

Investment Analysis

Equity Valuation I: Macroeconomics and Industry Analysis

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Outline

- I. Introduction**
- II. Global Economy Analysis
- III. Domestic Economy Analysis
- IV. Business Cycle
- V. Industry Analysis

The Top-down and Bottom-up Approach

- Top-down analysis
 - Domestic and global economic analysis
 - Industry analysis
 - Company analysis

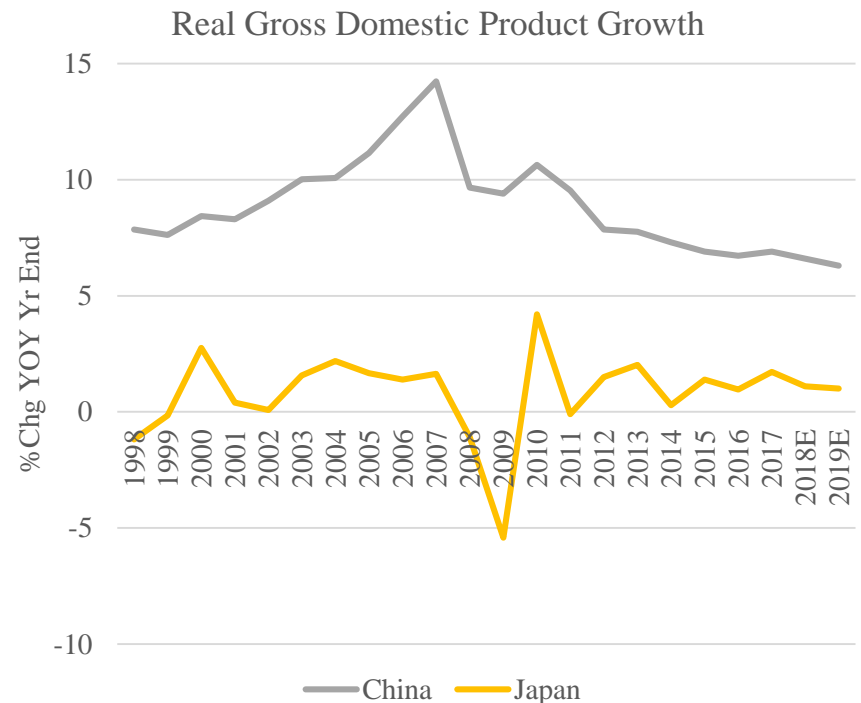
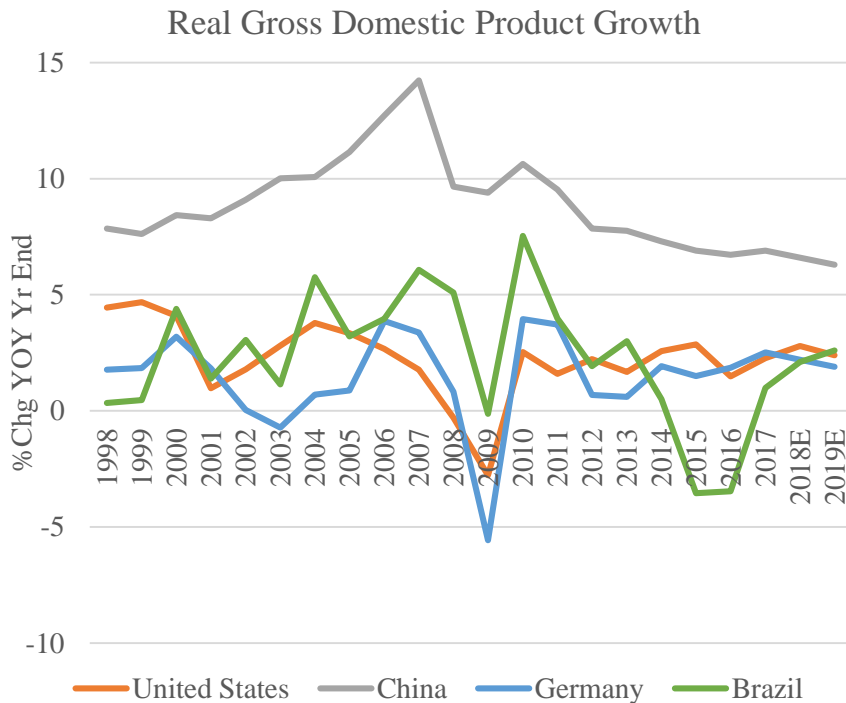
- Bottom-up analysis
 - Individual firm valuation

- Ho do you pick the best stock? / How does a company pick the best bachelor student?
 - Top-down and bottom up lead to different choices
 - What is more important – affiliation / alma mater or individual potential?

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- I. Introduction
- II. Global and Domestic Economy**
- III. Government Policy
- IV. Business Cycle
- V. Industry Analysis

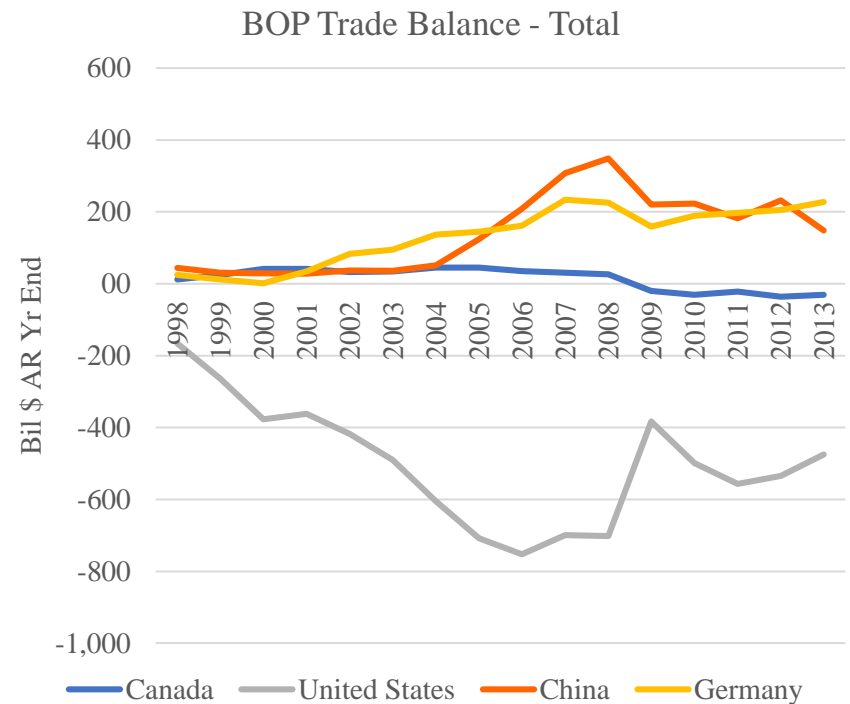
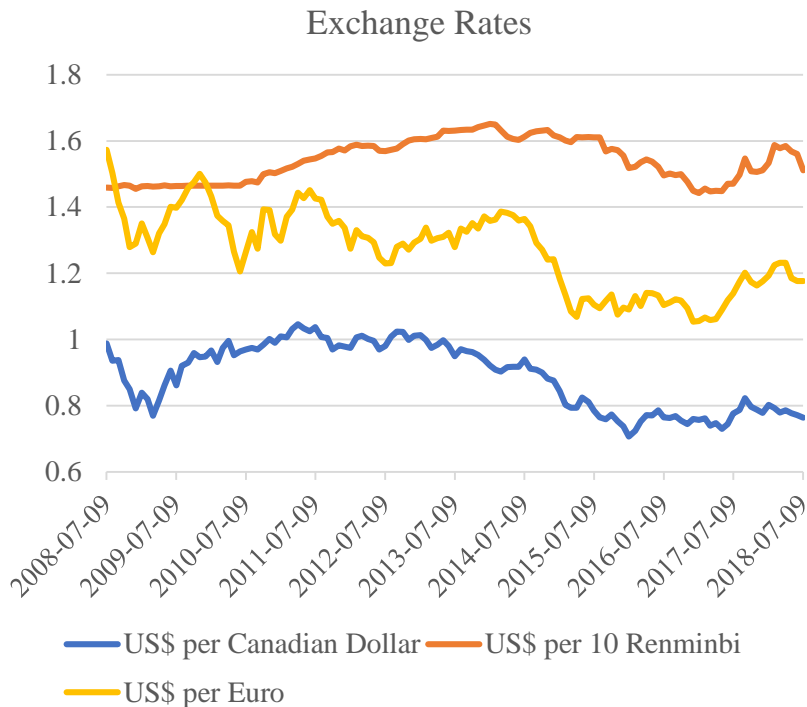
Financial and Economic Performance: GDP Growth



- Performance in countries and regions is highly variable
 - Variation in regional macroeconomic conditions are considerable
 - Variation in macroeconomic conditions across countries within one region *can* be considerable
 - Political risks can affect macroeconomic conditions considerably

