2. ORGANIZING THE TASK: FRAMEWORK AND CHALLENGES

2.1 A Framework for Developing Capital Market Expectations

The following is a framework for a disciplined approach to setting CME:

1. ***Specify the final set of expectations that are needed, including the time horizon to which they apply***. The analyst needs to understand the specific objectives of the analysis and the questions that need to be answered, giving appropriate regard to the constraints of the client.

2. ***Research the historical record***. For many markets, the historical record contains useful information on the investment characteristics of assets, suggesting at least some possible ranges for future results.

3. ***Specify the method(s) and/or model(s) that will be to be used and their information requirements***. Analysts should be explicit about the methods and/or models to be used and should be able to justify their selection.

4. ***Determine the best sources for information needs***.

5. ***Interpret the current investment environment using the selected data and methods, applying experience and judgment***. The analyst should use a common set of assumptions so that conclusions are mutually consistent, and apply judgment and experience to interpret conflicting signals within the data.

6. ***Provide the set of expectations that are needed, documenting conclusions***. These are the analyst's answers to the questions set out in Step 1, accompanied by the reasoning and assumptions behind them.

7. ***Monitor actual outcomes and compare them to expectations, providing feedback to improve the expectations-setting process.***

- The development of capital market expectations is ***beta research***: research related to systematic risk and returns to such risk. As such, it is usually *centralized* so that the inputs used are *consistent*.
- Research conducted within particular product groups is **alpha research:** research related to capturing excess risk-adjusted returns by a particular strategy.
- Institutional investors may develop capital market expectations in-house or may consult professional consultants and peers.
- Individual investors rely on their investment adviser or other external source in setting capital market expectations.

Important:

Step 1: **Establishing boundaries:** This involves establishing boundaries so that the analysts are able to focus on the expectations relevant for their investment situation.

There is a direct relationship between the number and variety or permissible asset class alternatives and the scope of the expectations-setting task.

See: Example 1 & 2, Volume 4, Reading 18, P. 9-10.

Steps 2 and 3: **Understanding historical performance.** These involve understanding the historical performance of the asset classes and researching their return drivers. Information can be collected by:

- geographic area, or
- broad asset class.

Practice: Example 3, Volume 4, Reading 18, P. 11.

*In **Step 3**,* the effectiveness of forecasting approaches may be related to the investor's *time horizon* (e.g. a discounted cash flow approach is usually appropriate to long-range forecasting).

Step 4: **Determine the best information sources.** The analyst needs to research the quality of alternative data sources and consider the *cost* of data. He must also select the appropriate *data frequency*. Using flawed data will result in faulty analysis.

Step 5: ***Interpret the current investment environment.*** This step requires the application of experience and judgment.

Step 6: ***Develop capital market forecasts.*** This step involves the development of any required quantitative forecasts depending on the selection of methodology. Top-down approaches often use economic analysis more intensively than bottom-up approaches.

Practice: Example 4, Volume 4, Reading 18, P. 12.

Generally, **good forecasts are**:

- unbiased, objective, and well researched;
- efficient, in the sense of reducing the magnitude of forecast errors to a minimum; and

- internally consistent.

See: Example 5,
Volume 4, Reading 18, P. 13.

2.2 Challenges in Forecasting

A range of problems can frustrate analysts' expectations-setting efforts. Expectations reflecting faulty analysis or assumptions may cause a portfolio manager to construct a portfolio that is inappropriate for the client. Some problems in the use of data, and analyst mistakes and biases, are as follows:

2.2.2) Limitations of Economic Data

The ***time lag*** with which economic data are collected, processed, and disseminated can be an impediment to their use.

- Older data for a variable increase the uncertainty concerning the current state of the economy with respect to that variable.

One or more ***official revisions*** to the initial values are common. Measurements are made with error, but the direction and magnitude of the error are not known at the time the data are initially publicized.

Definitions and ***calculation methods change*** too (e.g. sampling procedures and calculation methods).

Suppliers of indices of economic and financial data periodically ***re-base*** indices (the time period used as the base is changed).

- A re-basing is not a substantive change in the composition of an index; it is more of a mathematical change.
- Data relating to different bases should not be mixed together.

2.2.2) Data Measurement Errors and Biases

Biases in data measurement and errors in data series include the following:

Transcription errors: These are errors in gathering and recording data. Such errors are most serious if they reflect a bias.

