comparison With Subject Company</b>								
All Rankings Provided in Descending Order								
<b><u>Invested Capital Financial Performance Metrics</u></b>								
<b>Profitability</b>	<b>Gross Margin</b>	<b>Rank</b>	<b>EBIT Margin</b>	<b>Rank</b>	<b>NOPAT Margin</b>	<b>Rank</b>	<b>EBITDA Margin</b>	<b>Rank</b>
<b><u>Comparables Medians</u></b>	<b>22.0%</b>		<b>6.1%</b>		<b>5.0%</b>		<b>9.7%</b>	
ChinaAutomotiveSystems	18.3%	7	8.2%	4	6.9%	3	12.0%	4
ChinaZenix	22.0%	6	8.8%	3	7.4%	2	12.6%	3
GentexCorp	34.6%	1	24.2%	1	16.5%	1	29.1%	1
Gentherm	25.8%	4	6.1%	6	5.0%	5	11.3%	5
ShilohIndustries	9.7%	9	4.8%	8	3.1%	10	7.8%	8
StandardMotorProducts	28.2%	3	7.9%	5	5.0%	6	9.7%	6
Stoneridge	24.4%	5	3.8%	9	3.2%	9	7.7%	9
StrattecSecurityCorp	18.1%	8	5.7%	7	3.9%	7	8.2%	7
SuperiorIndustries	7.1%	10	3.7%	10	3.4%	8	6.9%	10
<b>APS-India</b>	<b>32.9%</b>	<b>2</b>	<b>9.6%</b>	<b>2</b>	<b>6.9%</b>	<b>4</b>	<b>13.8%</b>	<b>2</b>
<b>Turnover</b>	<b>Sales / Receivables</b>	<b>Rank</b>	<b>COGS / Inventory</b>	<b>Rank</b>	<b>Sales / NFA</b>	<b>Rank</b>	<b>Sales / Assets</b>	<b>Rank</b>
<b><u>Comparables Medians</u></b>	<b>x6.26</b>		<b>x6.85</b>		<b>x5.40</b>		<b>x1.34</b>	
ChinaAutomotiveSystems	x1.33	10	x6.26	6	x4.44	7	x0.70	10
ChinaZenix	x3.37	9	x7.36	4	x2.31	10	x0.82	8
GentexCorp	x9.03	1	x6.12	7	x3.14	9	x0.79	9
Gentherm	x5.25	8		na	x9.24	2	x1.34	6
ShilohIndustries	x7.39	3	x13.91	1	x4.07	8	x2.00	1
StandardMotorProducts	x6.26	5	x2.30	9	x14.82	1	x1.41	5
Stoneridge	x5.81	7	x6.34	5	x8.20	3	x1.55	3
StrattecSecurityCorp	x6.28	4	x10.05	3	x5.80	4	x1.76	2
SuperiorIndustries	x7.59	2	x10.71	2	x5.40	5	x1.33	7
<b>APS-India</b>	<b>x6.06</b>	<b>6</b>	<b>x3.08</b>	<b>8</b>	<b>x4.86</b>	<b>6</b>	<b>x1.47</b>	<b>4</b>
<b>Leverage</b>	<b>IC / Assets</b>	<b>Rank</b>	<b>Assets / IC</b>	<b>Rank</b>				
<b><u>Comparables Medians</u></b>	<b>65.2%</b>		<b>x1.53</b>					
ChinaAutomotiveSystems	56.4%	9	x1.77	2				
ChinaZenix	71.1%	4	x1.41	7				
GentexCorp	88.3%	1	x1.13	10				
Gentherm	48.0%	10	x2.08	1				
ShilohIndustries	63.1%	7	x1.59	4				
StandardMotorProducts	59.3%	8	x1.69	3				
Stoneridge	65.2%	6	x1.53	5				
StrattecSecurityCorp	67.3%	5	x1.49	6				
SuperiorIndustries	78.5%	2	x1.27	9				
<b>APS-India</b>	<b>77.1%</b>	<b>3</b>	<b>x1.30</b>	<b>8</b>				

<b>Auto Parts Superior (APS) - INDIA</b>								
<i>Comparable Publicly Traded Companies Market Method</i>								
<b><u>INVESTED CAPITAL</u></b> - Financial Performance Ranking Comparison With Subject Company								
All Rankings Provided in Descending Order								
<b><u>Invested Capital Financial Performance Metrics</u></b>								
	<b><u>NOPAT /</u></b>	<b><u>Rank</u></b>	<b><u>Sales /</u></b>	<b><u>Rank</u></b>	<b><u>Assets /</u></b>	<b><u>Rank</u></b>	<b><u>ROIC</u></b>	<b><u>Rank</u></b>
<b>Return on investments</b>	<b><u>Sales</u></b>		<b><u>Assets</u></b>		<b><u>IC</u></b>			
<b><u>Comparables Medians</u></b>	<b><u>5.0%</u></b>		<b><u>x1.34</u></b>		<b><u>x1.53</u></b>		<b><u>9.9%</u></b>	
ChinaAutomotiveSystems	6.9%	3	x0.70	10	x1.77	2	8.6%	7
ChinaZenix	7.4%	2	x0.82	8	x1.41	7	8.5%	8
GentexCorp	16.5%	1	x0.79	9	x1.13	10	14.8%	1
Gentherm	5.0%	5	x1.34	6	x2.08	1	13.9%	2
ShilohIndustries	3.1%	10	x2.00	1	x1.59	4	9.9%	6
StandardMotorProducts	5.0%	6	x1.41	5	x1.69	3	11.8%	4
Stoneridge	3.2%	9	x1.55	3	x1.53	5	7.7%	9
StrattecSecurityCorp	3.9%	7	x1.76	2	x1.49	6	10.1%	5
SuperiorIndustries	3.4%	8	x1.33	7	x1.27	9	5.7%	10
<b>APS-India</b>	<b>6.9%</b>	<b>4</b>	<b>x1.47</b>	<b>4</b>	<b>x1.30</b>	<b>8</b>	<b>13.1%</b>	<b>3</b>

<b>Auto Parts Superior (APS) - INDIA</b>						
<i>Comparable Publicly Traded Companies Market Method</i>						
<b><u>INVESTED CAPITAL MARKET ANALYSIS</u></b>						
<i>All Rankings Provided in Descending Order</i>						
<b><u>Invested Capital Financial Performance Metrics</u></b>						
<b>Actively Traded</b>	<b>Avg Daily</b>	<b>Rank</b>	<b>Avg Annual</b>	<b>Rank</b>	<b>Annual</b>	<b>Rank</b>
	<b>Volume %</b>		<b>Shs Traded</b>		<b>Price Range</b>	
	<b>End Shares</b>		<b>Turnover</b>		<b>+/-% Med</b>	
<b>Comparables Medians</b>	<b>0.7%</b>		<b>x2.47</b>		<b>30.8%</b>	
ChinaAutomotiveSystems	0.7%	4	x2.48	4	43.7%	2
ChinaZenix	0.0%	9	x0.06	9	26.1%	8
GentexCorp	0.7%	5	x2.47	5	26.5%	7
Gentherm	0.8%	2	x2.74	2	30.8%	5
ShilohIndustries	1.8%	1	x6.72	1	29.9%	6
StandardMotorProducts	0.7%	3	x2.71	3	39.3%	3
Stoneridge	0.7%	6	x2.47	6	50.3%	1
StrattecSecurityCorp	0.1%	8	x0.44	8	33.1%	4
SuperiorIndustries	0.3%	7	x1.12	7	14.5%	9
<b>APS-India</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>
<b>Market Multiples</b>	<b>Price /</b>	<b>Rank</b>	<b>Price /</b>	<b>Rank</b>	<b>Price /</b>	<b>Rank</b>
	<b>Sales</b>		<b>Gross Prof</b>		<b>EBIT</b>	
<b>Comparables Medians</b>	<b>0.90 x</b>		<b>5.07 x</b>		<b>14.72 x</b>	
ChinaAutomotiveSystems	0.67 x	6	3.67 x	7	8.11 x	9
ChinaZenix	1.63 x	2	7.41 x	3	18.52 x	2
GentexCorp	3.37 x	1	9.75 x	1	13.91 x	6
Gentherm	1.14 x	3	4.43 x	6	18.59 x	1
ShilohIndustries	0.49 x	9	5.07 x	5	10.18 x	8
StandardMotorProducts	0.90 x	5	3.17 x	8	11.32 x	7
Stoneridge	0.56 x	8	2.31 x	9	14.72 x	5
StrattecSecurityCorp	0.96 x	4	5.30 x	4	16.87 x	3
SuperiorIndustries	0.59 x	7	8.31 x	2	15.77 x	4
<b>APS-India</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>
<b>Market Multiples</b>	<b>Price /</b>	<b>Rank</b>	<b>Price /</b>	<b>Rank</b>	<b>Price /</b>	<b>Rank</b>
	<b>NOPAT</b>		<b>GCFic</b>		<b>BVic</b>	
<b>Comparables Medians</b>	<b>18.00 x</b>		<b>9.22 x</b>		<b>1.88 x</b>	
ChinaAutomotiveSystems	9.67 x	9	5.58 x	9	0.83 x	9
ChinaZenix	22.04 x	3	12.91 x	1	1.88 x	5
GentexCorp	20.44 x	4	11.59 x	3	3.03 x	2
Gentherm	22.84 x	2	10.07 x	4	3.19 x	1
ShilohIndustries	15.73 x	8	6.31 x	8	1.55 x	6
StandardMotorProducts	18.00 x	5	9.22 x	5	2.13 x	4
Stoneridge	17.49 x	6	7.36 x	7	1.34 x	7
StrattecSecurityCorp	24.73 x	1	11.69 x	2	2.50 x	3
SuperiorIndustries	17.36 x	7	8.52 x	6	1.00 x	8
<b>APS-India</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>



# Chapter 6. Guideline Transaction Method

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## Section A. Overview of Guideline Transaction Method

1. Summary
  - A. Involves a review of recent transactions of similar companies to provide indicators of rates of returns or prices required by investors.
  - B. Valuation multiples are derived from actual market transactions of companies engaged in the same or similar lines of business as the Subject Company.
  - C. Can use the same multiples as discussed in the comparable company multiple method.
  - D. Similar to the comparable company multiple method, except that instead of looking at public companies trading on a stock market, the valuer develops valuation multiples by reviewing and analyzing companies that have recently been bought or sold in the marketplace.
2. Advantages
  - A. Many comparable transactions can involve smaller private companies and thus be more comparable to the Subject Company than listed companies.
  - B. Since most comparable transactions represent the purchase of a controlling and often a 100% interest in an acquired company instead of a non-controlling interest, comparable transactions can often be a better reflection of the value of an entire business.
  - C. Industry transactions may assist the valuer in identifying special interest purchasers, and in some cases, quantifying synergies.
  - D. Can be used to test the reasonableness of another valuation analysis or be used as a primary valuation approach.
3. Disadvantages
  - A. Relevant information:
    - (1) Is generally not publicly available
    - (2) May be outdated
    - (3) Can be difficult to identify and obtain

- (4) Can often require a significant amount of investigation to derive relatively small amounts of relevant data
- (5) Availability of information can vary depending on whether the companies involved in the transaction are public or private
- (6) Sufficient information about the transactions and the target company must be obtained and thoroughly analysed to be able to reasonably interpret the transaction and properly apply the implied multiples to the financial results of the Subject Company.
- (7) When there are insufficient details and it is not possible to understand the given reasoning behind the price paid by the purchaser, the use of publicly available transactional data can lead to inappropriate and/or unsupported conclusions.
- (8) Without direct knowledge of the transaction and related information, adjustments to render the transaction comparable may not be possible.
- (9) Transactions often reflect synergies and buyer-specific value
- (10) Differences in negotiating ability, highly competitive bidding, vendor and/or specialized knowledge, and post-acquisition synergies could distort the purchase price paid.
- (11) Balance sheet issues of capital structure and working capital are often not reported.

## **Section B. Considering the Structure of the Guideline Transactions**

1. Does the information represent operating asset value, enterprise value or equity value?
  - A. Most small businesses sell only their long-term tangible assets and intangible assets (i.e., goodwill) plus their inventory as of the closing date. The remaining current assets and the liabilities remain with the seller.
2. Was real estate or non-operating assets included in the purchase price?
3. Was the transaction for 100% of the shares or for a lesser interest?
4. Was the transaction on an arm's-length basis? Were the sellers compelled to act, or did they negotiate under distress?
5. Was the deal all-cash, or did the consideration paid include earn-out provisions, non-competition agreement(s), and other non-cash and/or intangible components which would not be obvious in the transaction price?

### **Section C. Understanding and/or Quantifying Purchaser Considerations**

1. Special purchaser considerations
2. Post-acquisition synergies
3. Strategic advantages

### **Section D. Considering the Characteristics of the Guideline Companies**

1. Similar industries, size of companies, diversity of product mix, geographic areas
2. Impact of contingent assets and/or liabilities
3. Dependency on key customers/suppliers
4. Nature, extent, and timing of new products to be launched
5. Historical and projected research and development expenditures
6. Impact of unionization status (if any) on the transaction

### **Section E. Other Important Considerations**

1. Transactions and multiples that are closer to the valuation date are more relevant than older transactions and multiples.
2. The length of time the comparable company was exposed for sale in the marketplace could have impacted the transaction price.
3. In general, a company should be able to obtain higher price when it exposes itself to the market for a relatively longer term.
4. Consider whether the industry is “over heated” or if the comparable transactions occurred during a time when the industry was in a cyclical downturn.
5. Consider whether the earnings and performance levels were unusually high or low.

### **Section F. Sources for Identifying Guideline Transactions**

1. Discussions with management
2. Discussions with other valuations professionals
3. On-line data providers, such as Bloomberg, Thomson Financial Securities Data, The Mergers and Acquisitions Advisor, Capital IQ, Mid-Market Comps, Mergerstat, BizComps, Pratt’s Stats
4. Search engines which provide information on publicly traded companies

5. Stock market or brokerage firm equity research reports

### **Section G. Steps in Applying the Method**

1. Identify transactions in which the target (or acquired company) is similar to the subject using the same or similar criteria as used in the market multiples method and are within an acceptable period of time
2. Obtain adequate data on the publicly reported transactions
3. Refine selection of relevant transactions based on additional information and quality of data. Older transactions may be less relevant if substantial economic and industry changes have occurred
4. Adjust numerator for non-cash terms of the deal (e.g., non-compete agreements, earn-outs, etc.)
5. Consider the impact of restricted shares
6. Develop appropriate transaction multiples
7. Adjust multiples for differences in risk between Subject Company and acquired companies
8. Apply the multiples to the appropriate metrics
9. Reconcile different multiples to obtain indicated value of operations
10. Add non-operating assets
11. Subtract debt and other claims to arrive at value of equity

## Section H. Exercises 6-1 and 6-2

Exercise 6-1: Analyse a Market Transaction in the Auto Parts Industry

**Exhibit 6-A** contains excerpts from public filings related to the acquisition of International Auto Parts Ltd. (“IAP”) by World Wide Motor Car Corp (“WWMC”) on May 1, 2011.

**Exhibit 6-B** contains various financial schedules concerning the acquisition of International Auto Parts Ltd. (“IAP”) by World Wide Motor Car Corp (“WWMC”) on May 1, 2011.

**Problem 6-1.1:** Review Exhibit 6-A and Exhibit 6-B to determine the following:

- the implied MVIC (also referred to as enterprise value) of IAP
- IAP’s most recent performance
- How similar IAP is to WWMC.

MVIC Price

- MVIC for IAP \_\_\_\_\_

Income Statement

- Latest sales \_\_\_\_\_
- Prior year sales \_\_\_\_\_
- Latest EBITDA \_\_\_\_\_
- Latest EBIT \_\_\_\_\_

Balance sheet

- Working capital \_\_\_\_\_
- Fixed assets \_\_\_\_\_
- Operating invested capital \_\_\_\_\_
- Intangibles \_\_\_\_\_
- Other assets \_\_\_\_\_
- Total investment \_\_\_\_\_
- Debt \_\_\_\_\_

- Equity \_\_\_\_\_
- Total financing \_\_\_\_\_

#### Performance

- Operating margin \_\_\_\_\_
- Invested capital turnover \_\_\_\_\_
- Pre-tax ROIC \_\_\_\_\_
- Latest sales growth \_\_\_\_\_

#### Leverage

- Debt/EBITDA \_\_\_\_\_
- Debt/Capital \_\_\_\_\_

#### Multiples

- MVIC/Sales \_\_\_\_\_
- MVIC/EBITDA \_\_\_\_\_
- MVIC/EBIT \_\_\_\_\_
- MVIC/BVIC \_\_\_\_\_



Exhibit 6A: Selected Excerpts From Various Public Filings

Relating to the acquisition of International Auto Parts Ltd.

by World Wide Motor Car Corp.

### ***Excerpt #1- Initial Announcement***

- On May 1, 2011, World Wide Motor Car Corp. ("WWMC" or the "Company"), completed the acquisition of all of the outstanding capital stock of International Auto Parts Ltd. ("IAP"), a multi-channel retailer and manufacturer of specialty auto parts under the well-known IAP, High Performance and IAP Racing brands, for a purchase price of approximately €85 million in cash, subject to adjustment for working capital and certain "earn-out" incentives which amount to a maximum of €4.5 million during the year ending 1 July, 2012 and €1.5 million during the year ending 30 June, 2011, upon achievement of specified earnings targets.

### ***Excerpt #2***

- The acquisition includes a modern 200,000-square-foot manufacturing facility and 52 IAP retail stores throughout Europe generating turnover of approximately €75 million in its most recent fiscal year ended 30 April, 2011.

### ***Excerpt #3***

- In order to finance the acquisition, on 1 May, 2011, the Company entered into a €135.0 million secured credit facility with JPMorgan Chase Bank, N.A., as administrative agent, and a group of lenders (the "2011 Credit Facility"). The 2011 Credit Facility includes an €85.0 million term loan and a €50.0 million revolving facility, which bear interest at LIBOR plus 0.625% to 1.125%, with pricing based upon the Company's leverage ratio. At closing, the Company borrowed €85.0 million of the term facility to acquire all of the outstanding capital stock of IAP. At the time of the filing, certain financial statements were not available and, accordingly were not filed with the Current Report.

### ***Excerpt #4***

- The CEO of WWMC stated, "This acquisition significantly expands our position in the key specialty auto parts market where we are rapidly becoming a leading player. The assets acquired include premium brands with a history of very strong customer loyalty.

- These brands offer a significant opportunity for growth, particularly through the leveraging of our assets and capabilities in the online and direct marketing space. ... The acquisition also brings an experienced and focused management team that can help us grow our business in this important market area.”
- In WWMC’s most recent release of its results for the fiscal third quarter, the Company said that it expects the financial impact of the acquisition, including operating losses associated with the IAP business, and interest expense associated with the debt financing being used, will have a negative impact on the Company’s fourth quarter earnings. The Company said it expects the acquisition will be accretive to earnings per share in the next fiscal year.

#### **Excerpt #5**

- The acquisition of IAP by WWMC was completed immediately subsequent to the “spinoff” of certain operating subsidiaries of IAP, namely KC Performance Bearings Inc., Alpine Performance Breaks ULC and MaxFlow Injector Company (together referred to as the “Spun off Entities”).
- The two retained subsidiaries, High Performance and IAP Racing comprised the majority of the revenues, and substantially all of the operating profit of IAP prior to the “spin-off.” Audited financial statements of IAP are included to provide investors with the financial history of the acquired business.
- Elimination of the operating subsidiaries not acquired by the Company is shown in the unaudited pro forma financial statements presenting the effects of the “spin-off” prior to the acquisition.

Exhibit 6B: Selected Financial Statements – IAP & WWMC  
Relating to the acquisition of International Auto Parts Ltd.  
by World Wide Motor Car Corp.

<b>International Auto Parts Ltd.</b>		<b>Exhibit 6A.1</b>	
<b>Consolidated Balance Sheets</b>			
<b>€000's</b>			
	30-April		
	2011	4-Jul	
<b>Current Assets</b>			
Cash	950.6	407.5	
Accounts receivable	5,313.6	6,346.7	
Inventories	24,093.2	25,823.8	
Deferred tax asset	-	1,801.0	
Prepaid expenses	684.5	932.8	
Related parties notes receivables	113.4	127.4	
Income tax receivable	297.5	843.8	
Total current assets	31,452.7	36,283.0	
Property, plant and equipment, net	7,620.9	7,233.2	
Related party notes receivable	210.2	326.7	
Goodwill	-	1,098.3	
Intellectual property	23,939.3	23,939.3	
Deferred tax asset	3,318.7	5,340.6	
other non-current assets	852.4	745.2	
	67,394.2	74,966.3	
<b>Current Liabilities</b>			
Line of credit	9,074.1	14,569.3	
Related party demand notes payable	2,570.3	1,479.0	
current maturities of notes payable	39,672.4	2,931.2	
Accounts payable	4,182.8	4,587.3	
Accrued liabilities	4,419.5	3,604.5	
Stock warrant liability	8,997.3	1,450.3	
Total current liabilities	68,916.5	28,621.6	
Deferred gain on sale of building	8,294.5	8,887.0	
Notes payable, less current maturities	167.6	26,449.8	
Related party notes payable	-	0.3	
<b>Stockholders' equity</b>	101.9	101.9	
Retained earnings (deficit)	(10,687.2)	10,187.0	
Accumulated other comprehensive income	600.8	419.1	
Total stockholders' equity (deficit)	(9,984.5)	10,708.0	
	67,394.2	74,666.6	

<b>International Auto Parts Ltd.</b>		<b>Exhibit 6A.2</b>	
<b>Consolidated Statements of Operations</b>			
<b>€000's</b>			
	Year ended 30-April		
	2011	2012	
Net turnover	110,541.3	97,028.6	
Cost of sales	69,548.1	62,404.3	
Gross profit	40,993.2	34,624.3	
Selling, general and administrative expenses	37,709.7	30,484.1	
Fees from unsuccessful financings	1,512.5	-	
Loss on goodwill impairment	1,098.3	-	
Accretion of deferred gain on leaseback	(592.5)	(1,112.6)	
Operating profit	1,265.1	5,252.8	
Other income (expense)			
Interest expense	(10,715.5)	(5,109.5)	
Interest income	24.1	173.7	
Stock warrant expense	(7,547.0)	(960.3)	
Other, net	(137.8)	(389.2)	
Net loss before taxes	(17,111.0)	(1,032.4)	
Tax expense (benefit)	3,763.2	(1,065.3)	
Net Earnings (loss)	(20,874.2)	32.9	

<b>International Auto Parts Ltd.</b>						<b>Exhibit 6A.3</b>
<b>Consolidating Balance Sheet Information, at 30 - April, 2011</b>						
<b>€000's</b>						
	<b>IAP</b>	<b>Spun-off</b>	<b>High Perform</b>	<b>IAP Racing</b>	<b>Consol</b>	<b>Total</b>
<b>Current Assets</b>						
Cash	0.1	573.3	96.7	280.4	-	950.6
Accounts receivable	-	1,637.9	2,027.7	1,648.0	-	5,313.6
Intercompany receivables	8,451.4	556.0	-	28.1	(9,035.4)	-
Inventories, net	-	11,159.3	9,445.2	3,722.3	(233.6)	24,093.2
Prepays	-	229.2	166.8	289.5	(1.0)	684.5
Related party notes receivable	-	111.9	1.5	-	-	113.4
Income tax receivable	-	297.5	-	-	-	297.5
<b>Total current assets</b>	<b>8,451.5</b>	<b>14,565.1</b>	<b>11,737.9</b>	<b>5,968.2</b>	<b>(9,270.0)</b>	<b>31,452.7</b>
Property, plant and equipment, net	-	3,981.3	2,145.4	1,494.2	-	7,620.9
Related party notes receivable	-	210.2	-	-	-	210.2
Investment in subsidiaries	15,468.8	-	-	-	(15,468.8)	-
Intellectual property	-	-	416.6	23,522.7	-	23,939.3
Deferred tax asset	-	-	3,318.7	-	-	3,318.7
Other non-current assets	-	620.0	-	232.4	(0.0)	852.4
<b>Total assets</b>	<b>23,920.4</b>	<b>19,376.5</b>	<b>17,618.6</b>	<b>31,217.5</b>	<b>(24,738.8)</b>	<b>67,394.2</b>
<b>Current Liabilities</b>						
Line of credit	7,566.6	-	724.3	783.3	-	9,074.1
Related party demand notes payable	-	2,570.3	-	-	-	2,570.3
Current maturities of notes payable	26,453.9	3.2	50.0	13,165.3	-	39,672.4
Intercompany borrowings	-	-	1,525.6	7,495.2	(9,020.8)	-
Accounts payable	-	1,946.5	991.6	1,244.7	-	4,182.8
Accrued liabilities	578.6	980.9	1,255.9	1,603.2	0.8	4,419.5
Stock warrant liability	901.2	-	-	8,096.1	-	8,997.3
<b>Total current liabilities</b>	<b>35,500.3</b>	<b>5,501.0</b>	<b>4,547.4</b>	<b>32,387.8</b>	<b>(9,020.0)</b>	<b>68,916.5</b>
Deferred gain on sale of building	-	-	8,294.5	-	-	8,294.5
Notes payable, less current maturities	-	52.0	115.6	-	-	167.6
	35,500.3	5,553.0	12,957.6	32,387.8	(9,020.0)	77,378.7
<b>Stockholders' equity (deficit)</b>	<b>(11,579.9)</b>	<b>13,823.5</b>	<b>4,661.0</b>	<b>(1,170.3)</b>	<b>(15,718.9)</b>	<b>(9,984.5)</b>
	23,920.4	19,376.5	17,618.6	31,217.5	(24,738.8)	67,394.2