Source: FactSet Economic Estimates

Exchange Rates and Trade Balance



- Foreign exchange rates affect industries that purchase factor inputs or sell their products abroad affecting: Sales → Profits → Stock Returns
- Global supply and demand affects certain globally integrated industries, e.g. logistics
- Balance of Trade shows Production(exports) minus Consumption(imports)

Source: FactSet Economic Estimates

Problems (Bodie, Ch. 15)

2. If you believe the U.S. dollar will depreciate more dramatically than other currencies do, what will be your stance on investments in U.S. auto producers?
20. If the French home currency were to greatly appreciate in value compared to the English currency, what is the likely impact on the competitive position of the East Winery?
- a. Make the firm less competitive in the English market
 - b. No impact, since the major market for East Winery is England, not France
 - c. Make the firm more competitive in the English market
31. a. If the exchange rate value of the British pound goes from US\$1.75 to US\$1.55, the pound has
- i. Appreciated and the British will find U.S. goods cheaper.
 - ii. Appreciated and the British will find U.S. goods more expensive
 - iii. Depreciated and the British will find U.S. goods more expensive
 - iv. Depreciated and the British will find U.S. goods cheaper

Problems (Bodie, Ch. 15) - Solutions

2. A depreciating dollar makes imported cars more expensive and American cars less expensive to foreign consumers. This should benefit the U.S. auto industry.

20. a. Foreign exchange rates can significantly affect the competitiveness and profitability for a given industry. For industries that derive a significant proportion of sales via exports, an appreciating currency is usually bad news because it makes the industry less competitive overseas. Here, the appreciating French currency makes French imports more expensive in England.

31. a. iii.

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Domestic Economy Analysis

- The domestic economy affects the economic success of its firms (and vice versa).
 - GDP
 - Exchange rate and current account

 - Employment
 - Inflation
 - Interest rate
 - Budget deficit
 - Sentiment and Consumer Confidence

- Government policy influences supply and demand (“demand-side-management”)
 - Fiscal policy - Government spending and taxing actions (direct but slow)
 - Monetary policy (manipulation of the money supply to influence economic activity (broad but quick with feedback))

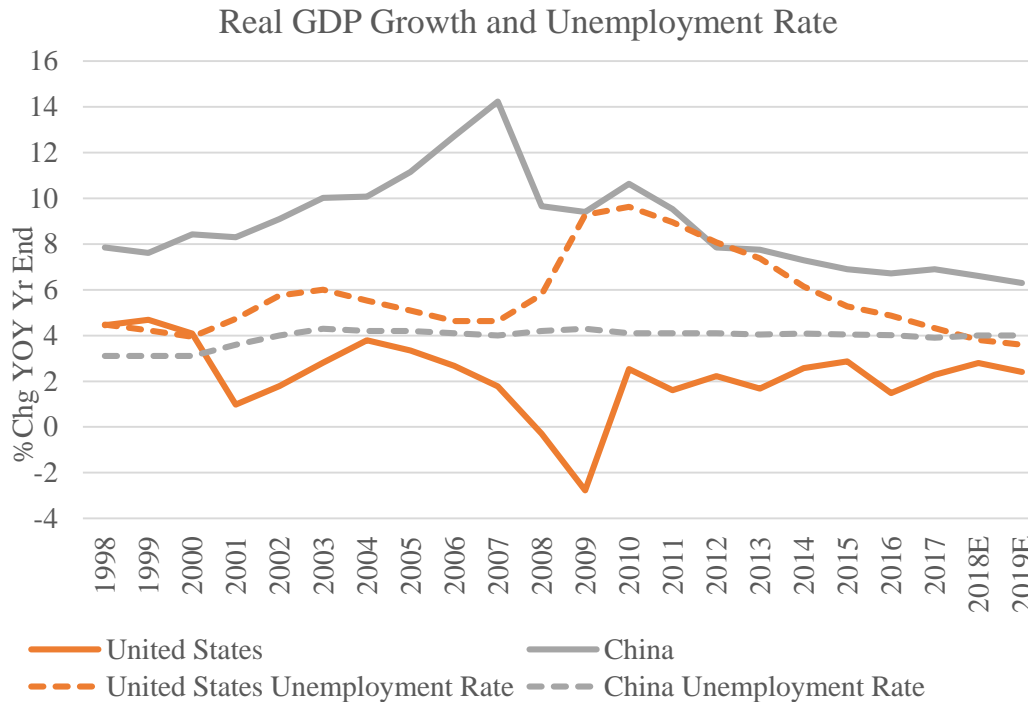
GDP and Industrial Production



- Strongly growing GDP as an indicator for expanding economy
- Industrial Productions measures economic activity focussing on manufacturing (coinciding indicator)
- Earnings forecasts (earnings-multiplier rule) can be used to forecast stock prices to some degree, other influencing factors include interest rate, risk, inflation

Source: FactSet Economic Estimates

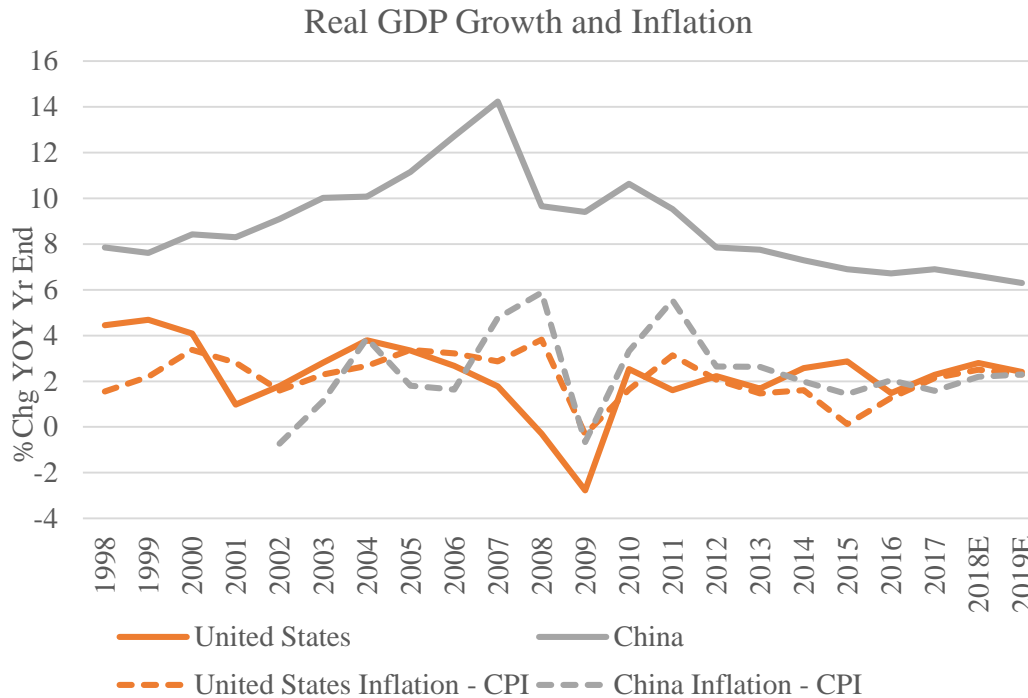
Unemployment Rate (Capacity Utilization Rate)



- Unemployment rate measures to which extend the economy is operating at full capacity
- Rises or falls with the changing economic conditions (coinciding)

Source: FactSet Economic Estimates

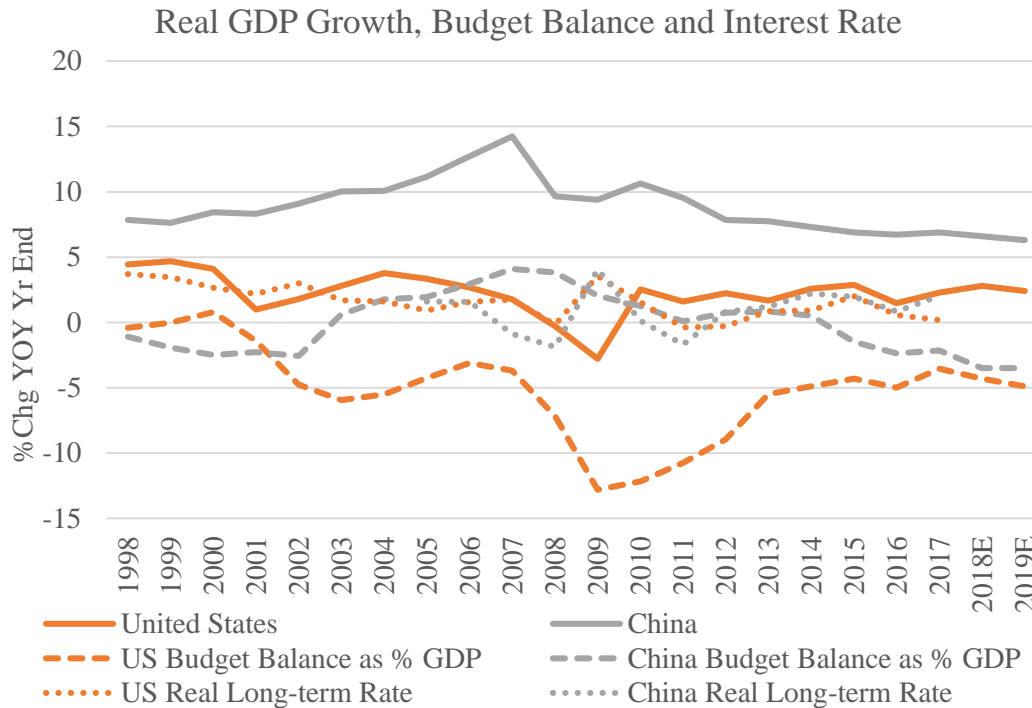
Inflation (Consumer Price Index – CPI)