Survivorship bias: This bias arises when a data series reflects only entities that have survived to the end of the period. Hence, the return series will probably convey an overly optimistic picture of the real-time investment returns and statistics derived from such a series can be misleading.

Appraisal (smoothed data): For certain assets without liquid public markets, appraisal data are used in lieu of market price data and such data tend to be less volatile than market-determined values. The consequences are:

- The calculated correlations with other assets tend to be *smaller* than true correlations.
- The true standard deviation of the asset is biased *downward*.

One approach of correcting for smoothed data is to ***rescale*** the data such that dispersion is increased but the mean is unchanged.

See: Example 7 & 8,
Volume 4, Reading 18, P. 15 & 16.

2.2.3) The Limitations of Historical Estimates

The past cannot be simply extrapolated to produce future results uncritically.

Changes in the technological, political, legal, and regulatory environments, as well as disruptions such as wars and other calamities, can alter risk-return relationships. Such shifts are **regime changes** and give risk to the statistical problem of **nonstationarity** (meaning that different parts of a data series reflect different statistical properties).

Extending a dataset to the distant past increases the chance of including irrelevant data. Statistical tools should be used to identify regime changes or turning points.

- When many variables are considered, a ***long data series*** may be a statistical necessity.
  - It increases the precisions with which population parameters are estimated.
  - Larger samples reduce the sensitivity of parameter estimates to the starting and ending dates of the sample.
- However, long data series may have the following ***problems***:
  - The risk that the data cover multiple regimes increase.
  - Time series of the required length may not be available.
  - Data of high frequency are more sensitive to a synchronism across variables. As a result, high-frequency data tend to produce *lower* correlation estimates.

The underlying mean returns on ***volatile asset classes*** are particularly difficult to estimate from historical data.

A practical approach to deciding whether or not to use a long data series is to assess whether there is a break in a time series. If there is, one should use only that part of the time series that appears to be relevant to the present.

Read: Example 9, Volume 4, Reading 18, P. 18.

2.2.4) Ex Post Risk Can Be a Biased Measure of Ex Ante Risk

In interpreting historical prices and returns over a given sample period for their relevance to current decision making, one needs to evaluate whether asset prices in the period reflected the possibility of a very negative event that did not materialize during the period.

- If so, looking backward, analysts are likely to *under* estimate *ex ante* risk and *over*estimate *ex ante* anticipated returns.
- For example, a high *ex post* equity risk premium may reflect fears of adverse events that did not materialize and may be a poor estimate of *ex ante* risk premium (since the negative event would be overlooked as a risk faced by investors at that time).

2.2.5) Biases in Analysts' Methods

Among the analyst biases that may be preventable are the following:

Data-mining bias: Data-mining bias is introduced by repeatedly searching a dataset until the analyst finds some statistically significant pattern. Such patterns cannot be of predictive value.

- The absence of an economic rationality is a warning sign of a data-mining problem.
- A further practical check is to examine the forecasting relationship *out-of-sample*.

Time-period bias: Research findings are often found to be sensitive to the selection of starting and/or ending dates (e.g. the small-cap stock effect in the U.S. has been largely concentrated in the nine year period from 1975-1983, and excluding this period would alter conclusions significantly).

2.2.6) The Failure to Account for Conditioning Information

The use of unconditional expectations can lead to misperceptions of risk, return, and risk-adjusted return. For example, an analyst determining whether an asset class fairly rewards risk in expansions and recessions would need to uncover through research whether the asset class's systematic risk (beta) varies with the business cycle. The analyst should then condition his/her forecasts on the state of the economy to formulate the most accurate expectations (use an `expansion' beta if the economy is in the expansion stage of the cycle).

2.2.7) Misinterpretations of Correlations

The analyst should take care in interpreting correlations. If a variable A is correlated with variable B, there are three possible explanations:

1. A predicts B;
2. B predicts A;
3. A third variable C predicts A and B.

The observed correlation by itself would not tell you which of the above holds.

If A is an **exogenous variable** (an exogenous variable is determined outside the system, in contrast to an **endogenous** variable, which is determined within the system), it is easier to say that A predicts B. However, the correlation does not tell us that and the reverse is true in many cases.
Also, there may be no predictive relationship between A and B; the relationship between A and B may be conditional on the presence of another variable C.

The correlation between A and B may be spurious.