<b>International Auto Parts Ltd.</b>						<b>Exhibit 6A.4</b>
<b>Consolidating Operations Information, Year ended 30, April, 2011</b>						
<b>€000's</b>						
	<b>IAP</b>	<b>Spun- off</b>	<b>High Perform</b>	<b>IAP Racing</b>	<b>Consol</b>	<b>Total</b>
Net turnover	-	35,102.0	27,966.7	48,414.4	(941.8)	110,541.3
Cost of sales	-	30,749.1	21,470.1	19,016.4	(1,687.5)	69,548.1
Gross profit	-	4,353.0	6,496.5	29,398.0	745.7	40,993.2
Selling, general and admin. expenses	2,230.8	9,721.9	6,802.6	18,952.0	2.5	37,709.7
Fees from unsuccessful financings	1,512.5	-	-	-	-	1,512.5
Loss on goodwill impairment	-	1,098.3	-	-	-	1,098.3
Accretion of deferred gain on leaseback	-	-	(592.5)	-	-	(592.5)
Operating profit	(3,743.3)	(6,467.3)	286.4	10,446.0	743.2	1,265.1
Other income (expense)						-
Management fee income (expense)	1,247.7	(1,090.7)	(75.0)	(75.0)	(7.0)	
Intercompany revenue (expense)	(2.5)	945.6	2,022.1	(2,022.1)	(943.2)	-
Interest expense	(4,487.4)	(1,680.1)	(445.2)	(4,102.8)	-	(10,715.5)
Interest income	17.7	6.4	-	-	-	24.1
Stock warrant expense	(703.7)	-	-	(6,843.3)	-	(7,547.0)
Other, net	(2.3)	514.4	(51.5)	(634.8)	36.4	(137.8)
Net loss before taxes	(7,673.7)	(7,771.7)	1,736.8	(3,232.0)	(170.5)	(17,111.0)
Tax expense (benefit)	245.1	1,158.1	1,922.0	438.0	-	3,763.2
Net loss	(7,918.8)	(8,929.8)	(185.1)	(3,670.0)	(170.5)	(20,874.2)

<b>World Wide Motor Car Corp.</b>						<b>Exhibit 6A.5</b>
<b>Pro Forma Condensed Combined Balance Sheet, Q3, 2011</b>						
<b>€000's</b>						
	<b>WWMC</b>	<b>IAP</b>	<b>Elim</b>	<b>IAP as Pro Forma Adj.</b>	<b>Pro Forma Adjs</b>	<b>Pro Forma Combined</b>
<b>Current Assets</b>						
Cash and equivalents	18.6	1.0	(0.4)	0.6	(8.0)	11.2
Receivables	13.1	6.8	(1.9)	4.9	-	18.0
Inventories, net	43.3	25.7	(10.8)	14.9	-	58.2
Deferred income taxes	8.2	-	-	-	4.1	12.3
Prepays	7.0	0.6	(0.2)	0.5	-	7.5
Total current assets	90.3	34.1	(13.3)	20.8	(3.9)	107.2
Property, plant and equipment, net	55.9	7.3	(3.6)	3.6	-	59.5
Goodwill	68.9	-	-	-	57.5	126.4
Other intangibles, net	15.4	24.0	-	24.0	(10.8)	28.6
Deferred income taxes	15.8	3.3	-	3.3	(0.1)	19.0
Other assets	8.2	0.4	(0.2)	0.2	1.2	9.5
<b>Total assets</b>	<b>254.3</b>	<b>69.1</b>	<b>(17.1)</b>	<b>52.0</b>	<b>43.8</b>	<b>350.1</b>
<b>Current Liabilities</b>						
Accounts payable	55.9	7.9	(2.3)	5.6	-	61.5
Other current	2.1	52.9	(16.1)	36.8	(25.3)	13.5
Stock warrant liability	-	9.0	-	9.0	(9.0)	-
Total current liabilities	57.9	69.8	(18.4)	51.4	(34.3)	75.1
LTD and cap. lease	1.9	0.2	(0.1)	0.1	78.6	80.6
Other	3.9	8.3	-	8.3	(8.3)	3.9
	63.8	78.3	(18.4)	59.9	36.0	159.6
<b>Stockholders' equity (deficit)</b>	<b>190.6</b>	<b>(9.2)</b>	<b>1.3</b>	<b>(7.9)</b>	<b>7.9</b>	<b>190.6</b>
	254.3	69.1	(17.1)	52.0	43.8	350.1

## Exhibit 6C: Selected Transaction Multiples and Performance Indicators

From Nine Auto Parts Companies Acquired/Merged

At or About the Date of the IAP acquisition

<b>Selected Transaction Multiples and Performance Indicators</b>								<b>Exhibit 6B</b>
At or About the Date of the IAP acquisition								
Transactions involving companies in autoparts industry	Multiples				Financial Performance			
	Sales	BVIC	EBITDA	EBIT	EBIT/ Sales	Sales/ BVIC	Pretax ROIC	LFY Sales Growth
Company A	1.8	6.8	7.9	8.6	21.2%	3.7	78.2%	-12%
Company B	3.9	43.9	9.5	9.7	40.4%	11.2	451.6%	na
Company C	1.1	3.4	16.2	22.4	4.9%	3.1	15.2%	na
Company D	3.2	25.3	8.9	9.2	35.1%	7.8	274.5%	-8%
Company E	0.9	2	7	10.5	8.3%	2.3	19.4%	34%
Company F	1.2	4.7	8.1	8.7	13.3%	4.1	53.8%	23%
Company G	1	1.3	10.3	17.5	5.7%	1.3	7.3%	3%
Company H	3.1	5.7	17.3	20.5	15.3%	1.8	27.9%	-7%
Company I	1.7	3.7	7.4	8.6	19.3%	2.2	43.2%	5%
Median	1.7	4.7	8.9	9.7	15.3%	3.1	43.2%	3%
Harm. Mean	1.5	3.7	9.4	11.2	11.4%	2.8	25.7%	na
Mean	2.0	10.8	10.3	12.9	18.2%	4.2	107.9%	5%
Standard Deviation	1.1	14.4	3.8	5.6	12.5%	3.3	152.8%	17%
Coeff. Variation	56%	134%	37%	44%	68.9%	78.3%	141.6%	315%

## Chapter 7. Multi-Period DCF Method

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The term “market value of invested capital” (MVIC) is used within this chapter and stands for the sum of equity market capitalization (number of shares X price per share) and the market value of interest-bearing debt. We would like to point out that MVIC can also be referred to as enterprise value (EV). The market value of invested capital, as referred to within this chapter, and enterprise value, therefore represent the same concept.

### Section A. Overview of DCF Method

1. The multi-period discounted future cash flow method (DCF) is defined as:

*“A method within the income approach whereby the present value of future expected economic benefits is calculated using a discount rate.” (International Glossary)*

- A. This method explicitly takes future changes in earnings or cash flows into account. If sales and cash flows are expected to vary during a discrete period, those cash flows are specifically forecasted for each year until operations are expected to stabilize.
- B. After stabilization, a “terminal value” is assessed usually using the single period Gordon Growth model, but the valuer can also use other methods such as using an estimated market multiple or a liquidation value.
  - (1) There are limitations to using market multiples or a liquidation value in terminal value assessment. Market multiples include hidden assumption about expected growth, profitability, leverage, etc., while liquidation value implies termination of operations.

C. The basic formula for the discounted future earnings method is below:

$$\text{Present Value} = \frac{\text{CF-yr1}}{(1+k)^1} + \frac{\text{CF-yr2}}{(1+k)^2} + \frac{\text{CF-yr3}}{(1+k)^3} + \dots + \frac{\text{CF-yrN}}{(1+k)^N} + \frac{\left( \frac{\text{CF-yrN+1}}{(k-g)} \right)}{(1+k)^N}$$

Where: CF-yrN = cash flow in year “N”  
k = risk adjusted market derived “discount rate”  
g = stabilized expected long-term growth rate

2. Future benefits “CF” can be expressed as:

- A. Equity net after-tax cash flows or after-tax cash flows to equity

- B. Invested capital after-tax cash flows or after-tax cash flows to enterprise capital
3. Advantages and disadvantages of using the discounted cash flow method.
- A. Advantages of the DCF:
    - (1) This method is generally considered to be central valuation method, widely accepted by clients, practitioners, courts, etc. The approach captures the cash flow generating ability of the company and therefore encompasses all of the tangible and intangible assets of the subject.
    - (2) It can be used as an analytical tool through “sensitivity analysis” by identifying the value drivers that affect value the most.
    - (3) As compared to the single-period capitalization method, the DCF allows for greater flexibility and precision in reflecting known variations in the future anticipated economic benefits.
    - (4) The DCF method exhibits cause/effect relationships between future economic benefits and present value. Users of this valuation method can weigh the analysis by identifying specific elements of the forecast that are overstated or understated and therefore can observe the key parameters driving the value.
    - (5) The purpose of the valuation is not a limiting factor in using this method.
    - (6) The DCF method can be used in valuing control or minority interests. However this depends upon whether control or minority cash flows are projected, which in turn is dependent on what financial statement adjustments have been made (see the discussion in chapter 3).
      - (a) There is a potential difference in the treatment of excess management compensation and/or the sale of business non-operating assets when projecting control and when projecting minority cash flows.
  - B. Disadvantages of the DCF:
    - (1) Since the quantification of growth and risk require the valuer’s judgment, users may suspect the results are disconnected from reality or overly optimistic/pessimistic and dismiss the valuation conclusion as a too subjective (reference to the hierarchies in FASB ASC Topic 820 or IPEVCG).
    - (2) The method also can be quite complex and can allow the valuer’s bias to be hidden within the complexity of the model itself.

- (3) Future benefits are “discounted” with a cost of capital (“discount rate”) that is estimated based on corporate finance theoretical models (e.g., CAPM) which allows for a certain level of subjectivity.
  - (4) A good example within the CAPM method is the estimation of beta for a Subject Company. Changing the underlying index or period for which the beta has been calculated may materially impact the beta calculation which also impacts the CAPM result.
  - (5) There is also the difficulty of establishing what is the correct discrete projection period and at what point the terminal value should be assessed. Too short of a projection period might be unreliable, however trying to build a projection for 15 or 20 years might prove to be unrealistic.
  - (6) Finally, determining the correct method used in assessing the terminal value at the end of the projection can be problematic, especially considering that the terminal value often represents 50% or more of the present value estimation.
    - (a) Obviously as with every valuation method, the income approach requires thorough company, industry, and economic analysis.
4. A fundamental correlation exists between the Income Approach (single period capitalization method) and the Market Approach (use of risk/growth adjusted market capitalization multiples).
- A. The capitalization rate ( $k - g$ ), used in the single period capitalization method, is the inverse of the guideline public company or transaction market capitalization multiple under the Market Approach.

$$\text{Market Multiple} = \frac{1}{\text{Market Capitalization Rate}}$$

$$\frac{\text{Market Price}}{\text{Economic Benefits}} = \frac{1}{(k - g)}$$

Economic Benefits = Subject Company economic benefits (e.g., earnings)

$k$  = Market derived risk adjusted discount rate ("cost of capital")

$g$  = Long-term growth rate in cash flow (present value weighted)

$k - g$  = Market based capitalization rate (single period model)

- B. Understanding this basic relationship between the income and market approaches generates implications regarding estimating the long-term growth rate and the discount rates imbedded in the market capitalization multiple under the market approach (see the discussion in chapter 3).
- (1) When reconciling indicated values between the income approach and the market approach, a full understanding of how risk and growth impact each method's value assessment is required in performing this task correctly.
  - (2) For example, if the indicated value from the income approach is lower than that from the market approach, then the valuer must ask whether the explicitly assessed risk ("k") and growth ("g") under the income approach matches that assumed under the market approach after adjusting the market capitalization multiple (see chapter 4 concerning adjusting the market multiple for both risk and growth).

**QUESTION: If the guideline public company forward EBITDA multiple is estimated at 6.5x, what questions should valuer ask regarding risk and growth?**

### Section B. Steps in a DCF Method – Invested Capital Method (Enterprise Value)

1. DCF Case Study – For the purpose of this chapter a case study was developed. It applies to a valuation of a **control interest** on an **invested capital basis/enterprise value basis**. Valuation of a minority interest or valuation on an equity capital basis alone would require modifications.
2. Steps to the DCF Method – When valuing a subject business using the DCF method the following steps should be applied in order to correctly implement this important technique:
  - A. Develop or obtain a forecast of invested capital cash flows (enterprise value cash flows) or equity capital cash flows for a specific number of years (known as the discrete projected period).
    - (1) Specific annual periods should be forecasted out to the point in the future projection where operations are expected to grow at a constant percentage rate into the indefinite future.
  - B. Develop an appropriate discount rate.
    - (1) If cash flows are prepared on an invested capital level (enterprise value level), the discount rate should be the weighted average cost of capital (WACC) which includes the cost of debt, the cost of equity and either a

- market based capital structure (control value) or the actual capital structure of the Subject Company (minority value).
- (2) If cash flows are prepared on an equity basis, the discount rate should be the cost of equity (generally estimated by CAPM or the build-up method).
  - (3) Discounting conventions (end-of-year discounting or mid-year discounting).
- C. Estimate the long-term growth rate beyond the forecast period.
  - D. Calculate the terminal value at the end of the forecast period which captures the value from the end of the discrete period “into perpetuity” (since under a going concern assumption a business is assumed to operate indefinitely).
  - E. Sum the present values of the forecast cash flows and the terminal value to obtain the value of the enterprise’s operations.
  - F. Test the sensitivity of key variables and develop alternative scenarios as needed. By such an analysis (e.g., growth, profitability, asset investment and financial leverage), the valuer can observe which factors are most important and thereby have a key insight into what operational areas will contribute most to the assessment of investment risk (“k”).
  - G. Add any non-operating assets/liabilities to the present value of the core operations to obtain the total value of invested capital (enterprise value) or equity capital, depending on level of value.
  - H. To derive the value of the common equity if valuing at the invested capital level, one must then subtract the other non-common equity claims on the business (such as debt, preferred stock, minority interests, options and warrants).
  - I. Finally, if needed, one must apply appropriate discounts and/or premiums for control and liquidity/marketability factors.

### Section C. Developing a Forecast of Net Cash Flows

1. Normalized Financial Statements – An integral part of the valuation process is the analysis the Subject Company’s “normalized” financial statements. As discussed in chapter 3, “normalization adjustments” are made to the Subject Company’s financial statements to reflect the level of core operations that are sustainable. The adjusted statements should not include any non-core assets or operations and should exclude one-time events that are unlikely to reoccur in the future.
  - A. The normalization of the company’s historical financial performance will make them more predictive of future enterprise operations and thereby assist in the development of the DCF projections.

- (1) A useful guide for financial statement analysis is presented in ASA Business Valuation Standard II – Financial Statement Adjustments.
  - (2) The level of adjustments (control vs. minority interest adjustments) corresponds to the purpose of valuation.
  - (3) The valuer should base his projections on the adjusted financial information that is relevant and significant to the appraisal process.
2. Who should prepare forecasts, management or valuer?
- A. Many valuation firms rely only on management forecasts for liability reasons or simply due to the fact that they may not be viewed as an expert able to develop detailed projections for a specific industry. However the valuer should pay attention to any ulterior motives or built-in bias in management's projections (e.g., management projections might differ if prepared for bank lending purposes or for financial reporting purposes).
- B. If the valuer accepts management's projections, he is accepting the reasonableness of their projection and supporting assumptions. *The valuer should not forget that the ultimate value opinion derived from the projections is owned by the valuer, not by management. Nevertheless the valuer should work with management to insure projections reflect market participants' expectations for the company.*
- (1) The degree that an appraiser relies on management's projections, or does his own projection, is in part based on the degree of control exerted by the equity being appraised. If valuing control, the equity potentially has the power to change the management, hence the valuer should rely on what a hypothetical buyer would do. If valuing minority (or shared control), the ability to change management is much less certain, hence valuer might need to rely more on current management projections and historic performance.
- C. Forecasts should be made in the context of extensive industry and economic analysis as well as the internal financial analysis of the Subject Company.
- (1) Any pro forma set of projections provided my management needs to be evaluated regarding the assessment of risk (k) and growth (g) through independent research.
  - (2) If the valuer prepares his own projections, they need to be reviewed and signed off by the management (this means that valuers' projections need to be reviewed, debated, etc. by management, but does not mean that management has veto power over valuer's projections).

3. **What the forecast should include** – The forecast should include Income Statement, Balance Sheet and Cash Flow Statement projections/forecasts.
- A. To adequately perform a DCF valuation, the valuer needs a thorough understanding of how the economic activities of the enterprise impact the financial statements, and how these statements interact with each other.
- B. The cash flow statement (operating, investment and financing cash flows)
- (1) is the result of the enterprise:
- (a) interactions with the marketplace (sales growth and profitability),
- (b) utilization of the productive asset base (turnover ratios), and
- (c) utilization of financial capital (solvency and leverage ratios).
- (d) The result is net cash flow and return on capital (ROIC and ROE).

#### **Basic Components of Net Cash Flow Statement**

<u>Fundamental Value Drivers</u>	<u>Projections</u>	<u>Ratios Analysis</u>
Growth in Sales	= Sales	Growth Ratios
Profitability of Sales	= Net Income	Margin Ratios
Utilization of Assets to Generate Sales	= Assets	Turnover Ratios
Structure of Financial Capital	= Debt Capital	Leverage/Solvency Ratios
<b>Net Cash Flow to Capital</b>	<b>= NCFic/NCFe</b>	<b>ROI &amp; ROE Ratios</b>

- (e) One of the most common mistakes in projecting financial statements such as the income statement and cash flows statement is to do so without consideration of the effect that growth might have on the balance sheet (CAPEX, depreciation, working capital, etc.).
4. **Equity or Invested Capital (Enterprise Value)** – The valuation process can determine the value of equity directly, or determine the value of the invested capital from which the value of equity can be derived subsequently by subtracting debt.
- A. The invested capital (enterprise value) model has become the more common method. The calculation of after-tax cash flows to equity or after-tax cash flows to invested capital (enterprise capital) are presented below:

**Calculation of  
Net Cash Flow to Equity (NCF<sub>e</sub>)**

<b>Earnings Before Tax (EBT)</b>
- Income Taxes
<b>Net Income After Tax (NIAT)</b>
+ Depreciation & Amortization
<b>Gross Cash Flow to Equity (GCF<sub>e</sub>)</b>
-/+ Change in Net Working Capital
-/+ Capital Expenditures
-/+ Other Operating Assets
+/- Change in Debt
<b>Net Cash Flow to Equity (NCF<sub>e</sub>)</b>

**Calculation of  
Net Cash Flow to Invested Capital (NCF<sub>i</sub>)**

<b>Earnings Before Interest &amp; Tax (EBIT)</b>
- Income Taxes
<b>Net Operating Income After Tax (NOPAT)</b>
+ Depreciation & Amortization
<b>Gross Cash Flow to Invested Capital (GCF<sub>i</sub>)</b>
-/+ Change in Net Working Capital
-/+ Capital Expenditures
-/+ Other Operating Assets
~ No Adjustment for Changes in Debt ~
<b>Net Cash Flow to Invested Capital (NCF<sub>i</sub>)</b>

***Increase in an asset is a (-) USE of cash***

***Increase in a liability is a (+) SOURCE of cash***

**Note:** NOPAT = NIAT + Interest Expense after tax

NOPAT = NIAT + Interest x (1-t)

**Where:** "t" = effective tax rate

- B. Some situations that might call for an equity valuation model include:
- (1) Small businesses which may have little debt capacity.
  - (2) Business start-ups, joint-ventures, highly levered companies and other complicated financing situations where debt levels are expected to change.
  - (3) Minority interest valuations – allows the valuer to value the minority equity interest directly without having to provide a separate minority discount opinion.
  - (4) Investment, finance and banking enterprises where the use of debt is a fundamental aspect of their financing operations.

## Section D. Tasks in Preparing Net Cash Flow Forecasts

1. **Forecasting Performance** – The valuer needs to develop a perspective of the company's likely future financial performance (should rely on economic analysis, industry analysis, and internal Subject Company analysis).

- A. The valuer is charged with the duty of assessing the future in light of the past, taking into consideration future expectations about the industry and the market, and thereby projecting the enterprise's future financial performance on a reasonable basis.
- B. To do this the valuer must be aware of interaction between economic activities and their effect on the company's financial performance:
  - (1) Business economic activity is entirely composed of human interactions and human responses to a changing environment (think of Steve Jobs at Apple).
  - (2) Historical financial statements and financial forecasts are just numbers.
  - (3) The valuer needs to fully understand how a particular company's human economic activity in the past has translated into its historical financial performance statements (i.e., "tell the story behind the numbers").
  - (4) If the valuer has good understanding of a company's history and future outlook, then his future projections will be reasonable and he will be able to "tell a persuasive story."
- C. The valuer must verify or justify management's or the analyst's own projections (remember the valuation opinion is always the responsibility of the valuer):
  - (1) Verifying/justifying the projection based on:
    - (a) Economic and industry expectations
    - (b) Competitive advantages and disadvantages of Subject Company
    - (c) Historical and expected trends of the company and the guideline companies
    - (d) Reasonableness of underlying assumptions validated by interviewing management
- D. Next the analyst needs to determine the forecast horizon:
  - (1) The forecast should extend until the company reaches stabilized operating conditions that are best represented, for example, by constant sales growth, stable profit margins, stable asset utilization and reinvestment rates, the stable use of liabilities/debt, and the constant rates of returns on current and new investments.
  - (2) The forecast horizon will depend upon the specific facts and circumstances:

- (a) Start-up company in a growth industry
  - (b) Company that is currently experiencing losses in a recession
  - (c) Company that just finalized material capital expansion investment
  - (d) Company in declining industry
- (3) In cyclical industries, one must forecast to the mid-point of the next economic cycle and then stabilize at a reasonable growth rate for the company.

**QUESTION: In practice, how would you explicitly determine the forecast period for a start-up company, a company that is currently experiencing losses, and a company that just finalized material capital investment.**

- E. Identify, quantify and justify key forecast variables.
- (1) Understand the Subject Company's historical financial performance results for each variable and which variables are the key value drivers (e.g., growth, profitability, asset utilization, financial capital involvement, etc.).
  - (2) Provide rationale for any forecasted change from historical results.
2. How to Approach the forecast
- A. Income statement forecast:
- (1) Sales: By understanding economic and industry factors in addition to the SWOT analysis of the Subject Company, the valuer must justify and project growth of sales within the discrete forecast period.
    - (a) Projection of units sold X expected sales price including inflation expectations
    - (b) Consider price elasticity in the competitive marketplace
    - (c) Consider other operating revenues which can refer to gains realized from sale of assets, revenues from renting out excess office space, subsidies, etc.
    - (d) Unless recurring and justifiable, they usually should not be part of forecast (based on analysis of historic operations)

- (e) Some of the data providers (e.g., Bloomberg, Capital IQ and InFinancials) already supply adjusted and non-adjusted financial statements for quoted companies

**QUESTION: Point out 2 examples of non-recurring operating revenues. Explain why and what adjustments are needed.**

- (2) COGS: Projected as largely variable expenses based on research into the company's past gross profit margin (expected movements of profit margins in the future).
- (3) SG&A: Divide into variable expenses & fixed expenses (consistency is key). In addition pay attention to expenses that can be classified as mix of variable and fix expenses.
  - (a) Variable expenses can be projected as a percentage annual sales.
  - (b) Fixed expenses should be projected independently of sales (e.g., rent and rent- related costs, utilities, etc.).
  - (c) Semi fixed costs are fixed costs that are applicable within a given range of sales. Once sales grow beyond given range the fixed costs will grow into a higher range with sales (e.g., salaries).
- (4) Depreciation: Should generally be projected as part of the fixed assets schedule. This should take into consideration historical gross fixed assets, capital expenditures that must be made on an annual basis to support sales and straight line depreciation convention (depreciation period depends on asset classes)
  - (a) Depreciation is sometimes projected as a percentage of sales (might be appropriate only for a company in stabilized operating conditions with steady capital expenditure).
- (5) Write offs: Generally they refer to revaluation adjustments of receivables, inventory or gains/losses realized when disposing of assets. Non-recurring or one off items are corrected through financial statement adjustments and are not part of forecast. If justifiable and recurring (e.g., certain level of receivables is non-collectable) then they should be modelled in the forecast.
- (6) Financial revenues and financial expenses: Financial expenses are based on the amount of debt projected to fund operations. This factor might be iterative (acquired debt may not be known until profitability is known).

- (7) Other revenues & other expenses: Generally considered non-recurring and as such not part of the permanent projection.
- (8) Taxes: Based on statutory tax rate and any justifiable recurring tax breaks (analysis of historical realized effective tax rates).

B. Balance sheet forecast – Balance sheet accounts can be forecasted individually by applying the appropriate financial ratio to the relevant income statement account (mostly used for forecasting working capital accounts).

- (1) Receivables: Based on A/R turnover ratio and analysis of days in receivables. In the case below, we estimated that relationship of A/R will continue (in general, the level of receivables in the projection period 2013-2016 will be collected in 104 days).