- High Inflation Rates are associated with “overheated” economies, demand is outstripping productive capacities
- Tradeoff between inflation and unemployment: Governments hope to stimulate economies to maintain full employment, but not so much as to bring inflationary pressure

Source: FactSet Economic Estimates

Interest Rates and Budget Deficit



- The Government Budget Balance is the difference between government spending and revenues; Shortfalls must be offset by borrowing
- Excess government borrowing can force interest rates up and crowd out private borrowing and investing choking off business investments
- (Real) Interest Rates are key determinants for business investment expenditures

Source: FactSet Economic Estimates

Problems (Bodie, Ch. 15)

- 16.** The researchers at IAAI have forecasted positive trends for both job creation and consumer confidence. Which, if either, of these trends should have a positive effect on stock prices?
- 33.** Judging from historical data and assuming less-than-full employment, periods of sharp acceleration in the growth rate of the money supply tend to be associated *initially* with
- i. Periods of economic recession
 - ii. An increase in the velocity of money
 - iii. A rapid growth of gross domestic product
 - iv. Reductions in real gross domestic product
- b.** Changes in which of the following are likely to affect interest rates?
- i. Inflation expectations
 - ii. Size of the federal deficit
 - iii. Money supply
 - iv. All of the above

Problems (Bodie, Ch. 15) - Solutions

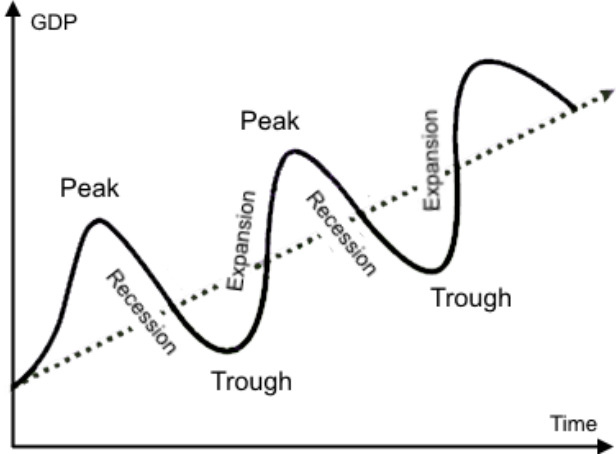
16. Equity prices are positively correlated with job creation or longer work weeks, as each new dollar earned means more will be spent. High confidence presages well for spending and stock prices.
33. i.
- b. iv, all of the above.

Outline

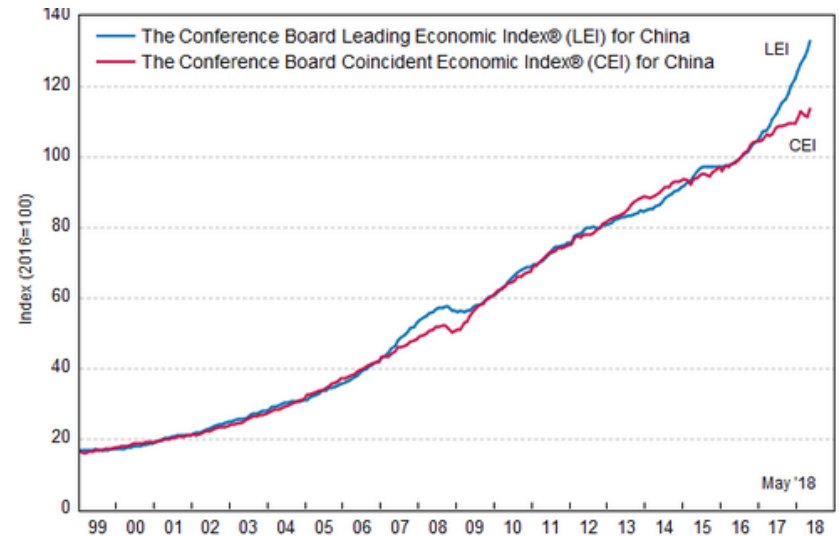
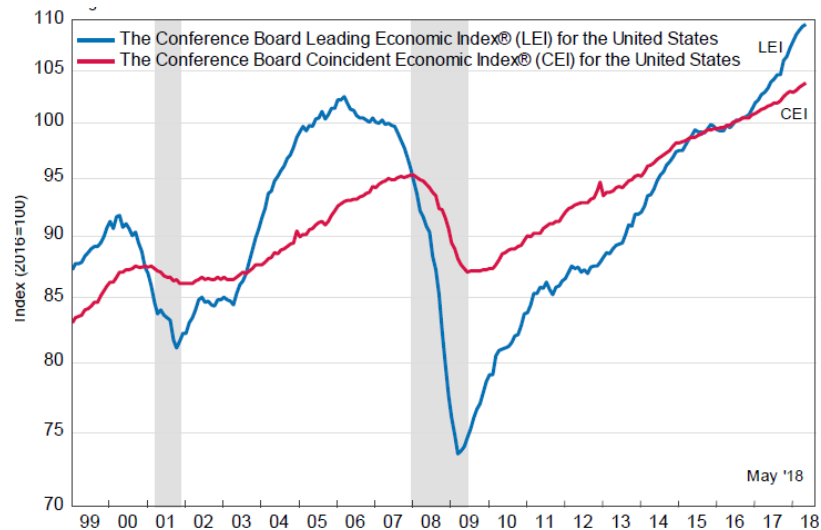
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Business Cycle

- Business Cycle
 - Peak
 - Trough

 - Industry relationship to business cycles
 - Cyclical
 - Defensive
- 
- Leading Indicators - tend to rise and fall in advance of the economy.
 - Examples: Average work week, New orders - durables
 - Coincident Indicators - indicators that tend to change directly with the economy
 - Examples: Industrial production, Manufacturing and trade sales
 - Lagging Indicators - indicators that tend to lag economic performance
 - Examples: Ratios of trade inventories to sales and consumer installment credit outstanding to personal income

Leading Economic Indicators



- LEI is a composite of 10 indexes to signal peaks and troughs in the business cycle:
 - (1) Average weekly hours, manufacturing;
 - (2) Average weekly initial claims for unemployment insurance;
 - (3) Manufacturers' new orders, consumer goods and materials;
 - (4) ISM new order index;
 - (5) Manufacturers' new orders, non-defense capital goods excl. aircraft;
 - (6) Building permits, new private housing units;
 - (7) Stock prices, 500 common stocks;
 - (8) Leading Credit Index;
 - (9) Interest rate spread, 10-year Treasury bonds less federal funds;
 - (10) Avg. consumer expectations for business and economic conditions

Source: The Conference Board

Canada – (Coincident) Economic Indicators

% Change vs. 1 Year Ago	Dec 06	Dec 07	Dec 08	Dec 09	Dec 10	Dec 11	Dec 12	Dec 13	Dec 14	Dec 15
Total Retail Trade Sales	6.5	6.0	3.8	-2.8	5.6	4.1	2.5	2.6	4.8	2.1
New Car Dealers	4.4	3.7	-3.9	-6.4	9.6	5.0	6.1	6.4	8.2	5.9
Used Car Dealers	10.8	9.5	11.9	1.9	-1.6	2.7	1.0	5.8	3.4	11.8
Furniture and Home Furnishing Stores	8.8	7.1	0.2	-8.6	3.9	-0.2	1.2	1.0	3.7	4.9
Electronics and Appliance Stores	8.7	8.4	7.1	-5.2	4.3	3.2	-4.7	-3.1	1.3	-0.4
Food and Beverage Stores	3.1	4.5	5.0	3.8	2.5	0.6	1.7	1.0	2.9	2.3
Health & Personal Care Stores	10.3	8.6	3.9	3.9	5.1	2.4	1.8	4.3	3.6	3.7
Gasoline Stations	8.6	10.7	13.9	-18.7	16.1	18.1	2.7	3.5	4.7	-13.9
Clothing & Clothing Accessories Stores	7.5	5.4	0.5	-3.2	7.1	3.8	2.4	2.9	3.4	7.4
Sporting Goods, Hobby, Book & Music Stores	5.3	5.4	1.6	3.1	1.7	1.9	0.6	1.7	5.6	4.0
General Merchandise Stores	6.3	4.3	5.4	2.0	4.6	3.8	3.6	3.5	6.2	2.1
Miscellaneous Store Retailers	7.9	6.5	4.0	0.6	-3.4	-0.7	1.8	4.9	0.0	0.7