A and B could have a strong but *non-linear* relationship but have a low or zero correlation.

Following can be used to model the underlying causal link:

Multiple regression analysis can be used. The coefficients derived from the analysis represent the effect of an independent variable on the dependent variable after accounting for the effects of all other variables. Hence, the framework supports the introduction of multiple control variables.

Time series analysis can be used, in which we regress a variable on lagged values of itself, lagged values of the independent variable, and lagged values of control variables.

Practice: Example 10, Volume 3, Reading 18, P. 22.

2.2.8) Psychological Traps

Anchoring trap. The anchoring trap is the tendency of the mind to give disproportionate weight to the first information it receives on a topic. Initial impressions, estimates, or data anchor subsequent thoughts and judgments.

- The analyst can try to address this trap by consciously attempting to avoid premature conclusions.

Status quo trap. This is the tendency for forecasts to perpetuate recent observations—that is, to predict no change from the recent past. Analysts may maintain the status quo to avoid increased work and regret of a decision turning out to be wrong.

- The status quo trap can be overcome with rational analysis used within a decision-making process.

Confirming evidence trap. The confirming evidence trap is the bias that leads individuals to give greater weight to information that supports an existing or preferred view than to evidence that contradicts it.

The tendency to seek out supporting information also reflects this bias.

- To ensure objectivity:
  - Examine all evidence with equal rigor.
  - Enlist an independent minded person to argue against a decision.
  - Be honest about your motives.

Overconfidence trap. This is the tendency of individuals to overestimate the accuracy of their forecasts and hence, admitting too narrow a range of scenarios in forecasting.

- To prevent this trap, one should widen the range of possibilities around the primary target forecast.

Prudence trap. The prudence trap is the tendency to temper forecasts so that they do not appear extreme; to be overly cautious in forecasting (esp. when making decisions that are expensive or damaging to one's career).

- To avoid this trap, an analyst should widen the range of possibilities around the target forecast.

Recallability trap. This is the tendency of forecasts to be overly influenced by events that have left a strong impression on a person's memory (e.g. catastrophic or dramatic past events).

- To minimize this trap, analysts should ground their conclusions on objective data.

Practice: Example 11, Volume 3, Reading 18, P. 23.

2.2.9) Model Uncertainty

The analyst encounters **two kinds of uncertainty** in conducting analysis:

1. ***Model uncertainty*** (uncertainty concerning whether a selected model is correct).
2. ***Input uncertainty*** (uncertainty concerning whether the inputs are correct).

The analyst may gauge model uncertainty by observing the variation in results that comes from shifting between the promising models.

Many of the apparent capital market anomalies explained by behavioral finance could represent equilibria resulting from the actions of investors who use competing models but process and act on information rationally.

3. Tools For Formulating Capital Market Expectations

3.1 Formal Tools

Formal tools are established methods amenable to precise definition and independent replication of results.

3.1.1) Statistical Methods

Statistical methods relevant to expectations setting include:

1. **Descriptive statistics** (methods for effectively summarizing data to describe important aspects of a dataset), and
2. **Inferential statistics** (methods for making estimates or forecasts about a larger group from a smaller group actually observed).

3.1.1.1 Historical Statistical Approach: Sample Estimators

The analyst can use historical data for forecasting. The analyst might use:

- The sample geometric or arithmetic mean total return as an estimate of the ***expected return***.
- The sample variance as an estimate of ***variance***.
- Sample correlations as estimates of ***correlations***.

One decision point relates to the *choice between arithmetic and geometric mean*:

- The arithmetic mean return best represents the mean return in a *single period*.
- The geometric mean return represents the compound rate of growth and represents *multiperiod growth* more accurately than arithmetic mean return.
- The geometric mean return is always *lower* than the arithmetic mean for a risky variable.

An alternative is to use a historical statistical approach for the equity risk premium and a current term structure estimate for the expected return on bonds, and then calculating the expected return on equities as their sum.

3.1.1.2 Shrinkage Estimators

Shrinkage estimation involves taking a weighted average of a historical estimate of a parameter and some other parameter estimate.

This approach has the ability to reduce the impact of *`extreme values'* in historical estimates.

The procedure has been applied to ***covariances*** and ***mean returns***.