	Actual		Forecasted Operations		
	2012	2013	2014	2015	2016
Revenue (mill)	\$30.000	\$31.500	\$33.075	\$33.902	\$34.580
growth		5%	5%	2,50%	2,0%
Account Receivable	\$8.571	\$9.000	\$9.450	\$9.686	\$9.880
<b>A/R turnover</b>	<b>3,5</b>	<b>3,5</b>	<b>3,5</b>	<b>3,5</b>	<b>3,5</b>
<b>Days in receivable</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>

- (2) Inventory: Based on inventory turnover ratio and analysis of days in inventory (note that the numerator is not sales, but COGS).

	Actual		Forecasted Operations		
	2012	2013	2014	2015	2016
COGS (mill)	\$24.000	\$25.200	\$26.460	\$27.122	\$27.664
COGS margin in %	20%	20%	20%	20%	20%
Inventory	\$3.934	\$4.131	\$4.338	\$4.446	\$4.535
<b>Inventory turnover</b>	<b>6,1</b>	<b>6,1</b>	<b>6,1</b>	<b>6,1</b>	<b>6,1</b>
<b>Days in inventory</b>	<b>60</b>	<b>60</b>	<b>60</b>	<b>60</b>	<b>60</b>

- (3) Payables: Based on A/P turnover ratio and days in payables analysis (note that the numerator is not sales but dependent on analysis of actual expenditures).

	Actual		Forecasted Operations		
	2012	2013	2014	2015	2016
Total supplier purchases (mill)	\$27.000	\$28.350	\$29.768	\$30.512	\$31.122
Payables	\$9.643	\$10.125	\$10.631	\$10.897	\$11.115
<b>Payables turnover</b>	<b>2,8</b>	<b>2,8</b>	<b>2,8</b>	<b>2,8</b>	<b>2,8</b>
<b>Days in payables</b>	<b>130</b>	<b>130</b>	<b>130</b>	<b>130</b>	<b>130</b>

- (4) Fixed assets (property, plant and equipment):
  - (a) Projected based on current level of fixed assets, required capital re-investments in the discrete projection period and depreciation requirements (using straight line depreciation and depreciation periods that apply to identifiable asset groups).
  - (b) Capital investments are based on interviews with management, the investment cycle, and the requirements of the industry.
  - (c) Ratios: Capital Investments/Depreciation, Capital Investments/Sales, Depreciation/Sales (compare historical and projected ratios to make sanity checks)
- (5) Booked intangible assets are modelled based upon their expected accounting amortization amount and a definite time period if applicable (different accounting conventions may apply). Many valuers choose to separate the booked intangibles and assess the “tax shield” effect of their amortization schedule.
- (6) Other balance sheet accounts can be projected using the same model as when projecting working capital accounts. The objective here is for the valuer to know how much is needed in working capital, fixed assets and other assets in order to fund the level of sales/expenses forecast in the income statement
- (7) Third party debt and/or equity should be projected based on assumptions about future capital structure of the business (valid if we are valuing controlling interest). Assumptions referring to future financing needs should be verified with management.

### 3. Other Important Issues

#### A. Cross Border Valuation Issues – global businesses that have cash flows arising in many countries in different currencies pose unique analytical challenges.

- (1) Different accounting principles:
  - (a) There are potential implications that a differences in cost capitalization accounting might have on financial statements.
  - (b) Another important issue in cross border valuations is transfer pricing – companies trying to minimize taxes in jurisdictions with different tax rates either by charging out R&D expense, advertising, management fees, by borrowing at subsidiary levels, etc.

**QUESTION: Discuss the potential implication that a difference in cost capitalization might have on financial statements.**

- (2) Currency risk – A form of risk that arises from the change in price of one currency against another. Whenever investors or companies have assets or business operations across national borders, they face currency risk if their positions are not hedged. (Discussed in iiBV202, chapters 6 & 7)
  - (3) Country Risk – A collection of risks associated with investing in a foreign country. These risks include political risk, exchange rate or currency risk, economic risk, sovereign risk and transfer risk, which is the risk of capital being locked up or frozen by government action. Country risk varies from one country to the next. Some countries have high enough risk to discourage much foreign investment. (Discussed in iiBV202, chapters 6 & 7)
  - (4) Country and currency risks can be recognized in either cash flows or the size of discount rate. Valuer should be careful not to double count the risks by including the same risks in cash flow and discount rate
- B. Forecasting in nominal or real terms: Financial forecasts will be prepared in *nominal terms* (including inflation expectations). Consequently the corresponding discount rate will also be based on nominal levels.
- (1) Forecasting in real terms might be justifiable for very high inflationary environments. This requires at the minimum the following:
    - (a) Historical analysis based on real terms (adjusting historical financial statements for impacts of inflation)
    - (b) Adjusting the discount rate (risk free rate, ERP size premium and other parameters should not include inflation expectations)

**QUESTION: How might ERP and size premium be adjusted for inflation expectations?**

- C. Deferred Taxes represent the difference between the provision for income taxes and actual cash taxes paid. They arise from differences between normal standardized accounting and accounting for tax purposes, particularly in the treatment of depreciation, asset revaluations and inventory reserves.
- (1) Usually not material for smaller companies however might be significant for larger companies (in a growth scenario deferred tax liability will most likely increase due to continued capital investment and the use of accelerated depreciation for tax purposes).

## Section E. Estimating the long-term growth rate and calculating Terminal Value

1. Long-term growth rate:
  - A. Should refer to expected growth over the very long-term, after the company has reached stabilized operating conditions.
  - B. Should be based on the following considerations:
    - (1) Real GDP growth, real consumption growth (depends on the maturity of the industry), expected inflation, Subject Company's long-term advantages & disadvantages.
    - (2) Due to competitive pressure it is unrealistic to expect that the return on invested capital will, in the long-run, exceed the cost of capital (WACC) into perpetuity.

2. Terminal Value calculation:

- A. The terminal value calculation is most often calculated based on the Gordon Growth model which grows the cash flows from the last year of the discrete projection period at the long-term growth rate. Care should be taken to ensure that the cash flow adjustments in the last year of discrete projection can be validly forecasted at the long-term growth rate:

$$\frac{NCF_t \times (1 + g)}{k - g}$$

Where: t = Length of discrete period  
 NCF<sub>t</sub> = Net Cash Flow in last year  
 k = discount rate  
 g = long-term growth rate

- B. It is reasonable only if the Subject Company is expected to continue indefinitely (if not the terminal value should reflect liquidation value).
- C. Terminal value usually represents an important portion of the overall valuation so it is wise to conduct sensitivity analysis (e.g., changing long-term growth rate).
- D. Long-term growth – One must be careful to ensure that all elements of cash flow are growing at the long-term growth rate in the continuing value year.
  - (1) Changing sales growth rate, profit margins, asset turnover or financial leverage assumptions from the last year of the forecast to the terminal value year will have an impact on the growth of cash flow into perpetuity (most likely will not grow at long-term growth rate which will be incorrect).
  - (2) One method to insure that the cash flow of the last year of the discrete forecast is “stabilized” is to have the last two years of the discrete forecast

using the stabilized assumptions (i.e., sales growth, profitability, asset turnover and financial leverage assumptions should be held constant for the last two years of the discrete forecast period).

- (3) Hence, it is advisable to insert a check figure to see that sales, NOPAT (net operating profit after-taxes), gross cash flow and free cash flow are all growing at the long-term growth rate in the post-terminal value year.

E. Relationship between depreciation and capital investments in the terminal value:

- (1) Valuer has to ensure that there is an appropriate relationship between depreciation and capital investments in the terminal value calculation.
- (2) Some valuers argue that capital investments and depreciation should equal each other in a residual model since everything that is purchased gets depreciated. However this will unlikely be the case in times of an inflationary economy because new expenditures reflect increasing capital asset nominal costs, while depreciation reflects the amortization of lower historical nominal costs
- (3) An interesting article discusses these issues and also displays the relationship of CAPEX / Depreciation for different industries (see Exhibit 7I “Long-term Relationships between CAPEX and Depreciation”). The analysis shows that over a period of 16 years across all industries the median ratio of CAPEX to depreciation was 21% (the mean value was 113%).
- (4) Hence, the valuer should ensure that his long-term relationship between CAPEX and depreciation is justifiable given the Subject Company’s history and the industry in which it operates.

F. Reasonableness checks for use in terminal value calculation:

- (1) The valuer can use the after-tax ROIC to test the reasonableness of the terminal value calculation. An inherent assumption of the perpetuity formula is that after-tax ROIC at the end of the forecast period is maintained forever.
  - (a) If after-tax ROIC is close to WACC then we are assuming that in the long-run competition will eliminate supernormal returns and drive after-tax ROIC close to WACC. If after-tax ROIC is already close to WACC then this implies a mature industry.
  - (b) If after-tax ROIC in terminal value period is materially higher than WACC and we can expect that competition will impact returns in the long-run, then the valuer should extend the forecast period until excess returns are eliminated or adopt a continuing value

(CV) formula that assumes after-tax ROIC gradually declines toward WACC.

$$CV = \frac{NOPAT_{n+1}}{WACC}$$

- ◆ (Refer to Tim Koller, et al., Measuring and Managing the Value of Companies, Fourth Edition)

## Section F. Developing Appropriate Discount Rate

1. **The discount rate** is a general term which can apply to different concepts. It is defined in the International Glossary of Business Valuation Terms as

*“A rate of return used to convert a future monetary sum into present value”.*

- A. Weighted Average Cost of Capital (WACC or “Kic”) – blended required return on different types of capital used in the business (e.g., equity, preferred shares, debt, etc.).
- B. Cost of Equity (“Ke”) – discount rate on equity financing.
- C. Cost of Debt (“Kd”) – Discount rate on debt financing.
- D. Discount rates are forward looking, embodying the market’s expectations of future conditions that correspond to the risk of the cash flows (despite that, quantification of the discount rate is often based on historical data – e.g., ERP, size premium, etc.).

### QUESTION: How do various firms in the class estimate discount rates?

- E. Discount rates are based on market values and usually expressed in nominal terms (including real rate of return and inflation expectations).
- F. Steps in developing a discount rate:
  - (1) Estimating the cost of equity – most often this is done by using the Capital Asset Pricing Model (CAPM). There are also other models used for estimating the cost of equity such as the build-up model, the DCF model, the Arbitrage Pricing Theory model, the Fama-French model, etc.
  - (2) Estimating capital structure – market based optimal structure if valuing a control interest, or use the Subject Company’s capital structure if valuing a minority interest.

- (3) Estimating cost of debt – market based involving the credit analysis of Subject Company’s debt and reference to publicly traded debt issues with similar credit risk ratings.
- (4) If applicable estimating cost of preferred shares – also market based involving an analysis of the terms of the preferred stock (dividend rate, cumulative versus non-cumulative, callable, sinking fund, etc.) and seeking the market prices of similar preferred issues in the capital marketplace.

## 2. Estimating the Cost of Equity Capital

### A. Cost of equity using CAPM ( $K_e$ ):

Cost of Equity Capital using the  
Capital Asset Pricing Model ("CAPM")

$$K_e = K_{rf} + \beta(\text{ERP}) + \alpha$$

Where:  $K_e$  = cost of equity  
 $K_{rf}$  = risk free rate  
 $\beta$  = Beta  
ERP = Equity Risk Premium  
 $\alpha$  = Alpha

- (1) Risk free rate (Krf): Represents the baseline return which would appeal to an investor who is highly risk averse. No investment is however totally free of risk. (this concept is extensively discussed in iiBV202 course material).
  - (a) Valuer should match investment horizon of the risk-free rate to the Subject Company investment being valued. Unless otherwise noted the Subject Company and the government bond are generally long-term (10-year or 20-year term bonds should be used). The risk free rate used should reflect the risk free rate of the country in which the Subject Company operates.
  - (b) Lately, returns of government bonds have been affected by abnormal market conditions (2008-2012) causing extreme rates of return compared to historical rates (“flight to quality”). This issue is discussed in article by Roger Grabowski (“Problems with Cost of Capital Estimation in the Current Environment – Update”, published on February 4<sup>th</sup> 2009) and also in 2013 Duff & Phelps Risk Premium Report.

- (c) Difference between government bonds' risk-free rates is currently especially strong for European countries which is indicative of varying economic conditions. This issue might be approached by using an international cost of capital model.
- (2) **Equity risk premium (ERP):** Is the return above the risk-free rate that is necessary to attract investors to the next level of investment risk and should reflect the investment risk of the country in which the Subject Company operates?
- (a) There is a relationship between risk-free rate and ERP which needs to be taken into account when adjusting risk-free rates due to abnormal market conditions (discussed in Roger Grabowski article "Problems with Cost of Capital Estimation in the Current Environment – Update", published on February 4<sup>th</sup> 2009 and 2013 Duff & Phelps Risk Premium Report).
- (b) Theoretically ERP is forward looking rate that is based on the market's expectations about future long-term returns. There are traditionally three ways to measure ERP:
- ◆ **Historical** – Stocks, Bonds, Bills and Inflation Valuation Edition Yearbook (issued by Morningstar) is one common source.
  - ◆ **Forward looking** (bottom-up or top-down studies) – Damodaran performs bottom-up study on annual basis and also publishes monthly update for the ERP for S&P 500 (*Implied ERP*). Other providers include Bloomberg Eurozone, Reuters, Value Line IBES and Associés en Finance. *Supply side ERP is now also included in SBBI Valuation Edition Yearbook.*
  - ◆ **Surveys** – Annual worldwide study is conducted by Professor Pablo Fernandez of the IESE Business School of the University of Navarra, Spain (Survey published on June 26, 2013: Market Risk Premium and Risk Free Rate used for 51 countries in 2013).
- (3) **Systematic risk ( $\beta$  – Beta):** Is measured by regressing the excess return on the Subject Company (or similar guideline company) against the returns on the overall market over certain period of time.
- (a) Theoretically systematic risk must be forward looking, however it is usually measured with historical price data (if historical data is for some reason distorted, adjustments should be made).

- (b) Beta can be difficult to estimate in certain countries/markets with high country risk and/or in emerging markets primarily due to:
  - ◆ high growth or lack of significant trading activity
  - ◆ due to index that is not diversified

**QUESTION: How do various firms in the class estimate beta for emerging markets?**

- (4) Size risk: It has long been accepted in the financial and valuation communities that smaller size equates to a higher risk profile and a higher required return.
    - (a) Size premium studies are available on US market but not yet in other countries (e.g., SBBI Valuation Edition Yearbook, The Duff & Phelps, LLC Risk Premium Reports (“DP Study” that includes The DP Size Study and The DP Risk Study).
    - (b) The above mentioned studies cannot be immediately applied to markets outside the US without informed judgment and adjustments.
  - (5) Other company-specific factors ( **$\alpha$  – Alpha**):
    - (a) Alpha is typically very company specific and could relate to customer concentrations, reliance on key personnel or other factors unique to the company being appraised.
    - (b) Valuers need to be sensible when estimating alpha related risk in order to avoid double-counting such as including adjustments already in the cash flows or other parameters of CAPM model (e.g., size, country risk).
3. Estimating the Cost of Invested Capital (WACC)
- A. Cost of invested capital using WACC ( $K_{ic}$ ):

Cost of Invested Capital using  
Weighted Average Costs of Capital ("WACC")

$$K_{ic} = \frac{E}{(E+D)} \times K_e + \frac{D}{(E+D)} \times (K_d \times (1-t))$$

Where:  $K_{ic}$  = cost of invested capital  
 $K_e$  = cost of equity  
 $K_d$  = cost of debt (pre-tax)  
E = Equity Market Value  
D = Debt Market Value  
(E+D) = Invested Capital Market Value  
t = Effective Tax Rate

B. Capital structure

- (1) The capital structure used to calculate the “weights” depends on the interest that is valued (control/minority). In a control valuation, the Subject Company’s capital structure is often adjusted to a target capital structure or a typical capital structure for the industry. In a minority valuation situation, the capital structure of the Subject Company is many times kept “as is.”
- (2) Target capital structures can be identified by:
  - (a) Estimating optimal capital structure for the Subject Company.
  - (b) Examining industry data – comparable industries/comparable guideline companies (e.g., Cost of Capital Quarterly by Ibbotson, Professor Aswath Damodaran online data, Guideline public companies).
- (3) Valuer should understand that using a constant WACC in a DCF analysis imposes a constant capital structure on the Subject Company forever. This is usually the most reasonable assumption because debt capacity increases with market value of equity.
  - (a) If, however, if we are valuing a company that is expecting a significant change in its future capital structure (e.g., leveraged buyout or increased level if investments that are financed with debt) a more complex analysis is required
    - ◆ Changing the WACC in each year of the forecast – a new cost of debt and cost of equity must be estimated for each

significant change in the capital structure. This might be the case when Subject Company leverage is changing materially within the forecast period.

- ◆ Using an adjusted present value (APV) technique – this method values the business as if it were all equity financed and then separately values the tax shields that arise from debt financing

### C. Cost of debt

- (1) All parameters of WACC should be based on market values and the same goes for the cost of debt. Practitioners often use book value of debt, under the assumption that the company's market value of debt will not change significantly from its book value, which is not always true, especially during the periods of volatility in the debt markets
- (2) The cost of debt should be the current rate at which the company could lock in long-term debt adequate to meet its needs for the indefinite future. It is expressed post tax because interest is tax deductible
- (3) How to assess the cost of debt:
  - (a) Ideally, the pre-tax cost of debt should be the rate paid by the company on recently issued, long-term debt. Since this is rarely available for private companies, the valuers will usually have to estimate of the cost of long-term debt
  - (b) Talk to Subject Company management
  - (c) Analyse the company's credit rating and find a proxy for the cost of its debt
- (4) There are problems from an international perspective. The difficulty arises in how to approach the cost of debt when the Subject Company operates in multiple countries and could potentially obtain debt in multiple debt markets. A useful approach might be the one suggested in ASA-BV204 course material referring to the international cost of capital:
  - (a) The valuer estimates the corporate bond yields for individual international countries by calculating the difference between US dollar denominated non-US government bond yield and the equivalent US risk-free rate. This differential is added or subtracted to the US corporate bond rate accordingly.

- (b) This approach requires the use of consistent term for the non-US-government bond yield, to be internally consistent with the term used in the WACC.
  - (c) If a long-term bond is not available for non-US country, then the valuer selects the longest-dated government maturity and matches this to US bond yield of similar maturity.
  - (d) In some cases, the spread determined by comparing a non-US government bond yield with US risk-free rate, may not provide sensible results (due to government debt defaults or high risk sovereign debt). In these cases, it may be more practical to determine cost of debt for non US companies by looking at the yields on investment grade rate corporate bonds issued by those with operations in the subject country.
4. International issues in estimating cost of capital
- A. There is no general agreement among practitioners how to approach the international cost of capital (particularly relevant for emerging markets).
  - B. Several models have been developed that are generally adaptations of CAPM. They have attempted to capture the risk differential of companies operating outside of the world's dominant economies. In countries like the US, the different methods often yield similar results. However, when we move outside the US – particularly in developing markets – different methods can produce widely varying results. The following outlines the most commonly-used models to determine international cost of capital.
  - C. Types of models
    - (1) Local country CAPM – all variables in CAPM are taken from the local economy (local company beta computed against local market index). This is difficult to use in developing economies due to undeveloped, thinly-traded and non-diversified capital markets (refer to iiBV202 – Chapter 7 Adapting CAPM for Country Risk). Note that the local risk free rate includes to some extent the local country risk.

$$K_L = R_{fL} + \beta_L(ERP_L)$$

Where:

$K_L =$	Cost of equity in local country
$R_{fL} =$	Risk free rate of local country (local gov't debt)
$\beta_L =$	Country beta (company measured against local securities mkt)
$ERP_L =$	Equity risk premium from local market

◆ Source: iiBV202 Student manual

- (b) Example: Estimate cost of equity for a Telecommunication company that is based and operates in Norway. Norwegian bond yield was estimated at 2.4%, local ERP at 6.0% (source: Pablo Fernandez: *Market Risk Premium and Risk Free Rate used for 51 Countries, June 2013*), while beta for Telecommunication company, regressed against local index was estimated at 0.75 and company specific risk factors at 3.0%.

$$K_L = 9.9\% = 2.4\% + (0.75 \times 6.0\%) + 3.0\%$$

- (2) International CAPM – use the local risk-free rate and local company beta (beta would be estimated using the world equity markets as the benchmark), while ERP is calculated on a worldwide basis.

$$K_L = R_{fL} + \beta_L(ERP_w)$$

Where:

$K_L =$	Cost of equity in local country
$R_{fL} =$	Risk free rate of local country
$\beta_L =$	Country beta

$$ERP_w = \frac{ERP_{US}}{\beta_{US}}$$

Where:

$ERP_w =$	World Equity Risk Premium
$ERP_{US} =$	U.S. Equity Risk Premium
$\beta_{US} =$	Historical U.S. Beta

- (a) Source: iiBV202 Student manual (refer to SBBI Valuation Edition Yearbook)

- (b) In order to calculate  $\beta_{US,W}$  and determine the  $ERP_W$  with the equation above, the valuer regresses the US market returns (dependent variable) against returns of the world index (independent variable) such as those of the Morgan Stanley Capital International (MSCI) World Index.
- (c) Next the valuer calculated a country-specific  $\beta_S$ , which is based on similar approach to the calculation of a beta for a US company. The returns of each country as the dependent variable are regressed against the returns of the world, as the independent variable.
- (d) The time period over which the beta is calculated is important, as less developed markets have less stable betas over time than developed markets (refer to Morningstar's International CAPM).
- (e) The model is consistent with the principles of CAPM, applied to the Subject Company and the local market as a whole. However, many countries do not have markets with enough history and diversity to regress against the US market.
- (3) Country Risk Rating Model – based on individual country rating from Institutional Investor (published twice a year) that is regressed against an established market return for a selected country.
- (a) This model compares the expected return of equity for a given country with the expected return of equity for the US to determine relative score (you can use either linear or logarithmic model to determine relative score). Relative score is then multiplied by US-based cost of equity (excluding size premium and company specific risk) to develop an adjusted cost of equity for the subject non-US based company.

$$K_t = \alpha + \beta_c \times C_{t-1} + \varepsilon$$

Where:	$K_t$	=	expected return of equity in a country in period t
	$\alpha$	=	regression intercept
	$\beta_c$	=	regression coefficient for the country credit rating of the prior period
	$C_{t-1}$	=	country credit rating in the prior period
	$\varepsilon$	=	error term of the regression

- (b) The model is based on country credit ratings to overcome the insufficient equity market data that exist in many countries.

- (c) On a positive side the country credit ratings are available by Institutional Investor on semiannual basis since 1979 (over 170 countries included). Stock market data for developed countries are provided by MSCI and S&P/IFCG.
- (d) The model is forward looking and serves as a good solution for lack of sufficient historical data from certain countries. On the downside, the method combines general market returns with other elements of country-specific risk and incorporates the perception of investors in the credit markets but does not focus exclusively on empirical stock market performance.
- (4) Country Spread Model – develops cost of equity based on a developed market and adds a spread to that return to capture country risk. Cost of equity can be developed based on traditional US data and then the country risk premium is calculated by the spread between dollar denominated foreign bond and the US Treasury yield.

$$K_L = R_{fUS} + (R_{fL} - R_{fUS}) + \beta_{US}(ERP_{US})$$

Where:

$K_L$	=	Cost of equity in local country
$R_{fUS}$	=	U.S. Risk Free Rate
$R_{fL}$	=	Risk free rate of local country in U.S. \$
$\beta_{US}$	=	U.S. Beta
$ERP_{US}$	=	U.S. Equity Risk Premium

- (a) Source: iiBV202 Student manual (refer to SBBI Valuation Edition Yearbook)
- (b) In order to use this model, the local country must issue dollar denominated debt (if not, the valuer can refer to Country Credit Rating for comparable countries that issue dollar denominated debt). The model is easy to understand. The sources for US-based WACC parameters are well known and the model focuses exclusively on empirical stock market performance (it forgoes the subjectivity that is part of the Country Risk Rating Model). On the downside, the spread between the yields for US- dollar denominated and non-US dollar denominated country bonds and Treasury bonds may not capture all of the risks of a non-US equity market.

(c) Example: Estimate cost of equity for a Telecommunication company that operates in India if you have the following information:

- ◆ 20 year US Treasury Bond yield = 4.0%
- ◆ US ERP = 5.5%
- ◆ Company beta regressed against US market = 0.95
- ◆ 20 year Indian Treasury Bond yield = 6.9%

$$Kl = 13.225\% = 4.0\% + (5.5\% \times 0.95) + (6.9\% - 4.0\%)$$

- ◆ Note: Country yield spread in this case amounted to 2.9%, referring to difference between Indian Treasury Bond yield of 6.9% and US Treasury Bond yield of 4.0%.

(5) Relative Standard Deviation Model – uses the relative standard deviation of the local country returns relative to the U.S. returns as beta, multiplied by the U.S. equity risk premium to arrive at the country's equity risk premium, which is added to U.S. risk-free rate to determine country return. This model is easy to apply if the country has observable historical information about market volatility. If the market volatility is attributable to one or a few dominant industries then the model yields industry risk and not country risk.

$$K_L = R_{fUS} + \sigma_{x,us.}(ERP_{US})$$

$$\sigma_{x,us.} = \frac{\sigma_x}{\sigma_{us.}}$$

Where:

- $\sigma_{x,us.}$  = Standard deviation of Country X returns, relative to U.S.
- $\sigma_x$  = Standard deviation of Country X returns
- $\sigma_{us.}$  = Standard deviation of U.S. returns

- (a) Source: iiBV202 Student manual
- (b) The downside of the model is that in some cases the model may produce unreasonably high costs of capital estimates for some non-US markets because less developed markets have higher standard deviation results. On the other hand there may also be risky markets that have low standard deviations for their equity

markets due to illiquidity. In such cases using this model may yield an understated cost of equity.