Source: FactSet Economic Estimates

Problems (Bodie, Ch. 15)

- 5.** What characteristics will give firms greater sensitivity to business cycles?
- 10.** Consider two firms producing smartphones. One uses a highly automated robotics process, whereas the other uses workers on an assembly line and pays overtime when there is heavy production demand.
- a.* Which firm will have higher profits in a recession? In a boom?
 - b.* Which firm's stock will have a higher beta?
- 13.** For each pair of firms, choose the one you think would be more sensitive to the business cycle.
- a.* General Autos or General Pharmaceuticals
 - b.* Friendly Airlines or Happy Cinemas

Problems (Bodie, Ch. 15)

16. The researchers at IAAI have forecasted positive trends for both job creation and consumer confidence. Which, if either, of these trends should have a positive effect on stock prices?
17. Stock prices are useful as a leading indicator. To explain this phenomenon, which of the following is *most* accurate? Stock prices
 - a. Predict future interest rates and reflect the trends in other indicators
 - b. Do not predict future interest rates, nor are they correlated with other leading indicators; the usefulness of stock prices as a leading indicator is a mystery
 - c. Reflect the trends in other leading indicators only, and do not have predictive power of their own
18. Which of the domestic series that the IAAI research department listed for use as leading indicators is *least* appropriate?
 - a. Industrial production
 - b. Manufacturing average weekly hours
 - c. M2 money supply

Problems (Bodie, Ch. 15) - Solutions

5. Firms with greater sensitivity to business cycles are in industries that produce durable consumer goods or capital goods. Consumers of durable goods (e.g., automobiles, major appliances) are more likely to purchase these products during an economic expansion, but can often postpone purchases during a recession. Business purchases of capital goods (e.g., purchases of manufacturing equipment by firms that produce their own products) decline during a recession because demand for the firms' end products declines during a recession.
10. a. The robotics process entails higher fixed costs and lower variable (labour) costs. Therefore, this firm will perform better in a boom and worse in a recession. For example, costs will rise less rapidly than revenue when sales volume expands during a boom.
- b. Because its profits are more sensitive to the business cycle, the robotics firm will have the higher beta.
13. a. *General Autos*. Pharmaceuticals are less of a discretionary purchase than automobiles.
- b. *Friendly Airlines*. Travel expenditure is more sensitive to the business cycle than movie consumption.

Problems (Bodie, Ch. 15) - Solutions

16. Equity prices are positively correlated with job creation or longer work weeks, as each new dollar earned means more will be spent. High confidence presages well for spending and stock prices.
17. a. Stock prices are one of the leading indicators. One possible explanation is that stock prices anticipate future interest rates, corporate earnings and dividends. Another possible explanation is that stock prices react to changes in the other leading economic indicators, such as changes in the money supply or the spread between long-term and short-term interest rates.
18. a. Industrial production is a coincident indicator; the others are leading.

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Industry Classification

- Industries are defined by NAICS or SIC codes.
- <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2012>

[21](#) Mining, Quarrying, and Oil and Gas Extraction^T

[211](#) Oil and Gas Extraction^T

[2111](#) Oil and Gas Extraction^T

[21111](#) Oil and Gas Extraction^T

[211111](#) Crude Petroleum and Natural Gas Extraction

[211112](#) Natural Gas Liquid Extraction

[212](#) Mining (except Oil and Gas)^T

[2121](#) Coal Mining^T

[21211](#) Coal Mining^T

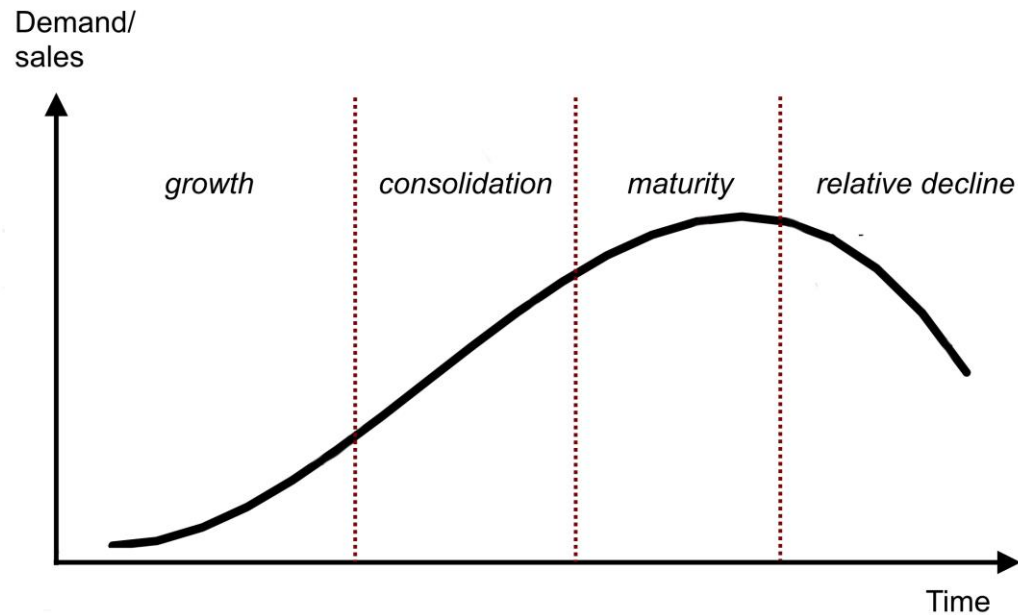
[212111](#) Bituminous Coal and Lignite Surface Mining

[212112](#) Bituminous Coal Underground Mining

[212113](#) Anthracite Mining

Sensitivity to Business Cycles (1/3)

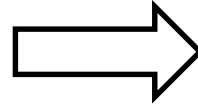
- Industries (tend to) go through various stages of growth.
- Rate of growth, competitive environment, profit margins, and pricing strategies tend shift from one stage to the next



Industry Life Cycles Stages

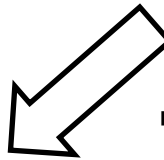
- *Start-up / Quantity Growth*

- Rapid increasing sales
- Large potential market
- Optimism for high profits
- High failure rates
- High product prices
- High costs (R&D, marketing, etc.)
- (Temporary) monopolistic industry structure



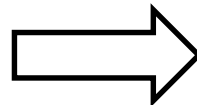
- *Consolidation / Quality Growth*

- Stable / consolidating sales
- Broadening markets
- Declining unit costs due to the learning curve
- Higher quality
- New entrants and industry leader emerge
- Prices usually stable allowing higher profit margins



- *Maturity*

- Slowing growth and declining P/E ration in maturing markets with less optimism
- Product or service begins to saturate the market
- Margins / ROE ratios are eroded by significant price reductions
- Increasing dividend payout ratios and dividend yields



- *Relative Decline*

- Minimal or negative growth
- Production costs stopped declining
- Profit margins are low
- Future depends on replacement demand and the existence of substitute products/services

Industry Life Cycles Stages: Examples (1/2)