Shrinkage Estimator of the Covariance Matrix

A shrinkage estimator of the covariance matrix is a weighted average of the historical covariance matrix and some alternative estimate of covariance. The alternative estimate is called the **target covariance matrix**. For example if the estimated covariance using a factor model is 48, and using a historical estimate is 80, and the weights on the model and historical estimates are 0.75 and 0.25, respectively, then the shrinkage estimator would be 0.75(48) + 0.25(80) = 56.

- The shrinkage estimator approach leads to an *increase* in the efficiency of the covariance estimates versus the historical estimate. The improvement will be greater if a plausible target covariance matrix is selected.

Practice: Example 12, Volume 3, Reading 18, P. 28.

Shrinkage Estimator of Mean Returns

This involves taking a weighted average of each historical mean return and some other target constant (e.g. the overall mean historical return across assets). For example if an asset has a mean return of 4%, and the overall mean is 7%, and the weight on the sample mean equals 80%, then the shrinkage estimator would equal: 0.8(4) + 0.2(7) = 4.6%.

3.1.1.3 Time-Series Estimators

Time series estimators involve forecasting a variable on the basis of lagged values of the variable and lagged values of other selected variables.

Time series methods have been applied to estimating near-term ***volatility***, given persuasive evidence of **variance clustering**—the tendency of large (small) swings in prices to be followed by large (small) swings of random direction.

One model specifies that the volatility in period t is a weighted average of the volatility in the previous period and the squared value of a random noise term:

$$\boldsymbol{\sigma_t^2} = \beta\sigma_{t-1}^2 + (1-\beta)\varepsilon_t^2$$

with 0 <β< 1

- The coefficient β measures the *rate of decay* of the influence of the value of volatility in one period on future volatility. The higher β is, the more volatility clusters.
- If the noise term takes on an extreme value, the volatility will shift significantly.

See: Volume 3, Reading 18, Page 29, Example Paragraph 3.

3.1.1.4 Multifactor Models

A multifactor model is a model that explains the returns to an asset in terms of the values of a set of return drivers or *risk factors*. The structure is as follows:

$$\boldsymbol{R_i} = \alpha_i + b_{i1}F_1 + b_{i2}F_2 + \ldots + b_{iK}F_K + \varepsilon_i$$

where,

R_i = return to asset i
a_i = an intercept term
F_k= the return to factor k, k = 1,2,….,K
b_{ik}= the sensitivity of the return to asset i to the return to factor k.
ε_i = an error term with a zero mean that represents the portion of return to asset *i* not explained by the model. It is uncorrelated with the factors and with error terms in the equations for other assets.

This model has been found useful for modeling ***asset returns*** and ***covariances*** among assets. Multifactor models are useful for estimating covariances for the following reasons:

- By relating the returns on all assets to a common set of factors, the model simplifies the task of estimating covariances.
- When the factors are well chosen, the model may filter out noise.
- Such models make it relatively easy to verify the consistency of the covariance matrix.

Top-down Structured Approach to Using Factor Models

Assume two factors, a global equity factor and a global bonds factor, drive the returns of all assets.

The **factor covariance matrix** contains the covariances for the factors assumed to drive returns.

In order to derive the **asset covariance matrix** (the matrix for the asset classes), we measure the responsiveness of markets to factor movements by the markets' **factor sensitivities'** (factor betas or factor loadings).

In addition, every market has some risk that is not explained by the factors. This is called the market's idiosyncratic or residual risk and is represented by the residual variance, Var (ε_i) for market *i*.

We compute the markets' variances and covariances using the following equations:

$$\mathbf{M_{ii}} = b_{i1}^2 Var(F_1) + b_{i2}^2 Var(F_2) + 2b_{i1}b_{i2}Cov(F_1, F_2) + Var(\varepsilon_i)$$

where, M_{ii} is the variance of market i;

$$M_{ij} = b_{i1}b_{j1}Var(F_1) + b_{i2}b_{j2}Var(F_2) + \left(b_{i1}b_{j2} + b_{i2}b_{j1}\right)Cov(F_1, F_2)$$

Where M_{ij} is the covariance of market *i* with market *j*

See: Exhibit 4 → Example, Volume 3, Reading 18, P. 30-31.

Note:

A zero sensitivity to global bonds does not mean that a market is uncorrelated with global bonds, although it does mean that its partial correlation with bonds is zero.

The ability to establish consistency efficiently is a significant advantage of a multifactor model approach.