(c) Example: Estimate cost of equity for a Utility company that operates in India if you have the following information:

- ◆ 20 year US Treasury Bond yield = 4.0%
- ◆ US ERP = 5.5%
- ◆ Company beta regressed against US market = 0.95
- ◆ Standard deviation of US market returns = 20.19
- ◆ Standard deviation of Indian market returns = 42.55

$$Kl = 15.01\% = 4.0\% + \left( \left( \left( \frac{42.55}{20.19} \right) \times 5.5\% \right) \times 0.95 \right)$$

- ◆ Note: US market standard deviation can be based on S&P 500 index, while for India a Bombay Stock Exchange Sensex could be used. Standard deviation of Indian market compared to Standard deviation of US market amounted in our case to 2.1x, which was the amount used to adjust US based ERP.

(6) Duff & Phelps Model – similar to the relative standard deviation model except in the part that relates to adjustment for political risk (it's generally a subjective measurement). This model should be applied to cash flows denominated in US currency.

$$K_e = R_{fUS} + ERP_{US}(\sigma_{subject}/\sigma_{Base}) + PRA$$

Where:

$K_e$  = Cost of equity for U.S. denominated cash flows

$R_{fUS}$  = U.S. Risk Free Rate

$ERP_{US}$  = U.S. Equity Risk Premium

$\sigma_{subject}$  = Volatility of subject company's market

$\sigma_{base}$  = Volatility of highly developed market

PRA = Political risk adjustment (optional)

(a) Source: iiBV202 Student manual

- (7) Damodaran Model – is based on CAPM with an adjustment for country risk derived from the relative volatility of the local country's stocks and bonds.

$$K_L = R_{fUS} + \beta_{US}(ERP_{US}) + \lambda(CRP)$$

Where:

$K_L$ =	Cost of equity in local country
$R_{fUS}$ =	U.S. Risk Free Rate
$\beta_{US}$ =	U.S. Beta
$ERP_{US}$ =	U.S. Equity Risk Premium
$\lambda$ =	Company's exposure to local country risk
$CRP$ =	Country Risk Premium = Country Default Spread x $(\sigma_{stock}/\sigma_{bond})$
$\sigma_{Stock}$ =	standard deviation of local country's stock market
$\sigma_{Bonds}$ =	standard deviation of local country's bond market

- (a) Source: iiBV202 Student manual
- (b) He introduces the factor *lambda* that measures subject local company's percentage of operations in its country relative to the average local company's percentage of operations in the country. The variable is difficult to quantify since it requires analysis on case by case basis.
- (c) Country default spread is the difference between the local government bond return and the U.S. return. It is added on to CAPM but adjusted for relative standard deviation of equity/bond markets.
- (d) Damodaran measures country default spreads on a continuous basis (see [http://pages.stern.nyu.edu/~%20adamodar/New\\_Home\\_Page/datafile/ctryprem.html](http://pages.stern.nyu.edu/~%20adamodar/New_Home_Page/datafile/ctryprem.html)). If the country does not have rated debt, the country rating system can be used.
- (e) Example: Estimate cost of equity for a retail company that operates in India if you have the following information:
- ◆ 20 year US Treasury Bond yield = 4.0%
  - ◆ US ERP = 5.5%

- ◆ Company beta regressed against US market = 1.15
- ◆ Indian debt rating = Baa3 (source: Aswath Damodaran, Country Default Spreads and Risk Premiums, based on Moody's)
- ◆ India Country Default Spread = 2.0% (source: Aswath Damodaran, Country Default Spreads and Risk Premiums, January 2013)
- ◆ India equity to bond market volatility ratio = 1.5

$$Kl = 13.32\% = 4.0 + (1.15 \times 5.5\%) + (2.0\% \times 1.5)$$

- ◆ Note: India country risk premium = India Country Default Spread  $\times$  India equity to bond market volatility (2.0%  $\times$  1.5) = 3.0%

#### D. Studies on international cost of capital

- (1) Estrada (2000 and 2006) – The Cost of Equity in Emerging Markets; a Downside Risk Approach – The aim of this article is to estimate a CAPM-based cost of equity for 28 emerging markets, and compare it to two alternative estimates based on total risk and downside risk
- (2) James & Koller (McKinsey-2000) – Valuation in Emerging Markets – The book discusses two options for incorporating the additional risks of emerging markets (cash flows or discount rate) and highlights the risks that included in the discount rate
- (3) Benserud & Austgulen (2006) – Valuation in Emerging Markets – This paper discusses valuation of four Argentine companies, all registered on the Buenos Aires Stock Exchange with the goal to investigate how best to calculate the relevant cost of capital in emerging markets
- (4) Devyzis & Jankauskas (2004) – Explaining the Cost of Equity in Central and Eastern Europe – The paper discusses possible determinants of variation in stock returns at the company level and the impact on cost of equity
- (5) Budyak, J. (2012) – Become Fluent in Factors Valuing Multinational Companies – The paper discusses possible approaches to estimating cost of capital when valuing multinational companies
- (6) Czaplinski, N. (2011 – American Society of Appraisers Advanced BC Conference) – International Cost of Capital – A Walk Around the Globe –

The paper discusses a case of developing cost of capital for companies in emerging markets using different international cost of capital models

- (7) Harvey, C (2005) – 12 Ways to Calculate the International Cost of Capital – The paper provides critical review of 12 different approaches to calculation international cost of capital

E. Practical application

- (1) No matter what cost of capital is selected, should be consistent with how the cash flows have been estimated.
- (2) Decide on the international cost of capital model, bearing in mind limitations and specifics of each model. In some cases it might be valid to test the calculation by using multiple international costs of capital models.
- (3) Risk free rate: It really depends on cost of capital model that is to be used as a consequence risk free rate can be based on local bond, international currency denominated bond, developed country bond, etc. The key assumption here is that most investors (international and national) have access to an international risk free rate.
- (4) ERP: Generally difficult to estimate. Valuer should ensure that certain elements are not accounted for twice (e.g., default risk, political risk)
- (5) Beta: Will generally be difficult to calculate based on local (emerging market) data (usually illiquid markets with little diversification). A good starting point could be using a global industry beta relevered to Subject Company's target capital structure.

F. Country risk premium:

- (1) Valuer should pay attention which risks were already included in the cash flows to avoid including the same risk twice. Country risks that could be avoidable through changing country exposure could be best dealt with at the cash flow level (e.g., might refer to devaluation & expropriation; however they might not be always avoidable, hence valuer should be cautious when dealing with country risk).
- (2) If valuer adjusts for country risk within the discount rate, a good reference could be Damodaran approach in estimating Country Risks and Equity Risk Premiums. Professor Damodaran measures country risk by using credit default swaps (CDS) and country ratings.

G. In some cases it might be valid to test discount rate calculation by using multiple international costs of capital models

## **Section G. Chapter 7 Exhibits**

Exhibit 7A: APS Case Study

Exhibit 7B.1: APS Profit and Loss account (2005-2012)

Exhibit 7B.2: APS Balance Sheet (2005-2012)

Exhibit 7B.3: APS Ratio's (2005-2012)

Exhibit 7C: 2013 Ibbotson SBBI Valuation Yearbook – Chapter 10

Exhibit 7D: International cost of capital – Local CAPM, Volatility Spread CAPM, Country Spread CAPM, Damodaran CAPM

Exhibit 7E: Guideline Public Companies, betas and capital structures

Exhibit 7F: 2013 Ibbotson SBBI Valuation Yearbook – Key Variables in Estimating Cost of Capital

Exhibit 7G: Market Risk Premium and Risk Free Rate used for 51 countries in 2013 by Pablo Fernandez

Exhibit 7H: “Long-term Relationships between CAPEX and Depreciation”

Exercises 7-1: Define performance scenarios for APS

**Exercise 7-1:** Based on information provided Chapter 2: Industry & Economic analysis and specifically the background information about APS-India provided under Exhibit 2A and the financial performance schedule for APS in Exhibit 7B, complete the answers below:

**Problem 7-1.1:** Point out cross-border valuation issues that are particularly important for this valuation engagement and comment how you plan to treat them (through cash flows, discount rate or other)?

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**Problem 7-1.2:** Based on information that APS plans considerable investment in 2013 in New Delhi plant, suggest the forecast horizon and justify your decision?

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**Problem 7-1.3:** Define the base case future performance for the general economy and auto industry scenario that will impact APS, covering the following relevant factors:

Growth possibilities:

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Product demand:

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Pricing trends:

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Positioning (competition):

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## Exercises 7-2: Quantify forecast variables

**Exercise 7-2:** Based on all of the information reviewed so far, and the base case future economic/industry scenario for APS that you assessed in Exercise 7-1, complete the answers below:

**Problem 7-2.1: Currency exchange exercise** – In order to forecast APS income statement, APC (Chinese subsidiary) revenue forecast and APR (Chinese subsidiary) costs of raw materials need to be converted into Indian Rupees. Based on information below (selected macroeconomic and financial information for APR and APC), convert into Indian Rupees the forecast of APC revenues for 2013 – 2020 period and forecast for APR costs of raw material for 2013 – 2020 period. **Use interest rate parity.**

**MACROECONOMIC DATA**

Selected Macroeconomic data	Planned							
India	2013	2014	2015	2016	2017	2018	2019	2020
GDP growth (real) in %	5.8	6.5	6.5	6.0	6.0	6.0	6.0	6.0
Inflation (real) in %	6.5	6.6	6.6	6.5	6.5	6.5	6.0	6.0
Bond rates (10Y) in %	8.2	8.0	7.8	7.8	7.8	7.8	7.8	7.8
Spot rate (USD / INR)	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0

Source: Exim Bank, OECD reports, Trading Economics. For plan, Asian Development Bank and OECD information.

Selected Macroeconomic data	Planned							
China	2013	2014	2015	2016	2017	2018	2019	2020
GDP growth (real) in %	7.3	7	6.5	6.5	6.5	6.5	6.5	6.5
Inflation (real) in %	5.7	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Bond rates (10Y) in %	3.9	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Spot rate (CNY/INR)	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
Spot rate (USD / CNY)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1

Source: Exim Bank, OECD reports, Trading Economics. For plan, Asian Development Bank and OECD information.

**FORECASTS IN LOCAL CURRENCY**

Auto Parts Raw - APR	2013	2014	2015	2016	2017	2018	2019	2020
<i>in million Chinese Yuan (CNY)</i>								
Raw materials	10,500	11,130	11,798	12,506	13,131	13,787	14,477	15,201
Auto Parts China - APC	2013	2014	2015	2016	2017	2018	2019	2020
<i>in million Chinese Yuan (CNY)</i>								
Revenues	8,750	9,188	9,647	10,129	10,838	11,597	12,409	13,277

$$\text{Formula Used to Calculate Interest Rate Parity} \\ \text{Forecasted Forward Rate (CNY)} = \left[ \frac{(1 + 10\text{YrChineseBond}\%)^{\text{\#Years Forecast}}}{(1 + 10\text{YrIndianBond}\%)} \right] \times \text{Spot Rate}$$

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**Problem 7-2.2:** Using all of the information so far developed, provide your valuation estimate of the forecast variables below to be used to develop your DCF:

Compound growth rate in sales from 2013 to 2020: \_\_\_\_\_%

Continuing value sales growth rate: \_\_\_\_\_%

Gross margin as % of sales from 2013 to 2020: \_\_\_\_\_%

Gross margin as % of sales at terminal value: \_\_\_\_\_%

Selling expenses as % of sales from 2013 to 2020: \_\_\_\_\_%

Personal expenses as % of sales from 2013 to 2020: \_\_\_\_\_%

Admin expenses as % of sales from 2013 to 2020: \_\_\_\_\_%

Write offs as % of sales from 2013 to 2020: \_\_\_\_\_%

Other operating expenses as % of sales from 2013 to 2020: \_\_\_\_\_%

Days in Trade receivable from 2013 to 2020: \_\_\_\_\_

Days in Inventory from 2013 to 2020: \_\_\_\_\_

Days in Accounts payable from 2013 to 2020: \_\_\_\_\_

CAPEX in 2013, 2014: \_\_\_\_\_

CAPEX after 2014 and until 2020: \_\_\_\_\_

Continuing value CAPEX as % of Depreciation: \_\_\_\_\_%

Debt balance in 2013 and movements in debt balance in 2013 – 2020 period: \_\_\_\_\_

Highest pre-tax ROIC during forecast: \_\_\_\_\_% What year? \_\_\_\_\_

Continuing value pre-tax ROIC: \_\_\_\_\_%

Exercises 7-3: Calculate WACC

Exercise 7-3: Since we are valuing the Company that is headquartered in India and has international operations, the discount rate will be based on international cost of capital.

Exhibits 7-C through 7-G at the end of this chapter consist of data and information that can be helpful to develop a cost of equity and WACC for APS.

**Problem 7-3.1:** Based on information provided in Exhibits 7-D and 7-E, which international cost of capital model will be used?

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**Problem 7-3.2:** After choosing international cost of capital model, enter your estimates on the page labelled WACC in the DCF Model.xlsx file and summarize the key variables. For information refer to Exhibits at the end of this chapter.

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**Problem 7-3.3:** Using all of the information developed so far, provide your valuation estimate of the WACC discount rate variables below to be used to develop your DCF:

Risk-free rate: \_\_\_\_\_

Equity risk premium: \_\_\_\_\_

Unlevered industry beta: \_\_\_\_\_ Source: \_\_\_\_\_

Debt percentage in market capital structure: \_\_\_\_\_

Source for market capital structure: \_\_\_\_\_

Re-levered beta: \_\_\_\_\_

Additional risk premium(s): \_\_\_\_\_

Cost of equity: \_\_\_\_\_

Pre-tax cost of debt: \_\_\_\_\_

How derived: \_\_\_\_\_

Weighted Average Cost of Capital \_\_\_\_\_

## Exercises 7-4: Calculate MVIC &amp; Equity Value

**Problem 7-4.1:** Based on projected cash flow and discount rate, estimate MVIC and equity value for APS.

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**Problem 7-4.2:** Are there any additions and/or subtractions that need to be made to the indicated value of equity for APS?

*Any asset or liability that will affect cash but is not included in projected free cash flows must be valued separately and accounted for as an adjustment to the value of operations. The adjustments fall generally under the following categories:*

- Debt and debt equivalents,
- One-time cash inflows (ex. sale of business non related assets),
- Any potential excess cash that is not necessary within working capital
- Assets that were assumed to have different risks than core business operations and are not included within projected cash flow.

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## Exercises 7-5: Sensitivity Analysis of Key Variables

**Exercise 7-5:** All valuations are driven by the assumptions included in the model. It is therefore important to understand how the assumptions affect your DCF value. This is best done through sensitivity analysis. *Based on that you might want to modify initial assumptions or even develop different valuation scenarios and weight them on order to arrive at final DCF valuation conclusion.*

**Problem 7-5.1:** Study and identify key variables in your DCF projection through the following sensitivity analysis:

Estimate the percentage effect on APS equity value of alternative assumptions for:

100 b.p. (1%) increase in sales growth after 2012: \_\_\_\_\_

100 b.p. (1%) increase in gross margin after 2012: \_\_\_\_\_

100 b.p. (1%) increase in asset turnover after 2012: \_\_\_\_\_

100 b.p. (1%) decrease in WACC: \_\_\_\_\_

100 b.p. (1%) increase in long-term growth (g): \_\_\_\_\_

**Problem 7-5.2:** What other observations do you have concerning applying the DCF valuation methodology to APS-India? What kind of confidence do you have in the data used and how reliable is the indicated value?

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Exhibit: 7A: APS Case Study

Refer to Exhibit 2A at the end of Chapter 2

Exhibit 7B.1: APS Profit and Loss Account (2005-2012)

<b>Auto Parts Superior (APS) - INDIA</b>								
<b>Historical Income Statements</b>								
<i>For the fiscal year ended December 31,</i>								
<i>in million INR</i>								
	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>Revenue</b>	1,543	1,432	1,865	2,101	2,320	2,558	2,865	3,209
<b>Cost of revenue</b>	<b>(1,003)</b>	<b>(945)</b>	<b>(1,306)</b>	<b>(1,429)</b>	<b>(1,589)</b>	<b>(1,727)</b>	<b>(1,928)</b>	<b>(2,153)</b>
<b>Gross Profit</b>	<b>540</b>	<b>487</b>	<b>560</b>	<b>672</b>	<b>731</b>	<b>831</b>	<b>937</b>	<b>1,056</b>
Selling expenses	(108)	(93)	(121)	(120)	(90)	(110)	(130)	(145)
Personal expenses	(187)	(172)	(214)	(250)	(245)	(252)	(265)	(285)
Administrative expenses	(62)	(53)	(73)	(95)	(100)	(110)	(115)	(120)
Depreciation and amortization	(32)	(25)	(30)	(34)	(70)	(90)	(110)	(135)
Write offs	(11)	(2)	(2)	-	(12)	(13)	(29)	(32)
Other operating expenses	(31)	(29)	(37)	(32)	(35)	(38)	(43)	(32)
<b>Total operating expenses</b>	<b>(430)</b>	<b>(374)</b>	<b>(477)</b>	<b>(531)</b>	<b>(551)</b>	<b>(613)</b>	<b>(692)</b>	<b>(749)</b>
<b>Operating profit (EBIT)</b>	<b>110</b>	<b>113</b>	<b>82</b>	<b>142</b>	<b>179</b>	<b>218</b>	<b>245</b>	<b>307</b>
Finance income	5	2	2	-	-	-	-	-
Finance costs	(36)	(38)	(40)	(35)	(40)	(65)	(70)	(80)
<b>Profit before tax</b>	<b>79</b>	<b>77</b>	<b>44</b>	<b>107</b>	<b>139</b>	<b>153</b>	<b>175</b>	<b>227</b>
<b>Tax</b>	<b>-</b>	<b>(25)</b>	<b>(13)</b>	<b>-</b>	<b>(39)</b>	<b>(46)</b>	<b>-</b>	<b>(63)</b>
<b>Profit from continuing operations</b>	<b>79</b>	<b>52</b>	<b>31</b>	<b>107</b>	<b>100</b>	<b>107</b>	<b>175</b>	<b>163</b>
Discontinued operations	(45)	-	-	-	-	-	-	-
<b>Profit for the year</b>	<b>34</b>	<b>52</b>	<b>31</b>	<b>107</b>	<b>100</b>	<b>107</b>	<b>175</b>	<b>163</b>
<b>Selected Summary Accounts</b>								
<b>Revenue growth</b>		<b>-7%</b>	<b>30%</b>	<b>13%</b>	<b>10%</b>	<b>10%</b>	<b>12%</b>	<b>12%</b>
<b>EBIT in %</b>	<b>7%</b>	<b>8%</b>	<b>4%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>9%</b>	<b>10%</b>
<b>EBITDA in %</b>	<b>9%</b>	<b>10%</b>	<b>6%</b>	<b>8%</b>	<b>11%</b>	<b>12%</b>	<b>12%</b>	<b>14%</b>
<b>Net income in %</b>	<b>2%</b>	<b>4%</b>	<b>2%</b>	<b>5%</b>	<b>4%</b>	<b>4%</b>	<b>6%</b>	<b>5%</b>
<b>Effective Tax rate</b>	<b>0%</b>	<b>32%</b>	<b>30%</b>	<b>0%</b>	<b>28%</b>	<b>30%</b>	<b>0%</b>	<b>28%</b>

<b>Auto Parts Superior (APS) - INDIA</b>										
<b>Historical Income Statements - common size</b>										
<i>For the fiscal year ended December 31,</i>										
<i>in million INR</i>										
	<b>Percentage of Sales</b>								<b>Historical Average</b>	<b>Historical Median</b>
	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>		
<b>Revenue</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Cost of revenue</b>	-65%	-66%	-70%	-68%	-69%	-68%	-67%	-67%	-67%	-67%
<b>Gross Profit</b>	<b>35%</b>	<b>34%</b>	<b>30%</b>	<b>32%</b>	<b>32%</b>	<b>33%</b>	<b>33%</b>	<b>33%</b>	<b>33%</b>	<b>33%</b>
Selling expenses	-7%	-7%	-7%	-6%	-4%	-4%	-5%	-5%	-5%	-5%
Personal expenses	-12%	-12%	-12%	-12%	-11%	-10%	-9%	-9%	-11%	-11%
Administrative expenses	-4%	-4%	-4%	-5%	-4%	-4%	-4%	-4%	-4%	-4%
Depreciation and amortization	-2%	-2%	-2%	-2%	-3%	-4%	-4%	-4%	-3%	-3%
Write offs	-1%	0%	0%	0%	-1%	-1%	-1%	-1%	0%	-1%
Other operating expenses	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-1%	-2%	-2%
<b>Total operating expenses</b>	<b>-28%</b>	<b>-26%</b>	<b>-26%</b>	<b>-25%</b>	<b>-24%</b>	<b>-24%</b>	<b>-24%</b>	<b>-23%</b>	<b>-25%</b>	<b>-25%</b>
<b>Operating profit (EBIT)</b>	<b>7%</b>	<b>8%</b>	<b>4%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>9%</b>	<b>10%</b>	<b>8%</b>	<b>8%</b>
Finance income	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Finance costs	-2%	-3%	-2%	-2%	-2%	-3%	-2%	-2%	-2%	-2%
<b>Profit before tax</b>	<b>5%</b>	<b>5%</b>	<b>2%</b>	<b>5%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>7%</b>	<b>5%</b>	<b>6%</b>
<b>Tax</b>	0%	-2%	-1%	0%	-2%	-2%	0%	-2%	-1%	-1%
<b>Profit from continuing operations</b>	<b>5%</b>	<b>4%</b>	<b>2%</b>	<b>5%</b>	<b>4%</b>	<b>4%</b>	<b>6%</b>	<b>5%</b>	<b>4%</b>	<b>5%</b>
Discontinued operations	-3%	0%	0%						-1%	0%
<b>Profit for the year</b>	<b>2%</b>	<b>4%</b>	<b>2%</b>	<b>5%</b>	<b>4%</b>	<b>4%</b>	<b>6%</b>	<b>5%</b>	<b>4%</b>	<b>4%</b>

## Exhibit 7B.2: APS Balance Sheet (2005-2012)

<b>Auto Parts Superior (APS) - INDIA</b>								
<b>Historical balance sheet</b>								
<i>For the fiscal year ended December 31,</i>								
<i>in million INR</i>								
	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>ASSETS</b>	<b>1,229</b>	<b>1,357</b>	<b>1,515</b>	<b>1,624</b>	<b>1,772</b>	<b>2,021</b>	<b>2,127</b>	<b>2,240</b>
<b>Non-current assets</b>								
Intangible assets	90	110	125	137	188	163	179	240
<i>Gross property, plant &amp; equipment</i>	780	980	1035	1,086	1,214	1,457	1,544	1,609
<i>Less: accumulated depreciation</i>	(275)	(460)	(490)	(524)	(594)	(684)	(794)	(929)
Property, plant and equipment, net	505	520	545	562	620	773	750	680
Deferred Tax Assets	12	15	0	0	0	15	20	25
<b>Total non-current assets</b>	<b>607</b>	<b>645</b>	<b>670</b>	<b>699</b>	<b>808</b>	<b>951</b>	<b>949</b>	<b>945</b>
<b>Current Assets</b>								
Inventory	350	395	500	525	537	600	650	720
Accounts receivable	255	295	330	380	405	445	500	545
Cash at bank and in hand	17	22	15	20	22	25	28	30
<b>Total current assets</b>	<b>622</b>	<b>712</b>	<b>845</b>	<b>925</b>	<b>964</b>	<b>1,070</b>	<b>1,178</b>	<b>1,295</b>
<b>LIABILITIES &amp; SHAREHOLDER'S EQUITY</b>	<b>1,229</b>	<b>1,357</b>	<b>1,515</b>	<b>1,624</b>	<b>1,772</b>	<b>2,021</b>	<b>2,127</b>	<b>2,240</b>
<b>Current Liabilities</b>								
Short term interest bearing debt	412	469	570	605	648	718	632	578
Accounts Payable	375	400	420	450	440	494	475	482
<b>Total current liabilities</b>	<b>787</b>	<b>869</b>	<b>990</b>	<b>1,055</b>	<b>1,088</b>	<b>1,212</b>	<b>1,107</b>	<b>1,060</b>
<b>Non-current liabilities</b>								
Long term interest bearing debt	100	110	90	100	110	120	150	150
Deferred tax liabilities	5	7	12	15	20	17	18	15
<b>Total non-current liabilities</b>	<b>105</b>	<b>117</b>	<b>102</b>	<b>115</b>	<b>130</b>	<b>137</b>	<b>168</b>	<b>165</b>
<b>Provisions</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>15</b>	<b>15</b>
<b>Stockholders' Equity</b>	<b>337</b>	<b>371</b>	<b>423</b>	<b>454</b>	<b>554</b>	<b>662</b>	<b>837</b>	<b>1,000</b>