Life Cycle Reasons

The industry is growing faster than the economy

The industry is experiencing a rise in the number of establishments

The industry's buyer market is expanding

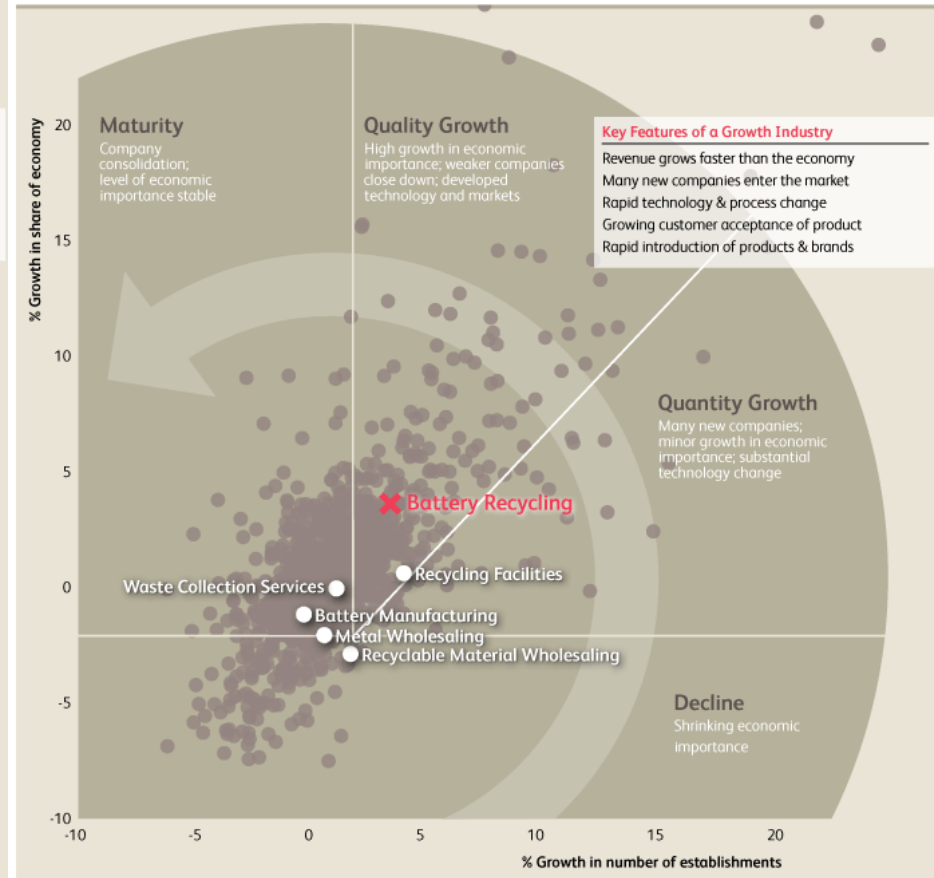


Life Cycle Reasons

Industry value added is forecast to grow faster than GDP

New and increasing environmental legislation is bolstering demand

The national stock of battery waste is growing strongly



Source: IBISWorld.com.au

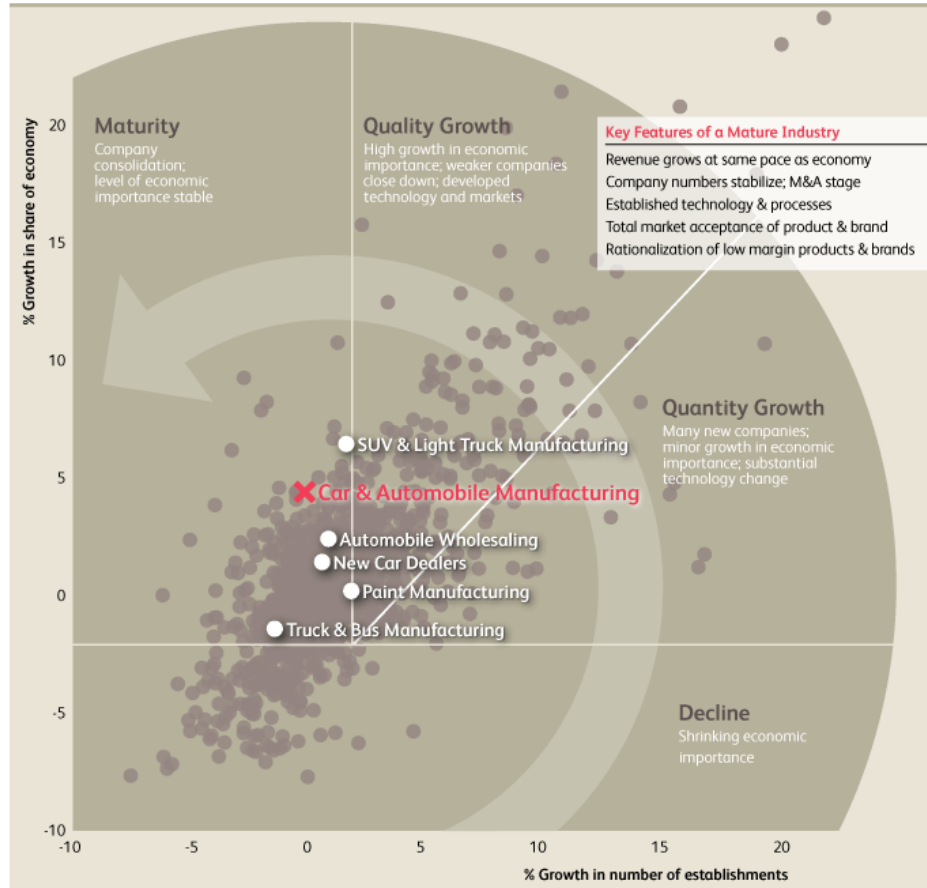
Industry Life Cycles Stages: Examples (2/2)

Life Cycle Reasons

The market for midsize and big cars has been contracting

Industry operators have improved production efficiency

Recent industry performance has mitigated any potential for a true decline

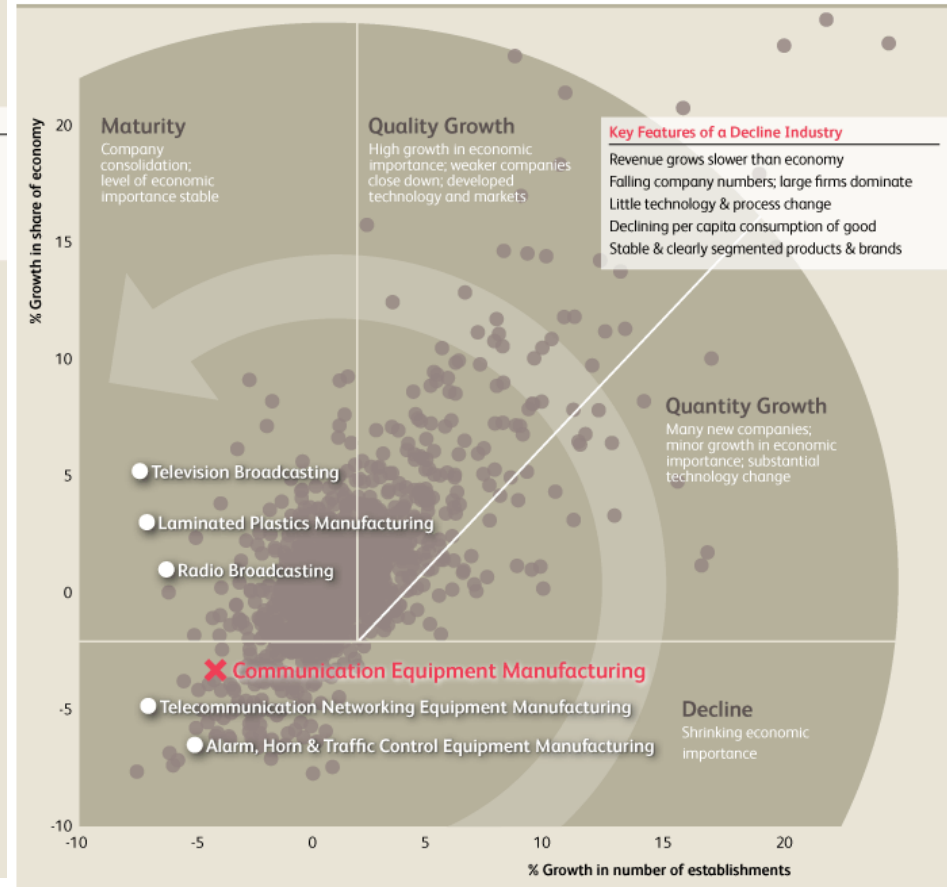


Life Cycle Reasons

The industry had declining IVA

Profit has declined

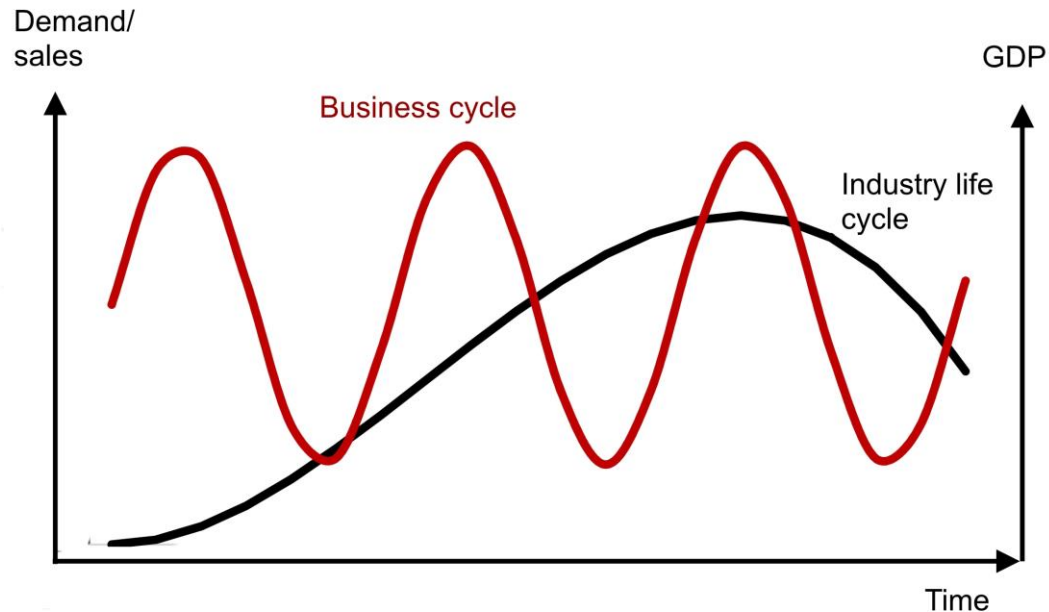
Products are clearly segmented



Source: IBISWorld.com.au

Sensitivity to Business Cycles (2/3)