The above example is a two-layer structure with the factors on the first layer and the markets on the second layer. The two-layer approach can be replaced by a multi-layer approach. The total number of layers would depend on the final set of markets whose covariance structure we want to model.

3.1.2 Discounted Cash Flow Models

Discounted cash flow models (DCF models) express the idea that an asset's value is the present value to its expected cash flows:

$$\boldsymbol{V_0} = \sum_{t=1}^{\infty} \frac{CF_t}{(1+r)^t}$$

DCF models have the advantage of being *forward*-looking.

DCF models do not address short-run factors such as current supply and demand conditions, so they are more appropriate for setting *long-term* expectations.

3.1.2.1 Equity Markets

1. Gordon Growth Model

The **Gordon (constant) growth model** is often used to formulate the ***long-term expected return*** of equity markets. The expression is as follows:

$$\boldsymbol{E(R_e)} = \frac{D_0(1+g)}{P_0} + g = \frac{D_1}{P_0} + g$$

Hence, the expected rate of return is composed of two parts:

1. The dividend yield (D_1/P_0);
2. The capital gains (or appreciation) yield (g).

Estimation of Inputs

The quantity *g* can be estimated as the growth rate in **nominal gross domestic product**.

- Nominal GDP can be estimated as the sum of growth rate in real GDP plus the expected long-run inflation rate.
- Any differences between the expected growth of the overall economy and the equity index should also be taken into account. Hence,:
  Earnings growth rate = GDP growth rate (nominal) +Excess corporate growth
  where, excess growth can be positive or negative.

2. Grinold and Kroner Model

The Grinold and Kroner model takes explicit account of repurchases and provides a means to incorporate expectations of valuation levels through the P/E ratio. The expression is:

$$\boldsymbol{E(R_e)} \approx \frac{D}{P} - \Delta S + i + g + \Delta PE$$

where,

$E(R_e)$= the expected rate of return on equity
D/P = the expected dividend yield
ΔS = the expected percent change in the number of shares outstanding
i = the expected inflation rate
g = the expected real total earnings growth rate
ΔPE = the per period percent change in the P/E multiple

The term ΔS is *negative* in the case of net *positive* share repurchases, so $-\Delta S$ is a *positive* **repurchase yield** in such cases.

The above equation consists of **three components**:

- Expected income return: D/P - ΔS
- Expected nominal earnings growth return: i + g
- Expected repricing return: ΔPE

The expected nominal earnings growth return and the expected repricing return constitute the ***expected capital gains***.

Read & Practice: Example 13 & 14, Volume 3, Reading 18, P. 36 & 37.

3. Fed Model

The Fed model asserts that the stock market is *over*valued if the market's current earnings yield (earnings divided by price) is *less* than the 10-year Treasury bond yield (because stocks are a riskier investment than T-bonds).

3.1.2.2 Fixed-Income Markets

The DCF model is a standard tool in the pricing of fixed-income instruments.

- The yield-to-maturity of a reference instrument for a bond market segment is a first approximation of the market expected return for the asset segment with a time horizon equal to the investment's maturity.
- However, the YTM assumes that interest payments are reinvested at a rate that equals the YTM. Hence, the YTM of a zero-coupon bond at the chosen time horizon would be a superior estimate.

3.1.3) The Risk Premium Approach

The risk premium approach (also called the **build-up approach)** expresses the expected return on a risky asset as the sum of the risk-free rate of interest and one or more risk premiums. It is most often applied to estimating ***required return*** in equity and bond markets.

3.1.3.1 A General Expression

A formal expression for the expected return on a risky asset is:

$$\boldsymbol{E(R_i)} = R_F + (Risk\ premium)_1 + (Risk\ premium)_2 + \cdots + (Risk\ premium)_K$$

where,

$E(R)_i$ is the asset's expected return
R_F is the risk-free rate of interest.

3.1.3.2 Fixed-Income Premiums

The expected bond return, $E(R_b)$, can be built up as the real rate of interest plus a set of premiums:

$E(R_b)$ = Real risk-free interest rate + Inflation premium +Default risk premium + Illiquidity premium +Maturity premium + Tax premium

The **real risk free interest rate** is the interest rate for a risk-free security if no inflation were expected.

The **inflation premium** compensates investors for expected inflation. The sum of the real risk-free rate and the inflation premium is the **nominal risk free interest rate** (Treasury bill YTM). The yield spread of conventional government bonds over inflation-indexed bonds (e.g. TIPS) of the same maturity may provide an estimate of the inflation premium.