<b>Auto Parts Superior (APS) - INDIA</b>										
<b>Historical balance sheet - common size</b>										
<i>For the fiscal year ended December 31,</i>										
<i>in million INR</i>										
	<i>Percentage of Assets</i>								<b>Historical</b>	<b>Historical</b>
	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>Average</b>	<b>Median</b>
<b>ASSETS</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Non-current assets</b>										
Intangible assets	7%	8%	8%	8%	11%	8%	8%	11%	9%	8%
<i>Gross property, plant &amp; equipment</i>										
<i>Less: accumulated depreciation</i>										
Property, plant and equipment, net	41%	38%	36%	35%	35%	38%	35%	30%	36%	36%
Deferred Tax Assets	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%
<b>Total non-current assets</b>	<b>49%</b>	<b>48%</b>	<b>44%</b>	<b>43%</b>	<b>46%</b>	<b>47%</b>	<b>45%</b>	<b>42%</b>	<b>45%</b>	<b>45%</b>
<b>Current Assets</b>										
Inventory	28%	29%	33%	32%	30%	30%	31%	32%	31%	30%
Accounts receivable	21%	22%	22%	23%	23%	22%	24%	24%	23%	22%
Cash at bank and in hand	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%
<b>Total current assets</b>	<b>51%</b>	<b>52%</b>	<b>56%</b>	<b>57%</b>	<b>54%</b>	<b>53%</b>	<b>55%</b>	<b>58%</b>	<b>55%</b>	<b>55%</b>
<b>LIABILITIES &amp; SHAREHOLDER'S EQUITY</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Current Liabilities</b>										
Short term interest bearing debt	34%	35%	38%	37%	37%	36%	30%	26%	34%	35%
Accounts Payable	31%	29%	28%	28%	25%	24%	22%	22%	26%	26%
<b>Total current liabilities</b>	<b>64%</b>	<b>64%</b>	<b>65%</b>	<b>65%</b>	<b>61%</b>	<b>60%</b>	<b>52%</b>	<b>47%</b>	<b>60%</b>	<b>63%</b>
<b>Non-current liabilities</b>										
Long term interest bearing debt	8%	8%	6%	6%	6%	6%	7%	7%	7%	6%
Deferred tax liabilities	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>Total non-current liabilities</b>	<b>9%</b>	<b>9%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>8%</b>	<b>7%</b>	<b>8%</b>	<b>7%</b>
<b>Provisions</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>1%</b>	<b>1%</b>	<b>0%</b>	<b>0%</b>
<b>Stockholders' Equity</b>	<b>27%</b>	<b>27%</b>	<b>28%</b>	<b>28%</b>	<b>31%</b>	<b>33%</b>	<b>39%</b>	<b>45%</b>	<b>32%</b>	<b>30%</b>

**Auto Parts Superior (APS) - INDIA****Historical balance sheet - selected summaries**

For the fiscal year ended December 31,  
in million INR

	2005	2006	2007	2008	2009	2010	2011	2012
<b>Selected Summary Accounts</b>								
Total Assets	1,229	1,357	1,515	1,624	1,772	2,021	2,127	2,240
Total interest-bearing debt	512	579	660	705	758	838	782	728
Total Liabilities	892	986	1,092	1,170	1,218	1,349	1,275	1,225
Current Liabilities	787	869	990	1,055	1,088	1,212	1,107	1,060
Operating working capital	247	312	425	475	524	576	703	813
Operating working capital/Sales	16%	22%	23%	23%	23%	23%	25%	25%
Cash/Assets	1%	2%	1%	1%	1%	1%	1%	1%
CapEx net of disposed assets	22	23	24	25	179	218	103	126
Depreciation	32	25	30	34	70	90	110	135
CapEx/Depreciation	69%	92%	80%	74%	256%	242%	94%	93%
Depreciation/Sales	0.02	0.02	0.02	0.02	0.03	0.04	0.04	0.04
CapEx/Sales	0.01	0.02	0.01	0.01	0.08	0.09	0.04	0.04
Sales/Fixed Assets	2.59	2.27	2.78	3.01	2.87	2.73	3.08	3.49
Inventory turnover	2.9	2.4	2.6	2.7	3.0	2.9	3.0	3.0
Days in Inventory	127.4	152.5	139.8	134.1	123.3	126.8	123.0	122.1
Receivable turnover	6.1	4.9	5.7	5.5	5.7	5.7	5.7	5.9
Days in receivable	60.3	75.2	64.6	66.0	63.7	63.5	63.7	62.0
Payable turnover	3.0	2.7	3.5	3.5	3.9	3.8	4.4	4.8
Days in payable	119.9	136.9	104.7	103.9	93.7	96.2	82.5	75.5
D/E	1.5	1.6	1.6	1.6	1.4	1.3	0.9	0.7
D/Total Capital	60%	61%	61%	61%	58%	56%	48%	42%
E/Total Capital	40%	39%	39%	39%	42%	44%	52%	58%

**Notes**

*Operating working capital = current asset minus non-interest bearing current liabilities*

*We are assuming balance sheets are prepared on consolidated basis taking into account currency exchange differences.*

## Exhibit 7B.3: APS Ratios (2005-2012)

<b>Auto Parts Superior (APS) - INDIA</b>										
<b>Historical ratios</b>										
	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>8 -year average</b>	<b>8 -year median</b>
<b>Revenue</b>	1,543	1,432	1,865	2,101	2,320	2,558	2,865	3,209	<b>CAGR</b>	
Revenue Growth		-7%	30%	13%	10%	10%	12%	12%	<b>11.0%</b>	
<b>Profitability Ratios</b>										
Gross profit margin	35%	34%	30%	32%	32%	33%	33%	33%	33%	33%
EBITDA margin	9%	10%	6%	8%	11%	12%	12%	14%	10%	10%
EBIT margin	7%	8%	4%	7%	8%	9%	9%	10%	8%	8%
EBT margin	5%	5%	2%	5%	6%	6%	6%	7%	5%	6%
ROE (EBT/Equity)	23%	21%	10%	24%	25%	23%	21%	23%	21%	23%
ROA (EBIT/Assets)	9%	8%	5%	9%	10%	11%	12%	14%	10%	10%
ROIC (EBIT/Equity & Debt)	13%	12%	8%	12%	14%	15%	15%	18%	13%	13%
ROIC Pre-Tax	9%	8%	4%	9%	11%	10%	11%	13%	9%	10%
ROIC Post-Tax	4%	6%	3%	9%	8%	7%	11%	9%	7%	7%
<b>Liquidity Ratios</b>										
Current ratio	0.79	0.82	0.85	0.88	0.89	0.88	1.06	1.22	0.92	0.88
<b>Coverage Ratios</b>										
Times interest earned	0.14	0.13	0.08	0.13	0.16	0.18	0.22	0.29	0.17	0.15
<b>Asset Management Ratios</b>										
Cash & Investments/ Assets	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Cash & Investments/ Revenue	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Total asset turnover	1.3	1.1	1.2	1.3	1.3	1.3	1.3	1.4	1.3	1.3
Inventory turnover	2.9	2.4	2.6	2.7	3.0	2.9	3.0	3.0	2.8	2.9
Inventory days	127	153	140	134	123	127	123	122	131	127
Receivable turnover	6.1	4.9	5.7	5.5	5.7	5.7	5.7	5.9	5.6	5.7
Trade receivable days	60	75	65	66	64	63	64	62	65	64
Payable turnover	3.0	2.7	3.5	3.5	3.9	3.8	4.4	4.8	3.7	3.7
Accounts payable days	120	137	105	104	94	96	83	76	102	100
Sales/Net fixed assets	3.1	2.8	3.4	3.7	3.7	3.3	3.8	4.7	3.6	3.6
Sales/Gross Working capital	6.25	4.59	4.39	4.42	4.43	4.44	4.08	3.95	4.6	4.4
Average age of assets	8.59	18.40	16.33	15.41	8.49	7.60	7.22	6.88	11.1	8.5
<b>Leverage Ratios</b>										
Interest bearing debt/ equity	1.5	1.6	1.6	1.6	1.4	1.3	0.9	0.7	1.31	1.44
Interest bearing debt/Total Capital	60%	61%	61%	61%	58%	56%	48%	42%	56%	59%
Equity/Total Capital	40%	39%	39%	39%	42%	44%	52%	58%	44%	41%
Assets/ equity	3.65	3.66	3.58	3.58	3.20	3.05	2.54	2.24	3.19	3.39

*n/a = not available*

*n/m = not meaningful*

## Notes

1. Revenues for 2012 represent a full year.
2. Averages include only the full fiscal years of 2005 through 2012.
3. Other working capital items include all current asset less current liability accounts with the exception of trade receivables, inventory, and trade payables.

## Exhibit 7C: 2013 Ibbotson SBBI Valuation Yearbook – Chapter 10

## Chapter 10

## International Cost of Capital

Calculating the cost of capital for a domestic enterprise can be a difficult proposition because of limited data or the poor statistical quality of the models being used. Applying cost of capital principles to international markets is even more challenging due to additional data limitations and the lack of integrated markets.

We begin this chapter by addressing a fundamental cost of capital issue: Should companies be concerned with international cost of capital issues? Consider a U.S. manufacturing company that raises its debt and equity through U.S. markets. Should it be concerned with applying a discount rate to operations in international markets that differs from its domestic cost of capital? The answer to this question is yes.

Assume a U.S. manufacturing company is considering opening a factory in Mexico. Also assume the economics driving the purchase or construction of a Mexican facility are access to cheaper labor and a less regulated infrastructure. These are cash flow issues that would be addressed in the numerator of the discounted cash flow analysis. However, the risks associated with this venture would differ significantly from the risks associated with a similar facility located in the United States.

Mexico is a distinct economy with its own equity markets, political system, and market regulations. While the investment in the Mexican factory might be made with equity raised in the U.S., that equity would be in Mexico and subject to the market fluctuations of the Mexican economy. In order for a U.S. investor to receive similar cash flows, the investor would have to buy a factory in Mexico. Therefore, a market-specific cost of capital should be determined for use in evaluating the Mexican investment. In other words, a Mexico-specific cost of capital should be used.

**Calculating the International Cost of Capital**

Because international data on companies and industries is so difficult to obtain, international cost of capital calculations are typically done on a country-specific basis. Therefore, instead of attempting to determine the risk of the auto-parts industry in Brazil or the chemical industry in Germany, we typically focus on the risk of the general Brazilian and German markets.

In analyzing markets, it is important to consider the size of the market being analyzed. For example, with the U.S. market it is possible to examine returns on thousands of publicly traded entities diversified across multiple industries. From an international perspective, the U.S. market has been large for a number of years. The tapes of the Center for Research in Security Prices (CRSP) contain the 1926 return on approximately 500 separate U.S. companies.

In comparison, many international markets are much smaller and much less diversified. For example, one commonly cited provider of international market data, Morgan Stanley Capital International (MSCI), based its 1998 Austrian equity market index on the returns of only 35 individual companies. The banking industry, which consisted of only three companies, represents over 20 percent of the total capitalization of the 1998 Austrian index. One energy company represented over 10 percent of the index. This demonstrates that the Austrian market is not only less diversified than the U.S. market, but also more concentrated. In addition, MSCI only has data from 1970 to the present, making long-term historical analysis impossible.

Emerging markets data tend to be even more concentrated. The International Finance Corporation (IFC) is another commonly cited international data provider. The IFC Argentine index had over 47 percent of its capitalization weighted in mining companies in 1998. The IFC Indian index was over 85 percent weighted toward manufacturing companies. As with MSCI, the IFC database also has a limited history of return data.

**International Equity Risk Premia**

It is possible to calculate historical equity risk premium statistics similar to the calculations provided for the U.S. in Chapter 5 for any international market. The limiting factor in these calculations is finding historical data. Listed below are the historical long-term risk premia for some selected international markets.<sup>1</sup>

**Table 10-1:** Equity Risk Premia by Country

	Local Currency	U.S. Dollars
Canada	3.45	3.99
U.K.	4.55	3.93
U.S.	4.31	4.31

Data from 1961–2011. Source: Ibbotson® International Risk Premia Report 2012, Morningstar Inc. (<http://global.morningstar.com/US/CoFCResources>).

The risk premia shown above are presented both in local currency and in U.S. dollar terms. In calculating historical international risk premia, it is essential to keep in perspective the investor's location, because this is a crucial element in cost of capital analysis. For instance, a Canadian investor valuing a Canadian business would be interested in the Canadian equity risk premium in Canadian dollar terms.

An international investor's local currency risk premia and the U.S. dollar risk premia are different because of exchange rate gains and losses. These currency gains and losses impact the returns of the equity market and the risk-free asset in different magnitudes. For example: Suppose that in one year Canada had an equity return of 10 percent and a risk-free return of 5 percent. Also suppose Canada's currency depreciated against the U.S. dollar by 2 percent. The equity risk premium in Canadian dollars would be 5.0 percent (10 percent – 5 percent). However, the equity risk premium in U.S. dollar terms would be 5.1 percent (10.2 percent – 5.1 percent).

Also note that it is possible for historical risk premia to be very low or negative. Low or negative risk premia are most commonly seen in high-inflation economies. A negative risk premium would indicate that the country's equities are less risky than its risk-free asset (represented here by each country's government bond). Though it is possible for equities to have lower returns than government bonds for periods of time, a negative historical equity risk premium is nonsensical for a long-term, forward-looking estimate of the equity risk premium.

It is also interesting to compare the historical U.S. equity risk premium in Table 10-1 to the results obtained using the full history of available U.S. market data. The figure of 4.31 percent is significantly lower than the U.S. equity risk premium calculated over a longer time horizon (in this case, 1926–2011).

The Ibbotson® International Risk Premia Report was enhanced in 2012 to include the earliest quality international data available. Table 10-1 shows the longest common period of available data used to calculate the risk premia, which corresponds with U.K. data, denominated in U.S. dollars. The report uses U.K. data in local currency beginning in 1919. The Canadian data begins in 1936, in local currency, and in 1939 when denominated in U.S. dollars. The U.S. equity risk premium uses the Ibbotson S&P data, which starts in 1926.

This illustrates another danger in using international data. Using a limited data window (1961 to present) can significantly understate or overstate the expected equity risk premium. Again, as was addressed in Chapter 5, longer periods of time are preferable when estimating the future equity risk premium from historical data. For many international markets, however, long-term data is not available.

#### International Sector Betas

Throughout this chapter we focus on various ways to overcome data limitations in order to calculate international cost of equity, but these models stop short of making the size and industry-risk adjustments that are common in the United States. While the "size effect" should be established over a very long period of time to ensure stability, industry risk is typically measured over a shorter time frame and has data that is more readily available. Here we will examine industry risk as measured through sector betas across markets. For more-detailed information on beta calculation, see Chapter 6.

Even though we are looking for two to five years of data to calculate international industry betas, the availability of foreign-company data can still be challenging. Fortunately, Morningstar has created an excellent global equity database, accessible through the Morningstar Direct™ platform, which was used in creating the betas presented here. As this is our second year publishing the international sector betas, it is expected that the methodology will continue to evolve and more granularity across countries (and, perhaps, industries) could be published based on reader feedback.

#### Methodology

Composite betas are only as good as the set of companies used to compute them. So, to ensure good-quality international sector betas, the companies used were first sorted through various filters. Each company must belong

Table 10-2: International Sector Betas

	Beta	Number of Companies	Recent Market Capitalization (mil)	Percent Market Share (%)	
Australia	Basic Materials	1.25	385	370,017.18	32.0
	Communication Services	1.41	8	3,241.71	0.3
	Consumer Cyclical	0.98	49	59,589.71	5.2
	Consumer Defensive	0.65	22	90,934.29	7.9
	Energy	1.15	81	80,269.16	6.9
	Financial Services	1.10	47	363,897.48	31.5
	Healthcare	0.55	50	41,673.19	3.6
	Industrials	1.30	69	49,629.84	4.3
	Real Estate	1.25	31	64,514.84	5.6
	Technology	1.06	35	8,689.34	0.8
	Utilities	0.57	22	23,237.40	2.0
<b>Totals</b>		<b>799</b>	<b>1,155,903.15</b>	<b>100.0</b>	
Canada	Basic Materials	1.27	658	383,483.08	20.5
	Communication Services	0.44	21	142,579.79	7.6
	Consumer Cyclical	0.65	87	80,750.15	4.3
	Consumer Defensive	0.29	36	75,309.55	4.0
	Energy	1.18	244	436,009.57	23.3
	Financial Services	0.67	82	426,564.30	22.7
	Healthcare	0.69	54	23,113.43	1.2
	Industrials	0.75	108	123,264.55	7.1
	Real Estate	0.86	46	83,596.46	4.5
	Technology	1.47	80	33,564.80	1.8
	Utilities	0.33	27	56,923.22	3.0
<b>Totals</b>		<b>1,433</b>	<b>1,875,108.91</b>	<b>100.0</b>	
United Kingdom	Basic Materials	1.39	120	104,170.32	5.5
	Communication Services	0.67	19	128,758.92	6.9
	Consumer Cyclical	1.05	159	144,626.18	7.7
	Consumer Defensive	0.62	45	339,011.23	18.0
	Energy	1.04	74	447,846.90	23.8
	Financial Services	1.41	85	299,088.51	15.9
	Healthcare	0.45	54	133,118.45	7.1
	Industrials	1.09	212	151,320.89	8.1
	Real Estate	1.04	40	31,078.20	1.7
	Technology	1.09	89	33,365.29	1.8
	Utilities	0.42	15	68,503.98	3.6
<b>Totals</b>		<b>912</b>	<b>1,879,690.68</b>	<b>100.0</b>	
United States	Basic Materials	1.39	280	577,102.63	3.4
	Communication Services	0.85	92	785,041.54	4.6
	Consumer Cyclical	1.29	570	1,965,948.79	11.5
	Consumer Defensive	0.59	213	1,795,230.23	10.5
	Energy	0.98	276	1,760,787.33	10.3
	Financial Services	1.22	783	2,449,897.70	14.3
	Healthcare	0.73	573	1,778,199.63	10.4
	Industrials	1.25	660	1,899,065.31	11.1
	Real Estate	1.35	193	562,334.39	3.3
	Technology	1.15	725	2,955,086.03	17.3
	Utilities	0.50	100	548,026.19	3.2
<b>Totals</b>		<b>4,465</b>	<b>17,076,720.67</b>	<b>100.0</b>	

Data from October 2007–September 2012. Betas calculated using five years of monthly excess returns using Morningstar company data and country specific risk-free rates. The benchmark indices are provided by Morgan Stanley Capital International, except for the United States, which uses the S&P 500. Market capitalization is shown in millions as of August 2012, as the betas are calculated using one-month lagged market capitalization, and all data is denominated in the country's respective currency.

**Table 10-3: Five-Year Sector-Weighted Beta versus Long-Term Market Beta**

	S-Yr Sector-Weighted Beta	Long-Term Market Beta
Australia	1.10	1.00
Canada	0.94	1.00
United Kingdom	0.98	1.00
United States	1.04	1.00

Data from October 2007 – September 2012.

to the respective sector, have a market capitalization of at least \$10,000, be headquartered and traded in the sector beta's respective country, and report fundamentals in the country's base currency. Companies are further filtered to ensure that they have at least 24 months of both market-capitalization and total-return data, do not have any gaps in market-capitalization or total-return data, and, for liquidity purposes, have no more than 10 percent of available total returns recorded as zero percent.

These sector betas include up to 60 months of excess total returns beginning in October 2007. The composite sector returns are weighted using one-month lagged market capitalization. The risk-free rates used are all the short-term government bond total returns, or Treasury bill returns, calculated from yields provided by the International Monetary Fund's International Financial Statistics database, with the exception of the United States. The U.S. risk-free rate used was the SBBI U.S. Treasury Bills index. The benchmarks chosen for the countries are provided by Morgan Stanley Capital International (MSCI), except for the United States, which uses S&P 500 total returns. These indices are also used in the Ibbotson® International Risk Premia report, allowing the betas to be used alongside the equity risk premia shown in Table 10-1. Note that Table 10-1 contains the 2011 risk premia, while the betas are as of September 2012. For 2012 equity risk premia, please see the 2013 Ibbotson International Risk Premia report.

#### A Look at the Results

Table 10-2 shows the sector betas for Australia, Canada, the United Kingdom, and the United States, using Morningstar-defined sectors. This table shows how some industries (for example, the health-care and utilities sectors) have consistent trends among countries. At the same time, there are other sectors that can have wide-ranging risk across different countries. An eye-catching example of this is seen by comparing the Canadian financial services sector beta of 0.87 with the United Kingdom beta of 1.41. The Canadian banking industry is highly concentrated, and it

demonstrated more stability through the recent economic downturn than banks in most other countries.

Another issue of note, as demonstrated in Table 10-2, is that countries differ dramatically in sector mix. The largest sector in the United States is technology, with a market share of 17 percent. The United States has the most diversified market of the four countries, with seven sectors holding a market share greater than 10 percent and none of the 11 sectors has a market share greater than 20 percent.

On the other hand, the largest sector in Australia, basic materials, accounts for almost a third of the country's market. Australia has the least sector diversity of the four countries studied, with two sectors containing less than 1% of market share: communication services and technology. Note that the low number of companies in these two sectors can produce less-reliable betas. The Australian communication services sector beta is 1.41, while the sector betas of the other three countries are less than 0.90. These betas can also be substantially influenced by large companies because of market-capitalization weighted composite returns. This can allow for an outlier company to dramatically alter the beta. For example, if Redbank Energy Ltd was included in Australia's utilities sector, it would shift the sector beta to 1.70 from the current 0.57. Redbank's market capitalization peaked at AUD\$2,263,017.59 million in October 2007 and has since dramatically fallen to AUD\$3.22 million in August 2012. In October 2007, the company's market capitalization had a weighting of 99 percent in the sector, and this dropped to a weighting of 0.01 percent in August 2012. Redbank's historically high volatility skewed the utilities sector beta so much that it no longer would have been representative of similar companies. As such, we removed it from our analysis.

Table 10-3 shows how each country's market has been affected by the economic environment over the past five years. The market beta is expected to be 1.0, but the realized sector-weighted country betas show deviation from the long-term theoretical beta. Country composite sector betas place a greater focus on the country's market composition as of August 2012 because each country composite beta weighting uses the sector's market share as of the most recent month. The sector composite market caps might have looked different during the other months in the five-year period. Therefore, the long-term beta of all countries should revert to 1.0, but deviations in these short-term composite betas are not surprising.

### International Cost of Equity Models

The measurement of cost of equity estimates for international markets is a developing area of academia. The remainder of this chapter will provide an overview of some of the more commonly discussed international cost of equity models. Parties interested in obtaining additional international data should look for the "International Cost of Capital Report" on the Cost of Capital Resources site at <http://global.morningstar.com/US/CofCResources>.

### International CAPM

The principles of the capital asset pricing model (CAPM) can also be applied to the international market. The definition of the market portfolio can be expanded to include the equity markets of all countries of the world. The CAPM states that the expected return on a security, asset, or country is equal to the risk-free rate plus the beta multiplied by the equity risk premium. The CAPM can be stated mathematically as follows:

$$k_s = r_f + (\beta_s \times ERP)$$

where:

- $k_s$  = the cost of equity for company  $s$ ,
- $r_f$  = the expected return on the riskless asset;
- $\beta_s$  = the beta of the stock of company  $s$ ; and
- ERP = the expected equity risk premium, or the amount by which investors expect the future return on equities to exceed that of the riskless asset.

To convert CAPM to a country-specific international format, the model can be modified so that the risk-free rate and beta are specific to the country being analyzed and the equity risk premium is calculated on a worldwide basis. Beta would be estimated using the world equity market as the market benchmark.

As was stated in the previous section, one limiting factor with international data is the historical time period over which data is available. Key to the calculation of the CAPM is the estimation of the world equity risk premium. For reasons outlined in Chapter 5, equity risk premium estimations using historical data should cover a long time period. However, data for many international markets is only available over much shorter time periods.

Since extensive historical data is available in the U.S., it is desirable to estimate the world equity risk premium by relating it to the U.S. data. To do this we can divide the U.S. equity risk premium by the beta of the U.S. market in relation to the world market:

$$ERP_w = \frac{ERP_{U.S.}}{\beta_{U.S.}}$$

where:

- $ERP_w$  = the world equity risk premium;
- $ERP_{U.S.}$  = the U.S. equity risk premium measured over the full history of available data; and
- $\beta_{U.S.}$  = the U.S. market beta measured over the common history of available data.

We know from our analysis of the equity risk premium in Chapter 5 that the expected U.S. value is 6.70 percent, using data from 1926 through 2012. If we assume that the Morgan Stanley Capital International (MSCI) world index represents a good proxy for world markets, we can regress the U.S. returns against the returns of the world index. The MSCI data is available from 1970 to the present. The U.S. beta for 1970 through 2012 using monthly returns is 0.9163. If the U.S. equity risk premium is 6.70 percent and the U.S. market has a beta with the world of 0.9163, then it follows that the equity risk premium of the world is 7.31 percent (6.70 percent divided by 0.9163).

The next step in the application of an international CAPM is the calculation of a country-specific beta. The beta calculation methodology for international markets is similar to the calculation methodology for domestic companies. Probably the most important assumption in this calculation is the selection of the appropriate historical time period. While a five-year window may be relevant for an established economy, such as Canada, it might be desirable to focus on shorter data windows for developing markets or markets in transition, such as Indonesia.

Table 10-4 shows the impact of using different time periods to measure beta for a developed market, Canada, versus less developed markets, Indonesia and Mexico. Less developed markets tend to have less stable betas over time than developed markets.

**Table 10-4:** Betas for Selected Countries over Various Periods

Period	Beta		
	Canada	Indonesia	Mexico
80 Months	1.15	1.39	1.23
48 Months	1.15	1.44	1.30
36 Months	1.03	0.86	1.14
24 Months	1.06	0.84	1.20

Data through September 2012. Statistics calculated from the monthly total return indices of Morgan Stanley Capital International.