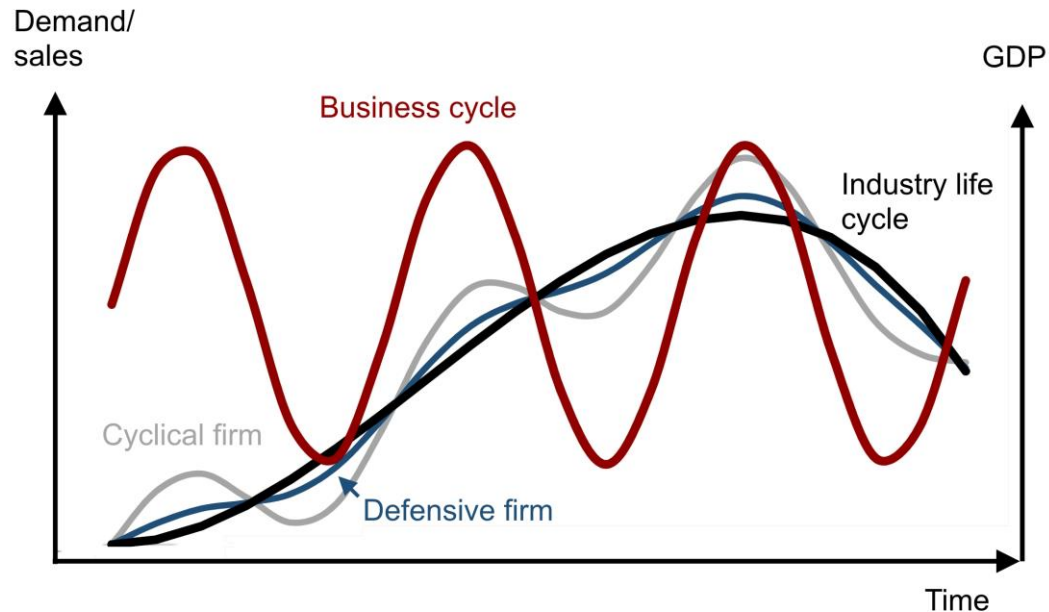
- Firms' profitability is influenced by industry life cycles (longer run) and business cycles (shorter run):



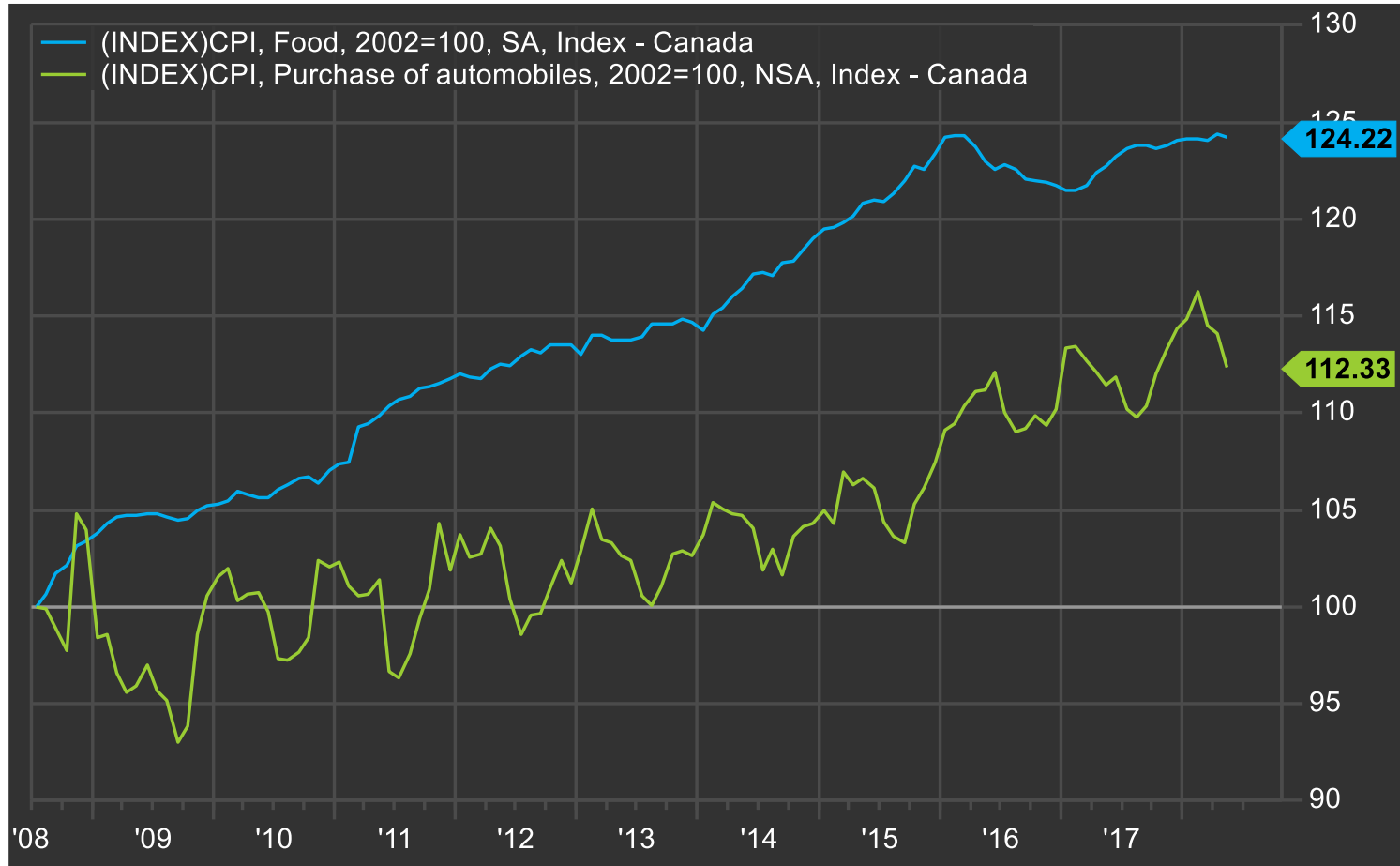
Sensitivity to Business Cycles (3/3)

Problem: 5

- Defensive industries are less affected by the business cycles as compared to cyclical industries

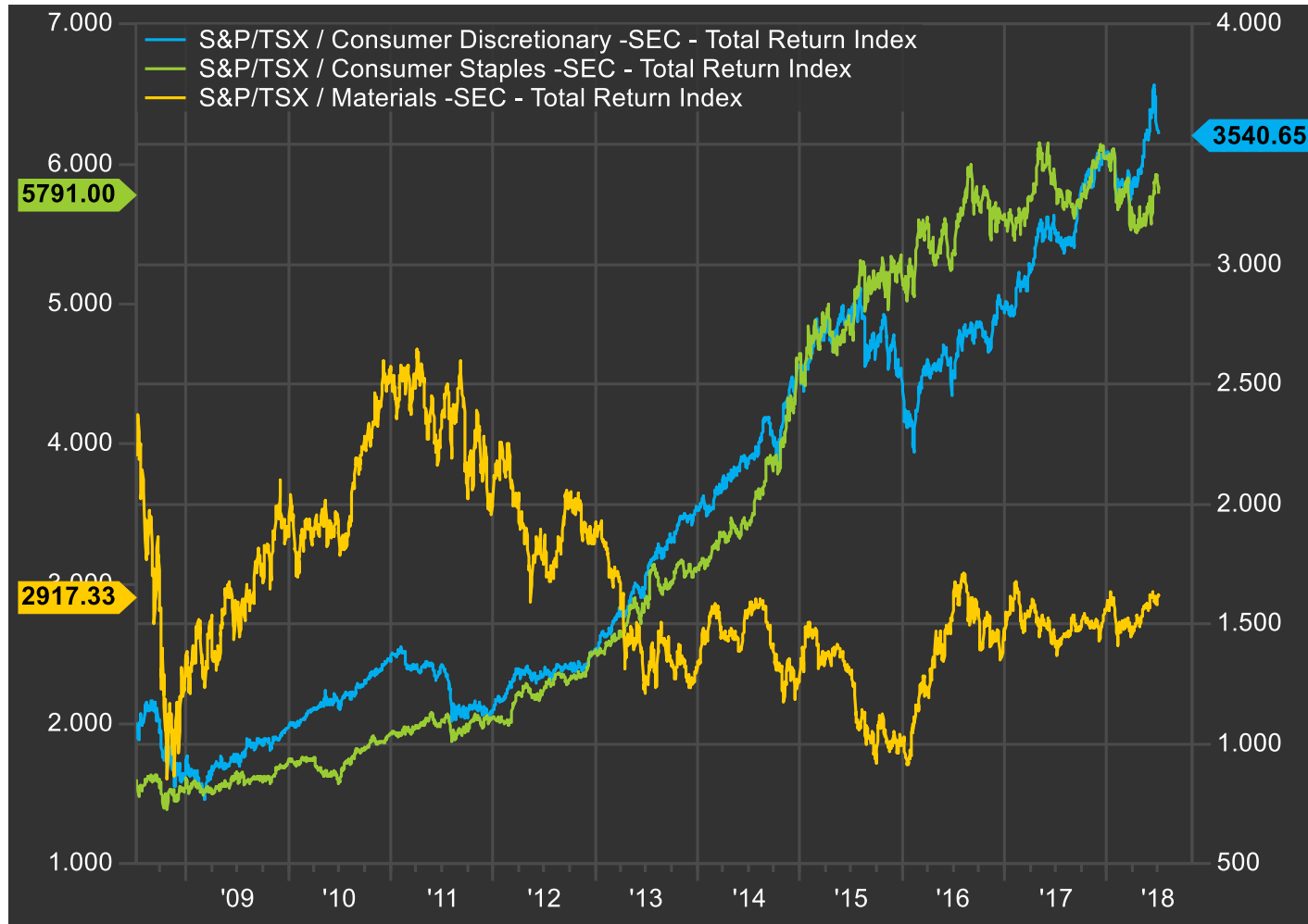


Factors Affecting Sensitivity of Industries/Firms to the Business Cycles: Sales



Source: FactSet Economic Estimates

Canada – Stock Performance by Industry

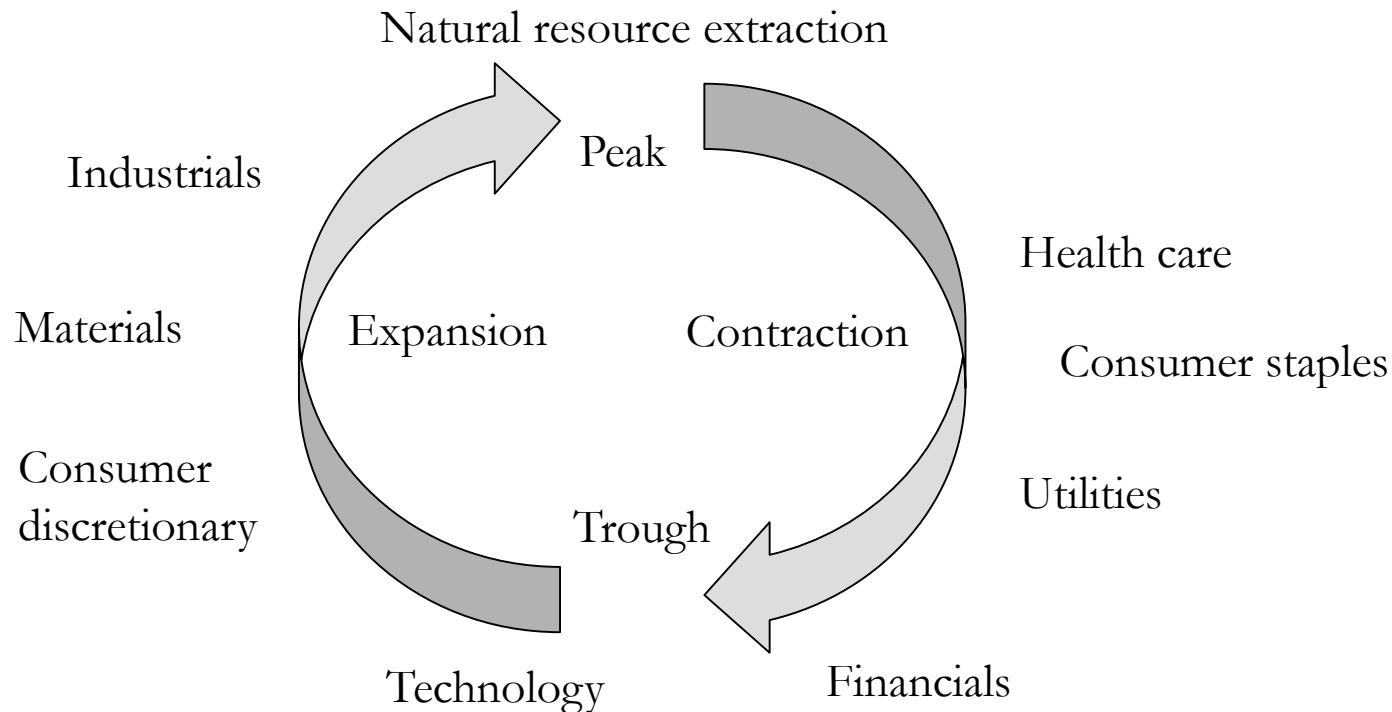


Source: FactSet

Sensitivity to Business Cycles – Summary

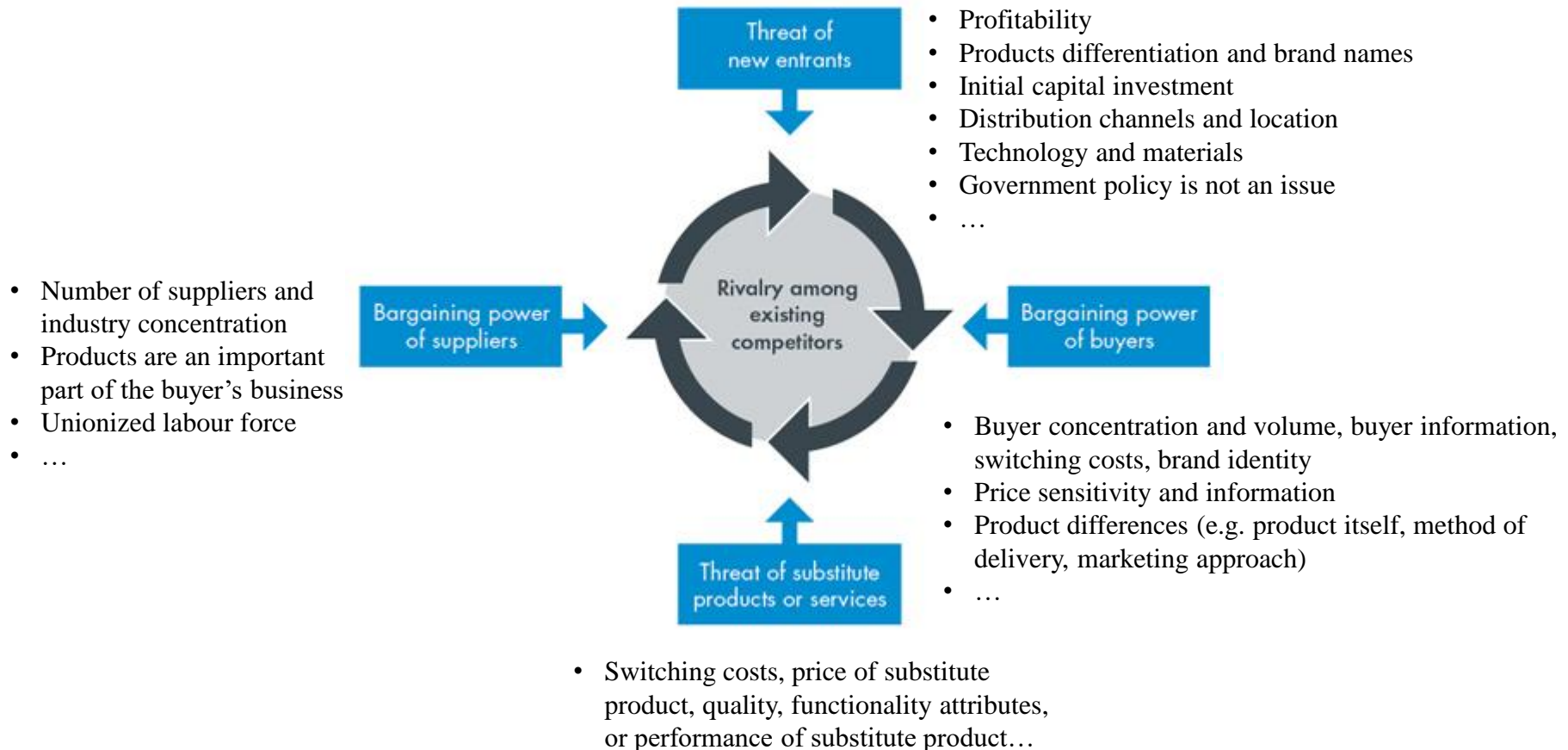
Problems: 3, 11, 13

- Ideally, an investor chooses to invest in cyclical industries at the beginning of an expansion and in defensive industries at the beginning of a recession.