The same problems that plague domestic beta calculations also plague international betas, only they are more pronounced.<sup>2</sup> The statistical quality of international betas is especially low, which calls into question the usefulness of the standard CAPM in the international arena.

Table 10-5 shows the beta, t-statistic, R-squared, and standard error for a selection of developing markets and developed markets, respectively. Unfortunately, foreign markets that intuitively have more risk often have lower betas than foreign markets that are seen as less risky. The regression statistics for the developing markets indicate less confidence in their beta measures than in those of the developed countries. The higher standard error and lower t-statistic of the developing market betas also indicates less statistical confidence in the beta estimates than those for the developed markets. The lower R-squared of these betas demonstrates that less of the developing market returns can be explained by changes in the world market.

**Table 10-5:** Beta, t-Statistic, R-Squared, and Standard Error for:

Developing Markets	Colombia	India	Korea	Poland	Pers
Beta	1.04	1.41	1.44	1.74	1.17
T-Statistic	8.54	9.18	12.35	13.74	6.56
R-Squared	0.56	0.59	0.72	0.77	0.43
Standard Error	0.12	0.15	0.12	0.13	0.18

Developed Markets	Canada	Germany	Japan	U.K.	U.S.
Beta	1.16	1.39	0.72	1.06	0.89
T-Statistic	14.60	21.34	11.01	26.05	36.46
R-Squared	0.79	0.89	0.68	0.92	0.86
Standard Error	0.08	0.07	0.07	0.04	0.02

Data from October 2007–September 2012. Statistics calculated from the monthly total return indices of Morgan Stanley Capital International.

### Globally Nested CAPM

One potential solution to the CAPM in international markets is to expand the model. While we might obtain data on country risk by the interaction of a specific country with the world, we may gather more information by examining the interaction of the country with the geographic region in which it is located.

Clare and Kaplan explored this topic using a “globally nested CAPM.”<sup>3</sup> The idea behind this model is that if markets are not fully integrated, then regional risk will matter. For instance, if we were trying to calculate a cost of equity for Mexico, we would look not only at how Mexico reacts to the rest of the world, but also in how Mexico reacts to the Latin American region.

This model is expressed as:

$$k_C = r_f + (\beta_{CW} \times ERP_W) + (\beta_{CR} \times \delta_R)$$

where:

- $k_C$  = the cost of equity for country C;
- $r_f$  = the expected return on the riskless asset;
- $\beta_{CW}$  = the country's covariance with world market risk;
- $ERP_W$  = the expected world equity risk premium;
- $\beta_{CR}$  = the country's covariance with regional risk; and
- $\delta_R$  = the risk premium associated with region R that is not part of the world equity risk premium.

The full model, which is beyond the scope of this book, focuses on measuring the country's sensitivity to both a world and a regional proxy. It is important to note that the regional risk measured here is residual regional risk that is not included in the world market risk.

Mexico, the model works as follows:

$$k_C = r_f + (\beta_{CW} \times ERP_W) + (\beta_{CR} \times \delta_R) = 2.48 + (0.95 \times 7.21) + (0.61 \times 12.50) = 16.95\% *$$

Data through March 2012. \*Difference due to rounding.

Source: 2012 Ibbotson® International Cost of Capital Report, Morningstar Inc. (<http://global.morningstar.com/US/CoCResources>). Regression uses Country Credit Ratings from Institutional Investor and market returns from Morgan Stanley Capital International.

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The advantage of this model is that it allows for other elements of risk to improve the statistical quality of the regression equation. The Clare-Kaplan study found that this model worked particularly well for the Latin American region. Unfortunately, other regional results using the MSCI regional data were not as encouraging. One line of reasoning for the poor regional performance of the model is the country makeup of the MSCI benchmarks currently used. The MSCI regions are constructed for the most part along geographic lines. However, regions that combine countries along economic lines would intuitively be better suited for this model. Additional study of this model is being pursued using modified regional benchmarks.

#### Country Risk Rating Model

One problem with market-based models is that they can only be applied to market-based economies. In a worldwide context, there are few countries that have the data necessary to provide a CAPM cost of equity. As a solution to this and other modeling problems, Erb, Harvey, and Viskanta have proposed a model based on country credit ratings.<sup>4</sup>

Each year, Institutional Investor produces a country risk rating based on a survey of lenders around the world for over 170 countries. The survey provides a forward-looking measure of risk for a broad sample of markets.

The idea behind this approach is that, given the risk ratings and financial returns of developed market economies, we should be able to make inferences about expected returns in developing markets or non-market-based economies. From the entire sample of market-based economies that have available returns and country credit ratings, a regression is performed with the return as the dependent variable and the natural logarithm of the country credit rating for the prior period as the independent variable. Country credit ratings are available for many countries on a semiannual basis from 1979 to 2012, except for 2010 during which time Institutional Investor only published country credit ratings in September. The entire history of available data is used for added statistical confidence. The resulting regression equation allows one to estimate the expected return of any country, given its country credit rating, regardless of whether the country has available return data. Table 10-6 shows the risk rating and expected return for a sample of developed countries using this model. Table 10-7 shows a sample of emerging market and non-market country expected returns.

**Table 10-6:** Country Credit Ratings and Expected Returns for Developed Markets\*

	Canada	Germany	Japan	U.K.	U.S.
Country Credit Rating	93.1	89.8	81.1	85.6	89.4
Expected Return (%)	10.7	11.3	13.0	12.1	11.4

**Table 10-7:** Country Credit Ratings and Expected Returns for Emerging Markets\*

	Colombia	India	Korea	Peru	Poland
Country Credit Rating	64.6	64.0	78.5	70.5	63.7
Expected Return (%)	16.9	17.0	13.6	15.4	17.1

Date through March 2012.

\*Source: 2012 Ibbotson® International Cost of Capital Report, Morningstar Inc. (<http://global.morningstar.com/US/CoCResources>). Regression uses Country Credit Ratings from Institutional Investor and market returns from Morgan Stanley Capital International.

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#### Country-Spread Model

Another international model in current use is the country-spread model. While it takes many forms, this model adds a country-specific spread to a cost of equity determined from more conventional means. Typically, a cost of equity is determined using U.S. data, then a spread is added to the cost of equity to "internationalize" it. Ideally, the spread is between the yield on dollar-denominated foreign bonds (Brady bonds) and the yield on the U.S. Treasury bond.

The spread between the bonds is intended to measure the additional return required to compensate for the additional risk inherent in the foreign investment. However, though the spread may capture incremental returns due to currency risk and other country-specific risks, it is important to note that there may be additional risks inherent in the equity market of a particular country that are not captured in the yield spread. The model nonetheless provides a good reference point to check against other models.

For example, suppose a dollar denominated foreign bond of an emerging-market country has a current yield that is 12.0 percent higher than the yield on a U.S. Treasury bond. The estimated U.S. cost of equity (as of December 2012) using the CAPM is the U.S. Treasury long-term yield as of December 2012, 2.41 percent, plus the U.S. equity risk premium, 6.70 percent which equals 9.11 percent. The estimated cost of equity for this emerging-market country would be 21.11 percent (the U.S. cost of equity, 9.11 percent, plus the spread of 12.0 percent) using the country-spread model.

**Relative Standard Deviation Model**

A more simplistic approach to calculating the international cost of equity is through the standard deviation model. In this model, the standard deviations of international markets are indexed to the standard deviation of the U.S. market. Countries with higher standard deviations than the U.S. are given a higher equity risk premium in proportion to their relative standard deviation. In other words, a country that has twice the standard deviation of returns is assumed to be twice as risky as the U.S. market.

$$\sigma_{j,R} = \frac{\sigma_j}{\sigma_{U.S.}}$$

where:

- $\sigma_{j,R}$  = the relative standard deviation of country  $j$ ,
- $\sigma_j$  = the standard deviation of returns for country  $j$ , and
- $\sigma_{U.S.}$  = the standard deviation of returns for the U.S.

For example, as of December 2011, the relative standard deviation of returns for Canada is 1.28 (5.81 percent / 4.53 percent), the equity risk premium for Canada would be 8.49 percent (6.62 percent  $\times$  1.28) (difference due to rounding). The difficulty with this model is that it produces unreasonably high measures of the equity risk premium for many international markets. Developed markets, such as the U.K., have relative standard deviation statistics in excess of 1.40. Less developed markets can have relative standard deviation statistics even higher (e.g., Poland at 3.24). Table 10-8 shows the relative standard deviations for a sample of developed and emerging markets.

**Table 10-8: Relative Standard Deviations**

Developed Country	Relative Standard Deviation	Emerging Country	Relative Standard Deviation
Canada	1.28	Colombia	1.84
Germany	1.42	India	1.89
Japan	1.38	Korea	2.41
U.K.	1.43	Poland	3.24
U.S.	1.00	Turkey	3.86

Data through December 2011.

\*Source: 2012 Ibbotson® International Cost of Capital Report, Morningstar Inc. (<http://global.morningstar.com/US/CoC/Research>). Statistics for the developed countries were derived from the monthly total return indices of Morgan Stanley Capital International. Statistics for the emerging countries were derived from the monthly total return indices of S&P/IFCS.

**Conclusion**

Determining appropriate cost of capital estimates for international markets is a problem for which solutions continue to be developed. While cost of capital models in general are plagued by statistical inaccuracy and limited data, these problems are compounded in the international arena.

**Which International Model Is Best?**

While no cost of equity model produces reliable numbers in every situation, the Country Risk Rating Model offers a number of advantages that the other international models are unable to overcome. These advantages include:

1. Breadth of coverage
2. Reasonable results
3. Stability of results

Trying to evaluate an investment in the Middle East, Central America, or Africa? Most of the models we have discussed require data that simply does not exist for many countries, since most countries do not have organized equity markets. Others have equity markets, but do not have either a significant history or a broad enough market to produce reliable market benchmarks.

The Country Risk Rating Model requires only a credit rating to produce a cost of equity estimate. Therefore, the model can be applied to almost any country in the world.

Another advantage of the Country Risk Rating Model is that it consistently produces results that are reasonable. The model works by using data from the developed world and extrapolating that data to developing markets. This methodology sidesteps the use of the inconsistent or incomplete data usually available in developing markets, thus avoiding the nonsensical results that this data may produce.

One example of an international cost of equity model producing nonsensical results is the international CAPM. This model recently produced single-digit cost of equity values for countries such as China and Malaysia that were significantly lower than comparable figures for the U.S., U.K., Germany or Japan.

Finally, the Country Risk Rating Model produces results that are relatively stable. Cost of equity estimates should vary across time as conditions change, but they should not vary radically from one time period to the next unless country-specific conditions change dramatically from one period to the next. Market-based models or macro-economic based models can become unstable if the data underlying the models is erratic in any way. For many developing markets, it is not unusual to have higher volatility and lower correlation with world market benchmarks. These data issues impact the results of market based and macro-economic based models.

This chapter has explored the challenges and potential solutions for determining international market cost of capital. Though all the models explored have some flaws, for most countries there is at least one model that produces a reasonable cost of equity estimate. ■

#### Endnotes

<sup>1</sup> Note that data is only through year-end 2011 as complete international data was unavailable at time of publication.

<sup>2</sup> See Chapter 6 for more details on the tools used to evaluate beta.

<sup>3</sup> Clare, Andrew D., and Paul Kaplan: "A Globally Nested Capital Asset Pricing Model." Ibbotson Associates' Working Paper, July 1998.

<sup>4</sup> Erb, Claude, Campbell R. Harvey, and Tadas Viskanta. "Country Credit Risk and Global Equity Selection," *Journal of Portfolio Management*, Winter 1995, pp. 74–83.

## Exhibit 7D: International cost of capital

**Local CAPM, Volatility Spread CAPM, Country Spread CAPM, Damodaran CAPM**

<b>Local CAPM</b>			<b>Source</b>			<b>Volatility Spread CAPM</b>			<b>Source</b>		
Risk Free Rate		8,50%	Local 20Y bond YTM	Risk Free Rate		4%	US market				
Beta adjusted ERP				Beta adjusted ERP							
Equity Risk Premium for Indian market	8,00%		Local ERP (P. Fernandez)	Indian Market Volatility		42,55					
Levered/Relevered Beta for APS	0,98			US Market Volatility		20,19					
Concluded beta adjusted ERP		7,8%		Relative Volatility Adjustment Factor			2,11				
				US market ERP			5,50%				
				Calculated Indian Market ERP				11,59%			
				Levered/Relevered Beta for APS				0,98			
				Beta Adjusted ERP				11,36%			
<b>Indicated Cost of Equity</b>			<b>16,34%</b>	<b>Indicated Cost of Equity</b>			<b>15,36%</b>				
<b>Country Spread CAPM</b>			<b>Source</b>			<b>Damodaran CAPM</b>			<b>Source</b>		
Risk Free Rate		4%	US market	Risk Free Rate		4%	US market				
Beta adjusted ERP				Beta adjusted ERP							
Equity Risk Premium for US market	5,50%		US market	Equity Risk Premium for US market	5,50%		US market				
Levered/Relevered Beta for APS	0,98			Levered/Relevered Beta for APS	0,98						
Concluded beta adjusted ERP		5,4%		Concluded beta adjusted ERP		5,4%					
Yield Spread differential				Country Risk Premium				3,00%	Damodaran		
Indian Risk Free Rate	8,50%										
US Risk Free Rate	4,0%										
Country Yield Spread		4,50%									
<b>Indicated Cost of Equity</b>			<b>13,89%</b>	<b>Indicated Cost of Equity</b>			<b>12,39%</b>				

## Exhibit 7E: Guideline Public Companies, betas and capital structures

<b>Guideline Quoted Companies</b>					
		<b>Levered</b>	<b>Market Debt/</b>	<b>Normalized</b>	<b>Unlevered</b>
	<b>Country</b>	<b>Beta</b>	<b>Equity</b>	<b>Tax Rate</b>	<b>Beta</b>
Sona Koyo Steering Systems Ltd...	IND	1,1	115%	25%	0,59
Ohashi Technica Inc	JPN	0,95	15%	34%	0,86
WABCO Holdings Inc.	USA	1,69	42%	15%	1,25
Astra Otoparts Tbk PT	IDN	0,74	5%	22%	0,71
Wabco India Ltd	IND	1,1	40%	32%	0,86
ZF Steering Gear (India) Ltd.	IND	1,1	35%	16%	0,85
Somboon Advance Technology PCL	THAI	0,95	35%	18%	0,74
Sundram Fasteners Limited	IND	0,86	25%	22%	0,72
Aisin Seiki Co Ltd	JPN	1,1	0%	12%	1,10
Yutaka Giken Co Ltd	JPN	1,2	45%	32%	0,92
<b>Average</b>		<b>1,08</b>	<b>36%</b>	<b>23%</b>	<b>0,86</b>
<b>Median</b>		<b>1,10</b>	<b>35%</b>	<b>22%</b>	<b>0,86</b>

Source: Information was extracted from database InFinancials ([www.infinancials.com](http://www.infinancials.com)) and is based on GPC.

Exhibit 7F: 2013 Ibbotson SBBI Valuation Yearbook Data  
Key Variables in Estimating Cost of Capital

## Key Variables in Estimating the Cost of Capital

				Value
<b>Yields (Riskless Rates)<sup>1</sup></b>				
Long-term (20-year) U.S. Treasury Coupon Bond Yield				2.41%
<b>Equity Risk Premium<sup>2</sup></b>				
Long-horizon expected equity risk premium (historical): large company stock total returns minus long-term government bond income returns				6.70
Long-horizon expected equity risk premium (supply side): historical equity risk premium minus price-to-earnings ratio calculated using three-year average earnings				6.11
<b>Size Premium<sup>3</sup></b>				
Decile	Market Capitalization of Smallest Company (in millions)		Market Capitalization of Largest Company (in millions)	Size Premium (Return in Excess of CAPM)
Mid-Cap (3–5)	\$1,912.240	–	\$7,686.611	1.12%
Low-Cap (6–8)	514.459	–	1,909.051	1.85
Micro-Cap (9–10)	1.139	–	514.209	3.81
Breakdown of Deciles 1-10				
1-Largest	17,557.706	–	626,550.334	-0.37
2	7,747.951	–	17,541.302	0.76
3	4,250.360	–	7,686.611	0.92
4	2,772.831	–	4,227.668	1.14
5	1,912.240	–	2,759.391	1.70
6	1,346.619	–	1,909.051	1.72
7	822.077	–	1,346.528	1.73
8	514.459	–	818.065	2.46
9	254.604	–	514.209	2.70
10-Smallest	1.139	–	253.761	6.03
Breakdown of the 10th Decile				
10a	166.154	–	253.761	4.23
	10w	212.292	253.761	3.66
	10x	166.154	212.031	4.66
10b	1.139	–	165.600	9.74
	10y	96.483	165.600	8.90
	10z	1.139	96.164	11.65

<sup>1</sup> As of December 31, 2012. Maturity is approximate.

<sup>2</sup> See Chapter 5 for complete methodology.

<sup>3</sup> See Chapter 7 for complete methodology.

Note: Examples on how these variables can be used are found in Chapters 3 and 4.

## Exhibit 7G: Market Risk Premium and Risk Free Rate

Used for 51 countries in 2013 by Pablo Fernandez

Pablo Fernandez, Javier Aguirreamalloz and Pablo Linares  
IESE Business School June 26, 2013

Market Risk Premium and Risk Free Rate used for  
51 countries in 2013: a survey with 6,237 answers

Table 2. Market Risk Premium (MRP) used for 51 countries in 2013

MRP	Number of answers	average	Median	St. Dev.	max	min	Av-Median
USA	2394	5.7%	5.5%	1.6%	15.8%	2.5%	0.2%
Spain	804	6.0%	5.5%	1.7%	15.0%	3.0%	0.5%
Germany	343	5.5%	5.0%	1.7%	18.0%	1.6%	0.5%
United Kingdom	247	5.5%	5.0%	1.4%	11.0%	2.0%	0.5%
Italy	205	5.7%	5.5%	1.5%	12.0%	3.0%	0.2%
France	134	6.1%	6.0%	1.6%	12.0%	3.0%	0.1%
Switzerland	113	5.6%	5.5%	1.5%	12.0%	3.0%	0.1%
Brazil	112	6.5%	6.0%	2.1%	12.0%	1.6%	0.5%
Canada	110	5.4%	5.3%	1.3%	12.0%	3.0%	0.1%
China	95	7.7%	7.0%	2.3%	14.0%	3.0%	0.7%
Portugal	52	6.1%	5.9%	2.3%	12.0%	2.5%	0.2%
Norway	51	6.0%	6.0%	1.8%	12.0%	3.0%	0.0%
Greece	50	7.3%	6.0%	4.1%	20.8%	3.0%	1.3%
Sweden	50	6.0%	5.9%	1.7%	12.0%	3.0%	0.1%
Belgium	48	6.1%	6.0%	1.8%	12.0%	3.0%	0.1%
Austria	47	6.0%	5.8%	1.9%	12.0%	3.0%	0.2%
Japan	28	6.6%	6.4%	2.7%	11.2%	2.0%	0.2%
Mexico	24	6.7%	6.3%	2.4%	13.6%	1.1%	0.4%
Argentina	20	10.6%	6.8%	8.1%	34.0%	4.0%	3.9%
Russia	18	7.3%	7.0%	4.1%	20.0%	1.0%	0.3%
Australia	17	6.8%	5.8%	4.9%	25.0%	3.0%	1.0%
Chile	17	5.0%	5.5%	2.2%	8.0%	1.0%	-0.5%
Malaysia	13	7.6%	7.5%	1.3%	10.0%	5.5%	0.1%
India	12	8.5%	8.8%	2.9%	13.4%	3.0%	-0.3%
Poland	12	6.3%	6.5%	1.0%	7.3%	5.0%	-0.2%
Colombia	11	8.4%	8.8%	3.4%	13.0%	1.2%	-0.4%
Korea(South)	11	7.0%	6.9%	1.8%	10.0%	4.0%	0.2%
Lituania	11	8.0%	8.0%	1.6%	11.0%	5.5%	0.0%
Hong Kong	9	7.4%	6.5%	2.7%	12.5%	3.6%	0.9%
Indonesia	9	7.8%	8.0%	1.4%	9.5%	5.5%	-0.2%
Netherlands	9	6.0%	5.8%	1.3%	8.9%	4.6%	0.2%
Peru	9	6.5%	6.8%	2.1%	8.4%	2.0%	-0.3%
Singapore	9	5.0%	5.8%	1.7%	6.0%	1.3%	-0.8%
Czech Republic	8	6.5%	7.0%	1.1%	8.0%	5.0%	-0.5%
New Zealand	8	5.4%	5.8%	1.8%	7.5%	2.5%	-0.4%
Finland	7	6.8%	6.0%	1.2%	8.7%	5.8%	0.8%
Ireland	7	6.2%	7.0%	3.3%	9.4%	2.7%	-0.7%
Taiwan	7	6.7%	6.9%	2.0%	11.0%	4.0%	-0.1%
Bulgaria	6	8.0%	8.4%	0.9%	9.0%	6.6%	-0.4%
Denmark	6	6.4%	5.9%	0.8%	7.4%	5.8%	0.5%
Hungary	6	8.2%	8.7%	1.6%	9.4%	5.5%	-0.5%
Israel	6	6.4%	7.0%	1.1%	7.1%	5.0%	-0.7%
South Africa	6	6.8%	7.0%	1.4%	8.1%	5.0%	-0.3%
Bolivia	5	10.6%	11.0%	1.7%	12.1%	8.0%	-0.4%
Egypt	5	9.2%	9.0%	1.2%	11.0%	8.0%	0.2%
Pakistan	5	16.0%	16.3%	0.6%	16.3%	15.0%	-0.3%
Romania	5	8.1%	8.8%	1.2%	8.8%	6.0%	-0.7%
Slovenia	5	7.4%	8.4%	1.5%	8.4%	5.5%	-1.1%
Thailand	5	7.6%	8.1%	0.6%	8.1%	7.0%	-0.4%
Turkey	5	8.2%	9.4%	2.9%	10.0%	3.0%	-1.2%
Venezuela	5	11.2%	11.8%	1.8%	12.5%	8.0%	-0.6%

## Exhibit 7H: Long-term Relationships Between CAPEX &amp; Depreciation

## The Long Term Relationships between Capital Expenditures and Depreciation Across Industries: Important Data for Capitalized Income Based Valuations

*by Daniel L. McConaughy, PhD, ASA and Lorena Bordi*

### Introduction

A better understanding of the long-term relationship between capital expenditures (capx) and depreciation will help financial analysts better forecast the long term cash flows used to estimate company values when capitalizing income. Earlier theoretical studies have shown that, when using the Gordon Growth model, assuming capx = depreciation results in an over valuation.<sup>1</sup> This upward bias also affects valuations using the DCF model when the Gordon model is used for terminal value.

This article provides long-term empirical evidence regarding the relationship between capx and depreciation over the 1986-2001 time period for 582 companies across 39 industries. During this period, on average, capx exceeded depreciation by 21%, though the amount varied across industries. The data presented in this article provide important information to those using the capitalized income approach employing the Gordon Growth model because they reflect the actual long-term relationships between capx and depreciation. Business appraisers and financial analysts should consider the empirical capx/depreciation relationship when making assumptions for use in this growing perpetuity model.

The Gordon Growth model is commonly used for valuation in both the capitalized income approach and for the terminal value in the discounted cash flow (DCF) approach to valuation.

This model assumes that a company will experience a constant growth of cash flow into perpetuity:

$$V = CF/(r-g),$$

where,

V = current value,

CF = expected annual cash flow,

r = discount rate, and

g = growth rate

When calculating CF for this model, analysts often adopt the simplifying assumption that capx equals depreciation. This may be true when  $g = 0$  and there is no inflation. If these assumptions do not hold, and there is positive growth and inflation, then capx likely will exceed depreciation, especially over the long term. This situation results in a reduction of cash flow. Thus, if a

valuation analyst assumes capx = depreciation, he has overvalued the company. We find that, over time and across industries, capx has exceeded depreciation by 21%. We also find that this varies by industry. The valuation impact depends not only on growth, but depreciable life and profitability.

### Overview of Literature

The main purpose of the article is to examine the *empirical* relationship between capx and depreciation, over the long term and across industries. Up to now, the literature on this subject has been theoretical. Theoretical considerations include growth in capx and depreciation rates. Three recently published articles have addressed the relationship between capx and depreciation. Gilbert E. Matthews, CFA, suggests the simplifying assumption, that depreciation equals capx results in upwardly biased values. In a table, Matthews gives a theoretical example in which he shows the difference between capx and depreciation over a ten-year period. He shows that if a company increases its capx by 3% each year and depreciates its fixed assets in 10 years, on a straight-line basis, at the end of the period, capx will exceed depreciation by 15.5%.<sup>2</sup>

In another table Matthews applies the same approach to different growth rates and equipment life years and obtains higher percentages for higher growth rates and greater number of equipment life years. For instance, he shows that if a company's growth rate in capx is 5% and it has equipment with a 15-year life, and uses straight line depreciation, capx will exceed depreciation by 41%.<sup>3</sup> His examples show that capx growth, depreciation rates, and equipment characteristics can affect the relationship between capx and depreciation and therefore impact the valuation conclusion.