Competitive Environment: Porter's Five Forces

- A useful tool from the consulting profession to analyze the competition within an industry is the Porter's Five Forces model.



Competitive Environment: Other Influencing Factors

- Market Share Concentration
 - Indicator for the dominance of the major four players in the industry.
 - Low (high) if major players account for less (more) than 40% (79%) of industry revenue
- Cost Structure Benchmarks
 - Costs such as purchases and wages vary among producers
 - Changes in demand can significantly impact smaller operators' earnings as compared to multinational companies with greater resources
 - Examples: Profit (EBIT), Wages, Marketing, Purchases, etc.
- Basis of Competition
 - Internal
 - External
- Industry Globalization

Problems (Bodie, Ch. 15)

3. Choose an industry and identify the factors that will determine its performance in the next three years. What is your forecast for performance in that time period?
11. Here are four industries and four forecasts for the macroeconomy. Match the industry to the scenario in which it is likely to be the best performer.

Industry

- a. Housing construction
- b. Health care
- c. Gold mining
- d. Steel production

Economic Forecast

1. *Deep recession.* Falling inflation, falling interest rates, falling GDP
2. *Superheated economy.* Rapidly rising GDP, increasing inflation and interest rates
3. *Healthy expansion.* Rising GDP, mild inflation, low unemployment
4. *Stagflation.* Falling GDP, high inflation

Problems (Bodie, Ch. 15)

- 12.** At which stage of the industry life cycle would you place each of the following industries? (*Note:* There is considerable room for disagreement about the answers to this question.)
- a. Oil well equipment
 - b. Computer hardware
 - c. Computer software
 - d. Genetic engineering
 - e. Railroads
- 14.** General Weedkillers dominates the chemical weed control market with its patented product Weed-ex. The patent is about to expire, however. What are your forecasts for changes in the industry? Specifically, what will happen to industry prices, sales, the profit prospects of General Weedkillers, and the profit prospects of its competitors? What stage of the industry life cycle do you think is relevant for the analysis of this market?

Problems (Bodie, Ch. 15)

27. Universal Auto is a large multinational corporation headquartered in the United States. For segment reporting purposes, the company is engaged in two businesses: production of motor vehicles and information processing services. The motor vehicle business is by far the larger of Universal's two segments. It consists mainly of domestic U.S. passenger car production, but it also includes small truck manufacturing operations in the United States and passenger car production in other countries. This segment of Universal has had weak operating results for the past several years, including a large loss in 2013. Although the company does not reveal the operating results of its domestic passenger car segments, that part of Universal's business is generally believed to be primarily responsible for the weak performance of its motor vehicle segment. Idata, the information processing services segment of Universal, was started by Universal about 15 years ago. This business has shown strong, steady growth that has been entirely internal; no acquisitions have been made.

An excerpt from a research report on Universal prepared by Paul Adams, a CFA candidate, states: "Based on our assumption that Universal will be able to increase prices significantly on U.S. passenger cars in 2014, we project a multibillion-dollar profit improvement."

- a. Discuss the concept of an industrial life cycle by describing each of its four phases.
- b. Identify where each of Universal's two primary businesses—passenger cars and information processing—is in such a cycle.
- c. Discuss how product pricing should differ between Universal's two businesses, on the basis of the location of each in the industrial life cycle.

Problems (Bodie, Ch. 15)

- 28.** Adams's research report (see the preceding problem) continued as follows: "With a business recovery already under way, the expected profit surge should lead to a much higher price for Universal Auto stock. We strongly recommend purchase."
- a.* Discuss the business cycle approach to investment timing. (Your answer should describe actions to be taken on both stocks and bonds at different points over a typical business cycle.)
 - b.* Assuming Adams's assertion is correct (that a business recovery is already under way), evaluate the timeliness of his recommendation to purchase Universal Auto, a cyclical stock, on the basis of the business cycle approach to investment timing.

Problems (Bodie, Ch. 15) - Solutions

3. This exercise is left to the student; answers will vary.
11. a. Housing construction (cyclical but interest-rate-sensitive): (iii) Healthy expansion
- b. Health care (a noncyclical industry): (i) Deep recession
- c. Gold mining (countercyclical): (iv) Stagflation
- d. Steel production (cyclical industry): (ii) Superheated economy
12. a. Oil well equipment: Relative decline (environmental pressures, decline in easily developed new oil fields)
- b. Computer hardware: Consolidation
- c. Computer software: Consolidation
- d. Genetic engineering: Start-up
- e. Railroads: Relative decline

Problems (Bodie, Ch. 15) - Solutions

14. The expiration of the patent means that General Weedkillers will soon face considerably greater competition from its competitors. We would expect prices and profit margins to fall, and total industry sales to increase somewhat as prices decline. The industry will probably enter the consolidation stage in which producers are forced to compete more extensively on the basis of price.
27. a. The concept of an industrial life cycle refers to the tendency of most industries to go through various stages of growth. The rate of growth, the competitive environment, profit margins, and pricing strategies tend to shift as an industry moves from one stage to the next, although it is generally difficult to identify precisely when one stage has ended and the next begun.

The start-up stage is characterized by perceptions of a large potential market and by a high level of optimism for potential profits. However, this stage usually demonstrates a high rate of failure. In the second stage, often called *stable growth* or *consolidation*, growth is high and accelerating, the markets are broadening, unit costs are declining, and quality is improving. In this stage, industry leaders begin to emerge. The third stage, usually called *slowing growth* or *maturity*, is characterized by decelerating growth caused by factors such as maturing markets and/or competitive inroads by other products. Finally, an industry reaches a stage of relative decline in which sales slow or even decline.

Problems (Bodie, Ch. 15) - Solutions

Product pricing, profitability, and industry competitive structure often vary by stage. Thus, for example, the first stage usually encompasses high product prices, high costs (R&D, marketing, etc.) and a (temporary) monopolistic industry structure. In stage two (stable growth), new entrants begin to appear and costs fall rapidly due to the learning curve. Prices generally do not fall as rapidly, however, allowing profit margins to increase. In stage three (slowing growth), growth begins to slow as the product or service begins to saturate the market, and margins are eroded by significant price reductions. In the final stage, industry cumulative production is so high that production costs have stopped declining, profit margins are thin (assuming competition exists), and the fate of the industry depends on replacement demand and the existence of substitute products/services.

- b. The passenger car business in the United States has probably entered the final stage in the industrial life cycle because normalized growth is quite low. The information processing business, on the other hand, is undoubtedly earlier in the cycle. Depending on whether or not growth is still accelerating, it is in either the second or the third stage.

Problems (Bodie, Ch. 15) - Solutions

c. *Cars.* In the final stages of the life cycle, demand tends to be price-sensitive. Thus, Universal cannot raise prices without losing volume. Moreover, given the industry's maturity, cost structures are likely to be similar across all competitors, and any price cuts can be matched immediately. Thus, Universal's car business is boxed in: product pricing is determined by the market, and the company is a "price taker."

Idata. Idata should have much more pricing flexibility given its earlier stage in the industrial life cycle. Demand is growing faster than supply, and, depending on the presence and/or actions of an industry leader, Idata may set prices high to maximize current profits and generate cash for product development, or set prices low in an effort to gain market share.

28. a. A basic premise of the business cycle approach to investment timing is that stock prices anticipate fluctuations in the business cycle. For example, there is evidence that stock prices tend to move about six months ahead of the economy. In fact, stock prices are a leading indicator for the economy.

Problems (Bodie, Ch. 15) - Solutions

Over the course of a business cycle, this approach to investing would work roughly as follows. As the investor perceives that the top of a business cycle is approaching, stocks purchased should not be vulnerable to a recession. When the investor perceives that a downturn is at hand, stock holdings should be lightened with proceeds invested in fixed-income securities. Once the recession has matured to some extent, and interest rates fall, bond prices will rise. As the investor perceives that the recession is about to end, profits should be taken in the bonds and reinvested in stocks, particularly those in cyclical industries with a high beta.

Generally, abnormal returns can be earned only if these asset allocation switches are timed better than those of other investors. Switches made after the turning points may not lead to excess returns.

- b. On the basis of the business cycle approach to investment timing, the ideal time to invest in a cyclical stock such as a passenger car company would be just before the end of a recession. If the recovery is already under way, Adam's recommendation would be too late. The equities market generally anticipates the changes in the economic cycle. Therefore, since the "recovery is underway," the price of Universal Auto should already reflect the anticipated improvements in the economy.