Another article,<sup>4</sup> by Jay B. Abrams, ASA, CPA, also addresses the relationship between cash flow, capx and depreciation. As Abrams develops the payout ratio formula, he notes that capx and depreciation are important inputs for forecasting cash flows, making DCF easier to perform and "reducing the temptation to take the shortcuts that lead to overvaluations."<sup>5</sup> Abrams provides an algebraic equation to express the relationship between capx and depreciation:

Capx (n) = (1+k)\*D(n-1), where:

k = multiplicative factor, normally  $0 < K < 200\%$ , and  
D = depreciation.<sup>6</sup>

To demonstrate this formula, Abrams assumes that a company has five machines each with an average five-year life, and he uses straight-line depreciation. He assumes that the company reaches a constant state in year 5 and no real (i.e., inflation adjusted) growth afterwards. With this example, Abrams shows that the difference between capx and depreciation, for a 3% growth rate, which represents inflationary level growth, and a five-year average equipment life, is 9.2%. This example shows that even if a company is in a mature industry, with only inflationary level growth, at the end of the fifth year, capx will exceed depreciation.

Abrams provides a table where he shows how the relation between capx and depreciation varies with changes in the growth rate and average years equipment life.<sup>7</sup> He shows that the amount that capx exceeds depreciation increases with capx growth and the depreciable life of the asset. For instance, with a 5% capx growth rate and a 15-year average equipment life, he estimates that capx will exceed depreciation by 44.5%, similar to Matthews' result of 41%. Likewise Abrams shows, by assuming a 5% growth rate (which is reasonable for many companies that grow only modestly above inflation, e.g., perhaps at a 2% real growth rate) and a 10 years average equipment life, capx exceeds depreciation by 29.5% after 10 years, a result also similar to Matthews' 26.3%.

The third article,<sup>8</sup> by Brant H. Armentrout, CFA, also addresses this issue. Armentrout assumes that a company spends \$20,000 on capital expenditures in its first year, with depreciation expense calculated using a half year straight-line convention. Using the same methodology for different growth rates and different average depreciable life years, Armentrout obtains results similar to Matthews' and Abrams.<sup>9</sup> For instance, with average depreciable lives of 15 years and 10 years and a capx growth rate of 5%, capx will exceed depreciation by 41% and 26% respectively.

The literature is consistent. Under reasonable assumptions, capx exceeds depreciation and thus reduces cash flow, affirming that making the assumption that capx = depreciation will lead to an upwardly biased value, other things equal.

### Empirical Analysis of Capx and Depreciation

This article provides empirical evidence regarding what has actually occurred among companies over the

long-term and across industries. Interestingly, it confirms the theoretical models of Matthews, Abrams, and Armentrout when using reasonable assumptions. Because this analysis covers 16 years and hundreds of companies, it provides guidance regarding what are reasonable expectations regarding the long-term relationship between capx and depreciation. This information can be used to develop more realistic cash flow assumptions when the capitalized income method is employed for valuation or when estimating the terminal value in the DCF method. By their very nature, these calculations must be long-term in their assumptions, since they are based on the growing perpetuity valuation model. Thus, the empirical data we present provide important information for those using the Gordon Growth model.

In addition to analyzing capx and depreciation trends across industries, we also examine the relationship between capx-to-sales and depreciation-to-sales to understand how, on an historical basis, capx and depreciation are related to sales. These ratios provide the reader with an idea of the magnitude of the relative size of depreciation and capx. This is a new issue and it was not covered in the above-mentioned articles published in *Business Valuation Review* and *Business Valuation Update*.

### Sample

The initial sample comprised 675 companies. We selected these companies from the *Compustat* database. We chose all the companies in the two-digit Standard Industrial Classification ("SIC") codes (from 10 through 89) from 1986 through 2001 and downloaded for each of them, capx, depreciation and sales for each year. We used these data to calculate capx/depreciation, capx/sales and depreciation/sales for each company through the period 1986-2001. Then, for each company we calculate the mean of each ratio from 1986 through 2001. Once we sorted each ratio by the mean, for the analysis across all industries, we dropped the companies in to the 1000 SIC (Metal Mining) code, because of the many extreme values in this industry. We also dropped all the companies with zero values and the top 5%, as outliers. (However, we do present the data for SIC 1000 in the industry analysis.) After all these adjustments, 524 companies remained.

Two different analyses are developed in this article:

- 1) *Capx-to-depreciation over the long-term period across all industries, and*
- 2) *Capx-to-depreciation over the long-term by industry.*

### Capx-to-Depreciation Across All Industries

Table 1 shows capx-to-depreciation by year across all industries. Using the companies in each industry, we calculate the mean and the median values by industry from 1986 through 2001. Then we calculate for each year the mean of the industry means and the median of the industry medians. All the industries' means and medians are used to calculate the 16 years' overall mean and median. Table 1 provides the results for all industries year by year.

This analysis shows that across all industries over 16 years, the median amount that capx exceeded depreciation was 21%. Because the mean value was 113%, we feel that the median annual value is more representative than the mean over time because the mean is upwardly biased. Rarely does the ratio approach zero, but given the cyclical nature of capx, there can be large individual annual values that shift the annual mean. The median capx/depreciation value over 16 years of operations, of all two digit SIC code companies, was 1.21. *See Table 1 and Chart 1.* This value is similar to the values developed by Matthews and Abrams, which are respectively 23.8% and 25.6%.

### Capx-to-Sales and Depreciation-to-Sales Across All Industries

Tables 2 and 3 are calculated like Table 1. As we noted above, the capx/sales and depreciation/sales median values are also more meaningful than the mean values because of the uneven nature of capx spending. The capx/sales and depreciation/sales medians for 16 years of operations, across all two digit SIC code industries, are respectively 0.05 and 0.04. These values, on an historical basis, are relatively stable and show that as sales increase over time, the relationship between sales and capx and depreciation remain stable. This result ties with capx/depreciation because 0.05 is 20% greater than 0.04. *See Tables 2 and 3 and Charts 2 and 3.* This information is important to give an idea of the magnitude of capx and depreciation. If a company's net margin was 5% of sales exceeded depreciation by 1% of sales, then net cash flows would be reduced by 20%. Thus, assuming capx = depreciation would overstate value by 25%.

### Capx-to-Depreciation Over the Long-term by Industry

This section is the focus of this article. Table 4 shows that, on an historical basis, capx has exceeded depreciation, for each industry, and the amount varies by

industry. Here, companies are grouped by two-digit SIC codes, and the mean and the median for each company's ratio, from 1986 through 2001, are calculated. Next, we calculate the mean of all the companies' means grouped by SIC codes. The same process has been applied to calculate the median of the medians and the median of the means. We feel that on an industry-by-industry basis, the median of the company means presents a better summary of the long-term industry relationships between capx/depreciation, capx/sales and depreciation/sales because the means better reflect the long-term behavior of companies over business cycles.

For example, due to these fluctuations, in the real estate industry (SIC 6500) the ratio (capx/depreciation) mean of the company means is higher (4.33) than the median of the means (1.61). In the Tobacco Products and Leather Products Industry (SIC 3100) the ratio (capx/depreciation) mean of the means and median of the means present lower and more similar values, 1.18 and 1.03 respectively, because companies in this industry do not make relatively large investments in fixed assets in a given year. However, the mean of the means of the companies in the SIC code 1000, metal mining, is 154.56, much higher than the median of the means, which was 2.52. This is the reason this industry was not included in the cross sectional statistics for all companies because it would skew the results. This high value suggests that in the mining industry, significant, large investments are made up front and depreciated slowly. *See Table 4 and Chart 4.*

### Capx-to-Sales and Depreciation-to-Sales by Industry

Table 5 shows the capx/sales by industry. In most industries, capx represents a small percentage of sales (around 10% or less). Only in three industries, excluding the 1000 SIC code is capx greater than 40% of sales. The medians of the company means by industry present less divergent values. *See Table 5 and Chart 5.*

Table 6 and Chart 6 show the depreciation/sales mean of the means by industry. They show that in most industries, the ratio is generally below 10%, except for the SIC code 1000, metal mining. It shows that, over the long-term, most companies in these industries generally depreciated their fixed assets at a very low rate compared to the sales levels. The median of the means by industry presents less dispersed values, which show that depreciation-to-sales is similar across industries over the long term.

The standard deviation has been calculated for each SIC code in order to show the variation among all the companies in the same SIC code. The coefficient of variation is a standardized measure of dispersion, calculated as standard deviation/mean. The coefficient of variation shows the relative stability of capx/depreciation, capx/sales and depreciation/sales among the companies in the same SIC code.

### Application of the Data to Valuation

To show how the relationships between capx and depreciation can affect the value of the companies in different industries, we develop two examples. The amount that operating income (and therefore value) is overstated when capx is assumed to equal depreciation can be calculated as:

$$\frac{EBITDA}{Sales} + \left[ \frac{EBITDA}{Sales} - \left\{ \frac{Depreciation}{Sales} \times \left( \frac{CapX}{Depreciation} - 1 \right) \right\} \right]$$

Where:

*Capex/Depreciation* = the long-term average of capx to depreciation – see Table 4, and

*Depreciation/Sales* = The long-term average of depreciation to sales – see Table 6.

The denominator reduces to:

$$\left[ \frac{EBITDA}{Sales} - \left( \frac{CapX}{Sales} - \frac{Depreciation}{Sales} \right) \right], \text{ which is}$$

the after-capX margin.

#### Example 1: SIC 2300 Apparel Industry

The five-year average operating margin (EBITDA/Sales) for a company in this industry is 6.35%.<sup>9</sup>

Capx/Depreciation = 1.66 (see Table 4)

Depreciation/Sales = 0.02 (see Table 6)

By substituting the figures in the previous formula we get:

$$0.0635 - (0.02) \times (0.66) = 0.0635 - 0.0132 = 0.0503$$

$$0.0635/0.0503 = 1.26.$$

This shows that, if one assumes depreciation equals capx, value is overstated, on average by 26% in the apparel industry

#### Example 2: SIC 2000 Hotel, Rooming Houses, Camps

The five-year average operating margin (EBITDA/Sales) for a company in this industry is 21.49%.<sup>10</sup>

Capx/Depreciation = 2.14 (see Table 4)

Depreciation/Sales = 0.06 (see Table 6)

By substituting the figures in the previous formula we get:

$$0.2149 - (0.06) \times (1.14) = 0.2149 - 0.0684 = 0.1465$$

$$0.2149/0.1465 = 1.47.$$

This shows that, if one assumes capx equals depreciation, the value is overstated on average by 47% in the Hotel, Rooming Houses and Camps industry. Generally, the more capital-intensive the industry, the higher its growth and the lower its operating margin, the greater the impact on value.

### Summary

This study shows that capx has consistently exceeded depreciation across industries over the long-term, and sometimes by a significant amount. Using real world data, our results suggest that those using the Gordon Growth model who assume that depreciation equals capx overstate company values. Likewise, those who use a discounted cash flow model without taking this into account, overstate values. Depending on the industry, profitability and growth, the overstatement can be significant. This article provides valuable long-term empirical data by industry that can be used by analysts for valuation.

Because this study uses 16 years of data, its results should be valuable for analysts who need to make the long-term projections assumed in the Gordon Growth model. In the Discounted Cash Flow model, the short-term may be foreseeable and deviate from the long term, and annual values of capx and depreciation can be explicitly forecasted, but this is not sufficient. If the analyst assumes that capx = depreciation using a Gordon Growth model for the terminal value, this will also result in a wrong answer for the Discounted Cash Flow model. When using the capitalized income method or calculating a terminal value with the DCF model, the best estimates of future long-term behavior of a company very well may be what has happened in its industry in the past over the long-term (unless the analyst has good reasons to assume otherwise). This article provides a valuable reference to business appraisers and financial analysts by showing the long-term relationships between capx and depreciation by industry.

## Endnotes

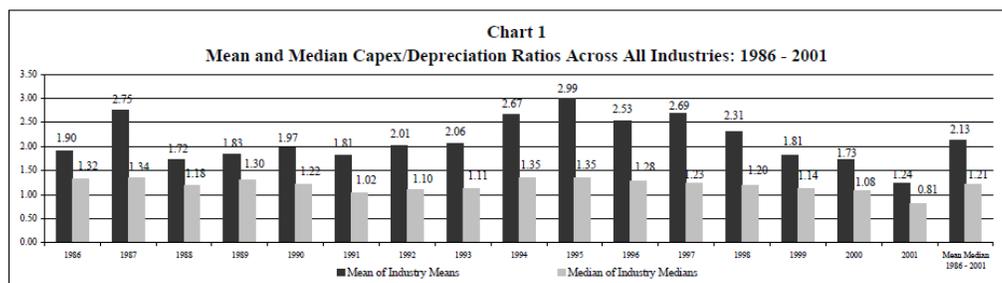
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**Table 1**  
Annual CapX to Depreciation Ratios Across All Industries: 1986-2001

Year	Mean of Industry Means	Median of Industry Medians
1986	1.90	1.32
1987	2.75	1.34
1988	1.72	1.18
1989	1.83	1.30
1990	1.97	1.22
1991	1.81	1.02
1992	2.01	1.10
1993	2.06	1.11
1994	2.67	1.35
1995	2.99	1.35
1996	2.53	1.28
1997	2.69	1.23
1998	2.31	1.20
1999	1.81	1.14
2000	1.73	1.08
2001	1.24	0.81
<b>1986-2001</b>	<b>2.13</b>	<b>1.21</b>

(Mean) (Median)

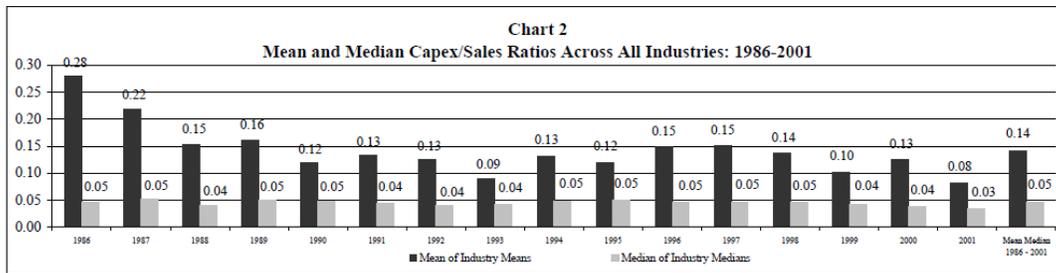


**Table 2**  
Annual CapX to Sales Ratios Across All Industries: 1986-2001

Years	Mean of Industry Means	Median of Industry Medians
1986	0.28	0.05
1987	0.22	0.05
1988	0.15	0.04
1989	0.16	0.05
1990	0.12	0.05
1991	0.13	0.04
1992	0.13	0.04
1993	0.09	0.04
1994	0.13	0.05
1995	0.12	0.05
1996	0.15	0.05
1997	0.15	0.05
1998	0.14	0.05
1999	0.10	0.04
2000	0.13	0.04
2001	0.08	0.03
<b>1986-2001</b>	<b>0.14</b>	<b>0.05</b>

(Mean)

(Median)

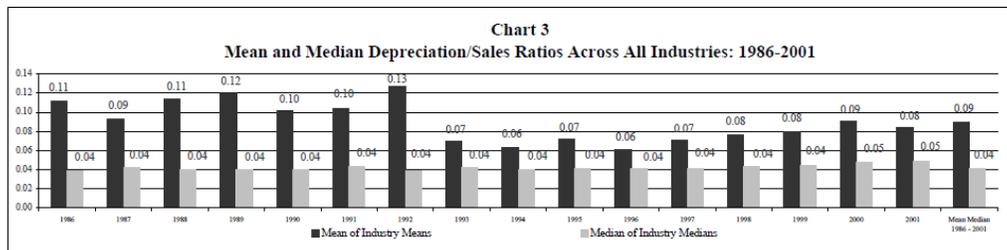


**Table 3**  
Annual Depreciation to Sales Ratios Across All Industries: 1986-2001

Years	Mean of Industry Means	Median of Industry Medians
1986	0.11	0.04
1987	0.09	0.04
1988	0.11	0.04
1989	0.12	0.04
1990	0.10	0.04
1991	0.10	0.04
1992	0.13	0.04
1993	0.07	0.04
1994	0.06	0.04
1995	0.07	0.04
1996	0.06	0.04
1997	0.07	0.04
1998	0.08	0.04
1999	0.08	0.04
2000	0.09	0.05
2001	0.08	0.05
<b>1986-2001</b>	<b>0.09</b>	<b>0.04</b>

(Mean)

(Median)

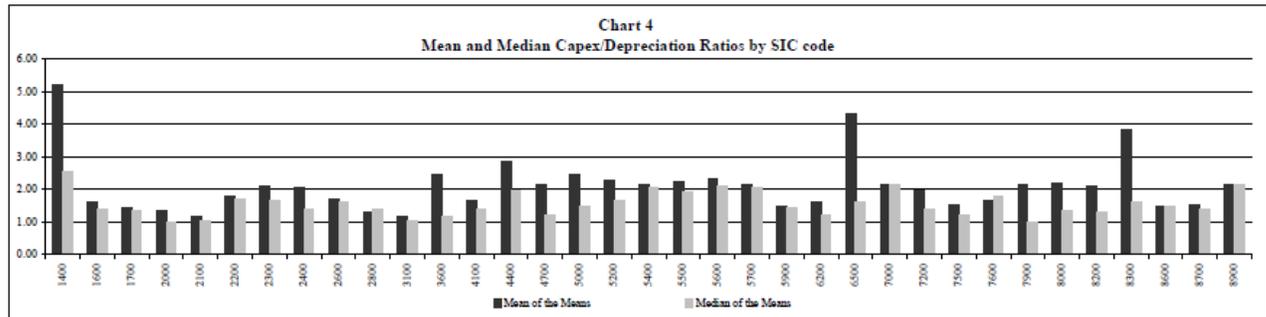


**Table 4**  
Capex/Depreciation by Industry : 1986-2001

Number of Companies	SIC	SIC Description	Mean of Company Means	Median of Company Medians	Median of Company Means	Standard Deviation	Coefficient of Variation
93	1000	Metal Mining	154.56	2.52	3.1	864.39	5.59
18	1400	Mining And Quarrying Of Nonmetallic Minerals	5.24	1.89	2.56	5.27	1.01
17	1600	Heavy Construction	1.62	1.24	1.38	0.80	0.50
15	1700	Construction Special Trade Contractors	1.44	0.97	1.36	1.03	0.72
14	2000	Food And Kindred Products	1.35	0.97	0.98	1.08	0.80
3	2100	Tobacco Products	1.18	1.05	1.03	0.30	0.25
12	2200	Textile Mill Products	1.80	1.48	1.71	1.10	0.61
20	2300	Apparel And Other Finished Products	2.10	1.22	1.66	1.56	0.74
15	2400	Lumber And Wood Products	2.07	1.16	1.37	1.51	0.73
3	2600	Paper And Allied Products	1.70	0.98	1.60	0.33	0.19
8	2800	Chemicals And Allied Products	1.30	1.41	1.40	0.31	0.24
9	3100	Leather And Leather Products	1.18	1.02	1.03	0.43	0.37
8	3600	Electronic And Other Electrical Equipment	2.47	1.11	1.18	3.37	1.36
13	4100	Local And Suburban Transit And Highway	1.64	1.23	1.41	0.75	0.46
29	4400	Water Transportation	2.86	1.12	1.95	2.77	0.97
15	4700	Transportation Services	2.12	0.98	1.21	1.95	0.92
27	5000	Wholesale Trade-durable Goods	2.47	0.79	1.46	3.67	1.49
14	5200	Building Materials, Hardware, Garden Supply	2.29	1.35	1.67	2.22	0.97
5	5400	Food Stores	2.16	0.91	2.08	1.31	0.61
23	5500	Automotive Dealers And Gasoline Stations	2.23	1.55	1.93	1.25	0.56
12	5600	Apparel And Accessory Stores	2.33	2.22	2.09	1.18	0.51
14	5700	Home Furniture, Furnishings	2.14	1.59	2.08	0.98	0.46
14	5900	Miscellaneous Retail	1.49	0.80	1.44	0.80	0.54
15	6200	Security And Commodity Brokers, Dealers,	1.61	0.96	1.21	1.42	0.89
16	6500	Real Estate	4.33	1.00	1.61	5.31	1.23
2	7000	Hotels, Rooming Houses, Camps	2.14	1.93	2.14	1.42	0.67
39	7200	Personal Services	1.95	1.05	1.38	2.12	1.08
16	7500	Automotive Repair, Services, And Parking	1.52	1.06	1.21	1.04	0.68
5	7600	Miscellaneous Repair Services	1.66	0.64	1.77	0.74	0.45
12	7900	Amusement And Recreation Services	2.12	0.53	0.98	2.70	1.27
21	8000	Health Services	2.18	1.05	1.34	2.15	0.99
56	8200	Educational Services	2.11	1.15	1.31	2.91	1.38
18	8300	Social Services	3.84	0.92	1.61	4.08	1.06
1	8600	Membership Organizations	1.49	1.03	1.49	0.00	0.00
14	8700	Engineering, Accounting, Research,	1.51	1.09	1.37	0.80	0.53
1	8900	Services - Services, NEC	2.15	2.15	2.15	0.00	0.00

Note:

Means and Medians are calculated by Industry over the 1986-2001 time period. The industry means are the means of the individual company means. The industry medians are the medians of the individual

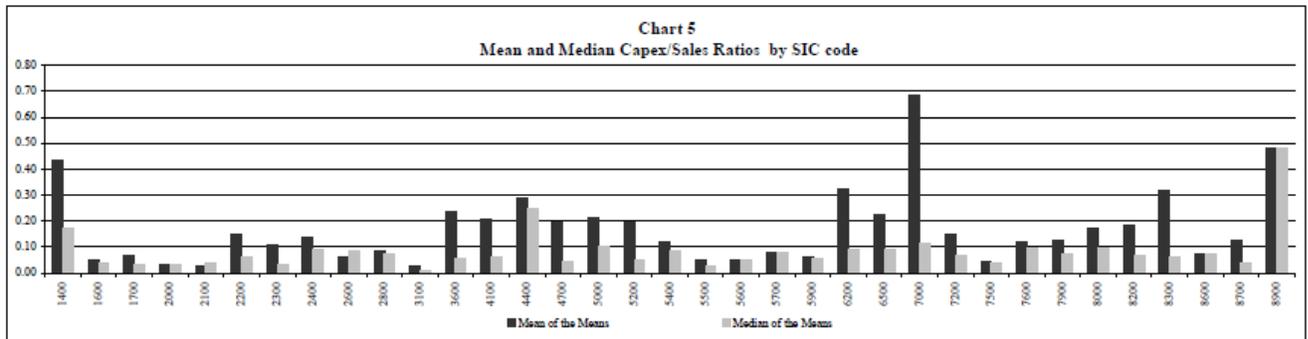


**Table 5**  
**Capex/Sales by Industry : 1986-2001**

Number of Companies	SIC	SIC Description	Mean of Company Means	Median of Company Medians	Median of Company Means	Standard Deviation	Coefficient of Variation
93	1000	Metal Mining	25.07	0.13	0.16	113.48	4.53
28	1400	Mining And Quarrying Of Nonmetallic Minerals	0.43	0.13	0.17	0.58	1.34
17	1600	Heavy Construction	0.05	0.04	0.04	0.07	1.35
15	1700	Construction Special Trade Contractors	0.07	0.03	0.03	0.09	1.34
11	2000	Food And Kindred Products	0.03	0.03	0.03	0.01	0.44
3	2100	Tobacco Products	0.03	0.04	0.04	0.02	0.65
12	2200	Textile Mill Products	0.15	0.05	0.06	0.22	1.50
20	2300	Apparel And Other Finished Products	0.11	0.03	0.03	0.21	2.02
15	2400	Lumber And Wood Products	0.14	0.08	0.09	0.11	0.78
3	2600	Paper And Allied Products	0.06	0.07	0.08	0.04	0.69
9	2800	Chemicals And Allied Products	0.09	0.07	0.08	0.03	0.39
9	3100	Leather And Leather Products	0.02	0.01	0.01	0.02	0.84
8	3600	Electronic And Other Electrical Equipment	0.24	0.04	0.06	0.52	2.18
11	4100	Local And Suburban Transit And Highway	0.21	0.07	0.06	0.31	1.49
25	4400	Water Transportation	0.29	0.13	0.25	0.21	0.74
17	4700	Transportation Services	0.19	0.04	0.04	0.20	1.05
14	5000	Wholesale Trade-durable Goods	0.21	0.03	0.10	0.26	1.27
12	5200	Building Materials, Hardware, Garden Supply	0.20	0.03	0.05	0.36	1.86
5	5400	Food Stores	0.12	0.08	0.09	0.08	0.69
23	5500	Automotive Dealers And Gasoline Stations	0.05	0.02	0.03	0.07	1.34
12	5600	Apparel And Accessory Stores	0.05	0.05	0.05	0.03	0.49
13	5700	Home Furniture, Furnishings	0.08	0.04	0.08	0.11	1.30
14	5900	Miscellaneous Retail	0.06	0.04	0.06	0.04	0.57
13	6200	Security And Commodity Brokers, Dealers,	0.32	0.05	0.09	0.56	1.72
10	6500	Real Estate	0.22	0.05	0.09	0.29	1.35
3	7000	Hotels, Rooming Houses, Camps	0.68	0.06	0.11	1.07	1.56
32	7200	Personal Services	0.15	0.04	0.07	0.18	1.24
12	7500	Automotive Repair, Services, And Parking	0.04	0.02	0.04	0.03	0.78
5	7600	Miscellaneous Repair Services	0.12	0.04	0.10	0.09	0.75
11	7900	Amusement And Recreation Services	0.13	0.04	0.08	0.14	1.10
12	8000	Health Services	0.17	0.07	0.10	0.19	1.13
48	8200	Educational Services	0.18	0.05	0.07	0.30	1.66
17	8300	Social Services	0.32	0.04	0.06	0.41	1.29
1	8600	Membership Organizations	0.07	0.06	0.07	N/A	N/A
15	8700	Engineering, Accounting, Research,	0.13	0.03	0.04	0.27	2.11
1	8900	Services - Services, NEC	0.48	0.48	0.48	N/A	N/A

Note:

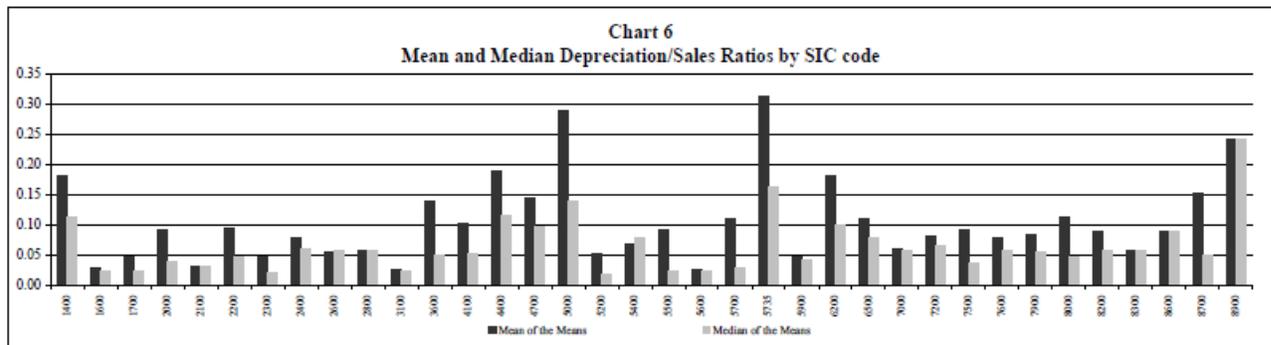
Means and Medians are calculated by Industry over the 1986-2001 time period. The industry means are the means of the individual company means. The industry medians are the medians of the individual



**Table 6**  
Depreciation/Sales by Industry : 1986-2001

Number of Companies	SIC	SIC Description	Mean of Company Means	Median of Company Medians	Median of Company Means	Standard Deviation	Coefficient of Variation
65	1000	Metal Mining	1.07	0.12	0.13	3.66	3.41
20	1400	Mining And Quarrying Of Nonmetallic Minerals	0.18	0.10	0.11	0.16	0.90
18	1600	Heavy Construction	0.03	0.02	0.02	0.02	0.74
15	1700	Construction Special Trade Contractors	0.05	0.03	0.02	0.04	0.74
14	2000	Food And Kindred Products	0.09	0.03	0.04	0.17	1.81
2	2100	Tobacco Products	0.03	0.03	0.03	0.01	0.34
11	2200	Textile Mill Products	0.09	0.04	0.05	0.10	1.10
19	2300	Apparel And Other Finished Products	0.05	0.02	0.02	0.07	1.46
15	2400	Lumber And Wood Products	0.08	0.06	0.06	0.07	0.84
3	2600	Paper And Allied Products	0.06	0.06	0.06	0.01	0.17
10	2800	Chemicals And Allied Products	0.06	0.06	0.06	0.01	0.22
8	3100	Leather And Leather Products	0.03	0.02	0.02	0.02	0.65
8	3600	Electronic And Other Electrical Equipment	0.14	0.05	0.05	0.25	1.82
13	4100	Local And Suburban Transit And Highway	0.10	0.05	0.05	0.10	0.93
31	4400	Water Transportation	0.19	0.09	0.12	0.27	1.42
18	4700	Transportation Services	0.15	0.07	0.10	0.16	1.10
25	5000	Wholesale Trade-durable Goods	0.29	0.12	0.14	0.37	1.28
10	5200	Building Materials, Hardware, Garden Supply	0.05	0.02	0.02	0.10	1.86
5	5400	Food Stores	0.07	0.06	0.08	0.04	0.55
17	5500	Automotive Dealers And Gasoline Stations	0.09	0.02	0.03	0.25	2.71
13	5600	Apparel And Accessory Stores	0.03	0.02	0.02	0.01	0.33
14	5700	Home Furniture, Furnishings	0.11	0.03	0.03	0.24	2.22
14	5900	Miscellaneous Retail	0.05	0.04	0.04	0.02	0.39
15	6200	Security And Commodity Brokers, Dealers, Real Estate	0.18	0.06	0.10	0.26	1.42
16	6500	Hotels, Rooming Houses, Camps	0.11	0.06	0.08	0.10	0.91
4	7000	Hotels, Rooming Houses, Camps	0.06	0.05	0.06	0.04	0.67
38	7200	Personal Services	0.08	0.05	0.07	0.08	0.95
18	7500	Automotive Repair, Services, And Parking	0.09	0.03	0.04	0.23	2.44
5	7600	Miscellaneous Repair Services	0.08	0.05	0.06	0.05	0.60
14	7900	Amusement And Recreation Services	0.08	0.05	0.05	0.07	0.82
23	8000	Health Services	0.11	0.04	0.05	0.32	2.84
50	8200	Educational Services	0.09	0.05	0.06	0.10	1.10
21	8300	Social Services	0.06	0.06	0.06	0.04	0.67
1	8600	Membership Organizations	0.09	0.06	0.09	N/A	N/A
15	8700	Engineering, Accounting, Research, Services - Services, NEC	0.15	0.04	0.05	0.32	2.05
1	8900	Services - Services, NEC	0.24	0.24	0.24	N/A	N/A

*Note:*  
Means and Medians are calculated by Industry over the 1986-2001 time period. The industry means are the means of the individual company means. The industry medians are the medians of the individual



# Chapter 8. Reconciliation of Indicated Values

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## Section A. Addressing Disparities between Market and Income Approach

1. **Need for Reconciliation of Values** – In the event that the value indications are not reasonably close to each other:
  - A. Review the math (check for simple linking or logic errors)
2. Income (Discounted Cash Flow) Approach
  - A. Review the projections used in the income approach
    - (1) Is projected growth in turnover and resulting gross margins and operating margins reasonable?
    - (2) Is the projected growth in line with overall industry outlook?
    - (3) Are the assumptions around future working capital and capital asset requirements supported? (Even the largest of companies often have a hard time projecting working capital requirements – particularly in cyclical industries)
    - (4) Review the discount rate used and the capitalization rate used in arriving at your terminal value. Is terminal growth rate reasonable?
      - (a) Do the rates reflect the risks associated with the Subject Company?
      - (b) Is projected ROIC for the Subject Company reasonable in the context of industry performance? If not can you justify why it is higher or lower?
      - (c) Is the assessment of risk incorporated into your DCF approach consistent with your treatment of risk in guideline approach?
  - B. Perform a sensitivity analysis. How sensitive is the value range to slight changes in the discount rate?
3. Market (Guideline Company) Approach
  - A. Review your selection of guideline companies. Are they truly comparable?
  - B. Review the risk adjustments made to guideline market multiples
  - C. Have Enterprise Value multiples been adjusted to reflect differing levels of non-cash working capital?

- D. Have Guideline Multiples been adjusted to reflect non-operating (redundant) assets? (Often market multiples are calculated without consideration of non-operating assets.)
  - E. Have the Guideline Multiples been adjusted to reflect differences between the net book value and FMV of debt (Multiples are often calculated based on the assumption that the NBV of debt = the FMV. This may not be the case for companies in financial difficulty.)
  - F. Consider other adjustments
    - (1) EBITDA and EBIT multiples: Growth, risk and size
    - (2) Sales multiples: Growth, risk, size and profit margin
    - (3) Enterprise price to book ratio: Growth, risk, size and ROIC
    - (4) Price to book ratio: Growth, risk, size and leverage
  - G. Consider External Factors
    - (1) Cyclical industries (What point in the cycle does valuation date fall?)
    - (2) Extreme market conditions
    - (3) Adequacy of data (Do you have enough data to properly evaluate the guideline public company?)
    - (4) Is the prospective financial information provided by management objective and plausible (i.e., worthy of belief)?
    - (5) Based on the above noted external factors should one of more approaches be de-emphasized?
4. Reaching a Final Conclusion
- A. At the end of the day your report must clearly and concisely explain why your conclusion is correct. If you haven't done so ... your job isn't done.
  - B. Reconciling different methods requires a significant amount of judgment and experience.
  - C. Avoid mindless averaging of approaches.
  - D. Often there are large disparities between the indicated values from the income and market approaches due to fundamental differences in the assessment of either risk ("k") or growth ("g"). The problem arises from the valuation methodologies that force the valuer to explicitly assess both risk and growth

under the income approach, but while these two fundamental value drivers are only covertly assessed in applying a market capitalization multiple ( $1/k-g$ ).

Exercise 8-1. Reconciling Market and Income Approaches for APS Value

**Exercise 8-1:** Using your conclusions of value for APS-India under the Guideline Public Company Method (Chapter 5) and under the DCF Method (Chapter 7), reconcile these value indications to one value.

**Problem 8-1.1:** Begin your discussion by comparing the strengths and weaknesses of the GPC Method (Chapter 5) and the DCF Method (Chapter 7) for APS.

Guideline Public Company Method

GPC Method

Indicated Value:

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Number of Companies Chosen:

---

Comparison Subject/Comps:

---

---

Multiples Chosen:

---

Time Period (LTM?):

---

Multiples Adjustments

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Why?

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Strengths:

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Weaknesses:

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## Multi-period Discounted Cash Flow Method

Length of Interim: \_\_\_\_\_ Interim Sales Growth: \_\_\_\_\_ Terminal Growth: \_\_\_\_\_

Int. Net Margin: \_\_\_\_\_ Int. Total Asset Turnover: \_\_\_\_\_ Interim ROI: \_\_\_\_\_

Trm. Net Margin: \_\_\_\_\_ Trm. Total Asset Turnover: \_\_\_\_\_ Trm. ROI: \_\_\_\_\_

WAAC: \_\_\_\_\_ Cost of Equity: \_\_\_\_\_ Indicated Value: \_\_\_\_\_

Strengths:

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Weaknesses:

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Reconcile the indicated values – What factors did you consider?

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## Exercise 8-2: Difficulties When Value is Less Than Reported Book Value

**Exercise 8-2:** Concluding that the equity value of an operating company is less than its carrying value can be perceived as making a strong negative statement about the business.

**Problem 8-2.1:** Review the following factors and reconcile the concluded equity value with book value.

- Concluded range of equity values (DCF approach): €43.5 million to €48.7 million





# Chapter 9. International Valuation Standards

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**Business valuation standards have been established by professional valuation organizations (PVOs) since the late 1970s in North America. Also at this time, there was an effort to write business valuation standards that could be applied on an international basis. The current result of this effort is the International Valuation Standards Council (IVSC).**

## **Section A. About the International Valuation Standards Council**

1. The IVS website states:
  - A. The International Valuation Standards Council (IVSC) is an independent, not-for-profit organisation that acts as the global standard setter for valuation practice and the valuation profession, serving the public interest.
  - B. It is a leader in the mission to raise standards of internal valuation practice. Its core objectives are to: develop high quality International Valuation Standards (IVS) which underpin consistency, transparency and confidence in valuations across the world, and encourage the adoption of IVS across the globe, along with professionalism provided by Valuation Professional Organisations.
  - C. IVSC facilitates collaboration and cooperation among its member organisations, who are valuation practitioners, financial services businesses, NGOs, regulators and academic institutions. IVSC consists of nearly 100 member organisations from around the world and is supported by 18 sponsors. These include the world's leading accountancy and valuation firms, professional bodies and other important global organisations.
2. The IVSC was started in late 1970s when discussions between representatives of the UK and US valuation profession led to the founding of the International Assets Valuation Standards Committee (TIAVSC) in 1981. The Committee changed its name in 1994 to the International Valuation Standards Committee (IVSC).
3. Due to continuous changes in the valuation environment, the IVSC, in 2007, published proposals for a radical restructuring to transform the IVSC from a committee of representatives of its member valuation organizations into an independent body that was accepted and went operational in 2008. At this time the organization's name was changed to the International Valuation Standards Council.
4. Membership of the IVSC is open to users, providers, professional bodies, educators and regulators of valuation services.
5. Structure and Objective of the IVSC

- A. IVSC Board of Trustees - The IVSC is governed by the IVSC Board of Trustees which is responsible for the governance, strategic direction and funding of the IVSC and for appointments to and oversight of the technical boards. The Board consists of a minimum of ten and a maximum of fifteen persons. The Trustees are elected by the members for a term of three years and may be re-elected for one further three year term. Trustees are also expected to play an ambassadorial role to achieve buy-in and recognition of International Valuation Standards.
- (1) Under the IVSC Board of Trustees are the following operational and technical boards:
    - (a) Membership and Standards Recognition Board – its mission is to secure greater recognition of the IVSC’s International Valuation Standards and to increase the level of valuation professionalism throughout the world.
    - (b) Standards Review Board – its mission to write the IVSC’s International Valuation Standards. It performs this fundamental function by meeting and collaborating with valuation professional organizations, practitioners and users of valuation worldwide. Underneath the Standards Review Board there are currently two technical boards:
      - (c) Business Valuation Standards Board, and
      - (d) Tangible Assets Board
      - (e) In addition, the Standards Review Board is reviewing the need to establish a Financial Instruments Board.
- B. **The Objective of the IVS** is to increase the confidence and trust of users of valuation services by establishing transparent and consistent valuation practices. A standard will do one or more of the following:
- (1) identify or develop globally accepted principles and definitions,
  - (2) identify and promulgate considerations for the undertaking of valuation assignments and the reporting of valuations,
  - (3) identify specific matters that require consideration and methods commonly used for valuing different types of assets or liabilities.

## Section B. IVSC International Valuation Standards 2017

1. The following discussion is a summary of the IVS 2017 standards.
  - A. In January 2017, the International Valuation Standards 2017 (IVS) were issued. The introduction to the 2017 standards states:

- (1) Valuations are widely used and relied upon in financial and other markets, whether for inclusion in financial statements, for regulatory compliance or to support secured lending and transactional activity. The IVSC is committed to advancing quality in the valuation profession. We are an independent, not-for-profit, private sector organisation. Our primary objective is to build confidence and public trust in valuation by producing standards and securing their universal adoption and implementation for the valuation of assets across the world.
  - B. The IVS consist of mandatory requirements that must be followed in order to state that a valuation was performed in compliance with the IVS. Certain aspects of the standards do not direct or mandate any particular course of action, but provide fundamental principles and concepts that must be considered in undertaking a valuation.
  - C. The IVSC Standards Board intends to continuously review the IVS and update or clarify the standards as needed to meet stakeholder and market needs. The Board has continuing projects that may result in additional standards being introduced or amendments being made to the standards in this publication at any time. News on current projects and any impending or approved changes can be found on the IVSC website at [www.ivsc.org](http://www.ivsc.org).
2. Structure of IVS 2017
- A. IVS Glossary. The Glossary defines certain terms used in the IVS but does not attempt to define basic valuation, accounting or finance terms, as *valuers* are assumed to have an understanding of such terms.
  - B. IVS Framework. The IVS Framework serves as a preamble to the IVS. The IVS Framework consists of general principles for valuers following the IVS regarding objectivity, judgement, competence and acceptable departures from the IVS.
  - C. IVS General Standards. The IVS General Standards set forth requirements for the conduct of all valuation assignments including establishing the terms of a valuation engagement, bases of value, valuation approaches and methods, and reporting. They are designed to be applicable to valuations of all types of assets and for any valuation purpose.
    - (1) IVS iiBV201 Scope of Work - A scope of work (sometimes referred to as terms of engagement) describes the fundamental terms of a valuation engagement such as the *asset(s)* being valued, the *purpose of the valuation* and the responsibilities of parties involved in the valuation.
      - (a) This standard is intended to apply to a wide spectrum of valuation assignments, including:

- ◆ valuations performed by *valuers* for their own employers (“in-house valuations”),
  - ◆ valuations performed by *valuers* for *clients* other than their employers (“third-party valuations”), and
  - ◆ valuation reviews where the reviewer may not be required to provide their own opinion of value.
- (2) IVS iiBV202 Investigations and Compliance - To be compliant with IVS, valuation assignments, including valuation reviews, must be conducted in accordance with all of the principles set out in IVS that are appropriate for the purpose and the terms and conditions set out in the scope of work.
- (3) IVS 103 Reporting - It is essential that the valuation report communicates the information necessary for proper understanding of the valuation or valuation review. A report must provide the intended users with a clear understanding of the valuation.
- (4) IVS 104 Bases of Value - Compliance with this mandatory standard requires a valuer to select the appropriate basis (or bases) of value and follow all applicable requirements associated with that basis of value, whether those requirements are included as part of this standard (for IVS-defined bases of value) or not (for non IVS-defined bases of value).
- (a) Bases of value (sometimes called standards of value) describe the fundamental premises on which the reported values will be based. It is critical that the basis (or bases) of value be appropriate to the terms and purpose of the valuation assignment, as a basis of value may influence or dictate a valuer’s selection of methods, inputs and assumptions, and the ultimate opinion of value.
- (5) IVS 105 Valuation Approaches and Methods - Consideration must be given to the relevant and appropriate valuation approaches. The three approaches described and defined below are the main approaches used in valuation. They are all based on the economic principles of price equilibrium, anticipation of benefits or substitution. The principal valuation approaches are:
- (a) market approach
  - (b) income approach, and
  - (c) cost approach.
  - (d) Each of these valuation approaches includes different, detailed methods of application. The goal in selecting valuation

approaches and methods for an asset is to find the most appropriate method under the particular circumstances. No one method is suitable in every possible situation.

### 3. IVS Asset Standards

- A. The Asset Standards include requirements related to specific types of assets. These requirements must be followed in conjunction with the General Standards when performing a valuation of a specific asset type. The Asset Standards include certain background information on the characteristics of each asset type that influence value and additional asset-specific requirements on common valuation approaches and methods used.
- B. IVS 200 Businesses and Business Interests - The definition of what constitutes a business may differ depending on the purpose of a valuation. However, generally a business conducts a commercial, industrial, service or investment activity. Businesses can take many forms, such as corporations, partnerships, joint ventures and sole proprietorships. The value of a business may differ from the sum of the values of the individual assets or liabilities that make up that business. When a business value is greater than the sum of the recorded and unrecorded net tangible and identifiable intangible assets of the business, the excess value is often referred to as going concern value or goodwill.
- (1) When valuing individual assets or liabilities owned by a business, valuers should follow the applicable standard for that type of asset or liability (IVS 210 Intangible Assets, IVS 400 Real Property Interests, etc.).
  - (2) Valuers must establish whether the valuation is of the entire entity, shares or a shareholding in the entity (whether a controlling or non-controlling interest), or a specific business activity of the entity. The type of value being provided must be appropriate to the purpose of the valuation and communicated as part of the scope of the engagement.
- C. IVS 210 Intangible Assets - An intangible asset is a non-monetary asset that manifests itself by its economic properties. It does not have physical substance but grants rights and/or economic benefits to its owner. Specific intangible assets are defined and described by characteristics such as their ownership, function, market position and image. These characteristics differentiate intangible assets from one another. There are many types of intangible assets, but they are often considered to fall into one or more of the following categories (or goodwill):
- (1) Marketing-related intangible assets are used primarily in the marketing or promotion of products or services. Examples include trademarks, trade names, unique trade design and internet domain names.

- (2) Customer-related intangible assets include customer lists, backlog, customer contracts, and contractual and non-contractual customer relationships.
  - (3) Artistic-related intangible assets arise from the right to benefits from artistic works such as plays, books, films and music, and from non-contractual copyright protection.
  - (4) Contract-related intangible assets represent the value of rights that arise from contractual agreements. Examples include licensing and royalty agreements, service or supply contracts, lease agreements, permits, broadcast rights, servicing contracts, employment contracts and non-competition agreements and natural resource rights.
  - (5) Technology-related intangible assets arise from contractual or non-contractual rights to use patented technology, unpatented technology, databases, formulae, designs, software, processes or recipes.
- D. IVS 300 Plant and Equipment - Items of plant and equipment (which may sometimes be categorised as a type of personal property) are tangible assets that are usually held by an entity for use in the manufacturing/production or supply of goods or services, for rental by others or for administrative purposes and that are expected to be used over a period of time.
- (1) For lease of machinery and equipment, the right to use an item of machinery and equipment (such as a right arising from a lease) would also follow the guidance of this standard. It must also be noted that the "right to use" an asset could have a different life span than the service life (that takes into consideration of both preventive and predictive maintenance) of the underlying machinery and equipment itself and, in such circumstances, the service life span must be stated.
  - (2) Assets for which the highest and best use is "in use" as part of a group of assets must be valued using consistent assumptions. Unless the assets belonging to the sub-systems may reasonably be separated independently from its main system, then the sub-systems may be valued separately, having consistent assumptions within the sub-systems. This will also cascade down to sub-sub-systems and so on.
  - (3) Intangible assets fall outside the classification of plant and equipment assets. However, an intangible asset may have an impact on the value of plant and equipment assets. For example, the value of patterns and dies is often inextricably linked to associated intellectual property rights. Operating software, technical data, production records and patents are further examples of intangible assets that can have an impact on the value of plant and equipment assets, depending on whether or not they

are included in the valuation. In such cases, the valuation process will involve consideration of the inclusion of intangible assets and their impact on the valuation of the plant and equipment assets.

- (4) A valuation of plant and equipment will normally require consideration of a range of factors relating to the asset itself, its environment and physical, functional and economic potential. Therefore, all plant and equipment valuers should normally inspect the subject assets to ascertain the condition of the plant and also to determine if the information provided to them is usable and related to the subject assets being valued.

E. IVS 400 Real Property Interests - Property interests are normally defined by state or the law of individual jurisdictions and are often regulated by national or local legislation. Before undertaking a valuation of a real property interest, a valuer must understand the relevant legal framework that affects the interest being valued. A real property interest is a right of ownership, control, use or occupation of land and buildings.

- (1) There are three main types of property interest:
  - (a) The superior interest in any defined area of land. The owner of this interest has an absolute right of possession and control of the land and any buildings upon it in perpetuity, subject only to any subordinate interests and any statutory or other legally enforceable constraints,
  - (b) A subordinate interest that normally gives the holder rights of exclusive possession and control of a defined area of land or buildings for a defined period, e.g. under the terms of a lease contract, and/or
  - (c) A right to use land or buildings but without a right of exclusive possession or control, e.g. a right to pass over land or to use it only for a specified activity.
- (2) Intangible assets fall outside the classification of real property assets. However, an intangible asset may be associated with, and have a material impact on, the value of real property assets. It is therefore essential to be clear in the scope of work precisely what the valuation assignment is to include or exclude. For example, the valuation of a hotel can be inextricably linked to the hotel brand. In such cases, the valuation process will involve consideration of the inclusion of intangible assets and their impact on the valuation of the real property and plant and equipment assets.

- (3) The immovability of land and buildings means that it is the right that a party holds that is transferred in an exchange, not the physical land and buildings. The value, therefore, attaches to the legal interest rather than to the physical land and buildings.

F. IVS 410 Development Property - In the context of this standard, development properties are defined as interests where redevelopment delivers the highest and best use, or where improvements are either being contemplated or are in progress at the valuation date and include:

- (1) the construction of buildings
- (2) previously undeveloped land which is being provided with infrastructure
- (3) the redevelopment of previously developed land
- (4) the improvement or alteration of existing buildings or structures
- (5) land allocated for development in a statutory plan
- (6) land allocated for a higher value uses or higher density in a statutory plan
- (7) Valuations of development property may be required for different purposes. It is the valuer's responsibility to understand the purpose of a valuation. A non-exhaustive list of examples of circumstances that may require a development valuation is provided below:
  - (a) when establishing whether proposed projects are financially feasible,
  - (b) as part of general consulting and transactional support engagements for acquisition and loan security,
  - (c) for tax reporting purposes, development valuations are frequently needed for ad valorem taxation analyses,
  - (d) for litigation requiring valuation analysis in circumstances such as shareholder disputes and damage calculations,
  - (e) for financial reporting purposes, valuation of a development property is often required in connection with accounting for business combinations, asset acquisitions and sales, and impairment analysis, and
  - (f) for other statutory or legal events that may require the valuation of development property such as compulsory purchases.

- G. IVS 500 Financial Instruments - A financial instrument is a contract that creates rights or obligations between specified parties to receive or pay cash or other financial consideration. Such instruments include but are not limited to, derivatives or other contingent instruments, hybrid instruments, fixed income, structured products and equity instruments. A financial instrument can also be created through the combination of other financial instruments in a portfolio to achieve a specific net financial outcome.
- (1) Valuations of financial instruments conducted can be performed for many different purposes including, but not limited to:
    - (a) acquisitions, mergers and sales of businesses or parts of businesses
    - (b) purchase and sale
    - (c) financial reporting
    - (d) legal or regulatory requirements (subject to any specific requirements set by the relevant authority)
    - (e) internal risk and compliance procedures
    - (f) tax
    - (g) litigation
  - (2) A thorough understanding of the instrument being valued is required to identify and evaluate the relevant market information available for identical or comparable instruments. Such information includes prices from recent transactions in the same or a similar instrument, quotes from brokers or pricing services, credit ratings, yields, volatility, indices or any other inputs relevant to the valuation process.