The **default risk premium** compensates investors for the possibility that the borrower will fail to make a promised payment and is analyzed as the sum of the default loss in yield terms plus a premium for the nondiversifiable risk of default. Market yield data and credit ratings can be used to measure the default risk premium by comparing the yields on bonds that are similar in all respects but differ in default risk.

The **illiquidity premium** compensates investors for the risk of loss relative to an investment's fair value.

The **maturity premium** compensates investors for the increased sensitivity of the market value of debt to changes in interest rates as maturity is increased. The difference between the interest rate on longer-maturity, liquid Treasury debt and that on short-term Treasury debt will reflect the maturity premium for longer maturity debt.

A **tax premium** may also be applicable to certain classes of bonds.

Read: Volume 3, Reading 18, Page 39 Paragraph above Example 15.

Read: Example 15-17, Volume 3, Reading 18, P. 39-40.

3.1.3.3 The Equity Risk Premium

The **equity risk premium** is the compensation required by investors for the additional risk of equity compared with debt.

The **bond-yield-plus-risk-premium method** of estimating the expected return on equity states that the equity risk premium is the expected excess return over a long-term government bond yield.

$E(R_e)$ = YTM on a long-term government bond + Equity risk premium

3.1.4) Financial Market Equilibrium Models

Financial equilibrium models describe relationships between expected return and risk in which *supply and demand are in balance*.

Equilibrium approaches to setting capital market expectations include:

- The **Black-Litterman approach** (which reverse-engineers the expected returns implicit in a diversified market portfolio), and
- The **international CAPM-based** approach.

1. The ICAPM Approach

If purchasing power parity holds, the ICAPM gives the expected return on any asset as:

$$\mathbf{E(R_i)} = R_F + \beta_i\,(E(R_M) - R_F)$$

where,

$E(R_i)$ = the expected return on asset i given its beta
R_F = the risk-free rate of return
$E(R_M)$ = the expected return on the world market portfolio **(global investable market; GIM)**
β_i = the asset's sensitivity to returns on the world market portfolio, equal to **Cov (R_i, R_M) /Var (R_M)**

An asset class's **risk premium** equals the product of the Sharpe ratio of the world market portfolio, the asset's volatility, and its correlation with the market portfolio:

$$\mathbf{RP_i} = \sigma_i \rho_{i,M} \left(\frac{RP_M}{\sigma_M}\right)$$

Suppose the standard deviation of Canadian bonds is 7%, their correlation with the GIM is 0.54, and the market Sharpe ratio is 0.28, then the ERP will equal:

$$7\%(0.54)(0.28) = 1.06\%$$

2. Singer-Terhaar approach

The Singer-Terhaar approach recognizes the need to account for **two market imperfections**:

Illiquidity.

The ICAPM assumes perfect markets (markets without frictional costs). Thus, we need to add an estimated *illiquidity premium* to an ICAPM expected return estimate.

- One estimation approach uses the investment's **multiperiod Sharpe ratio (MPSR)**. The MPSR is calculated over a holding period equal to the investment's lockup period. An illiquid investment's MPSR should at least be as high as the MPSR of the market portfolio. Suppose the ICAPM return of an illiquid investment is 12%, and its MPSR is below that of the GIM (say, 0.67). Then, if increasing its return to 20% makes its MPSR equal to that of the market's, the estimate of the illiquidity premium would be 20%-12% = 8%

Market segmentation.

Market integration means that there are no impediments or barriers to capital mobility across markets, so that two assets in different markets with identical risk characteristics must have the same expected return.

Market segmentation means that there are impediments to capital movements across markets

and two identical assets in different markets may have different expected returns.

Since most markets lie between the extremes of perfect integration and complete segmentation, the estimate of risk premium is a *weighted average of the risk premium assuming perfect integration and the risk premium assuming complete segregation*.

If a market is completely segmented, the market portfolio is the individual *local* market, so the correlation of the market with the reference portfolio is 1. Hence, the risk premium equals:

$$\mathbf{RP_i} = \sigma_i \left(\frac{RP_M}{\sigma_M}\right)$$

For Canadian bonds (above), this would equal 1.96% (7%×0.28).

Suppose Canadian markets are 80% integrated and 20% segmented.

Taking a weighted average, we have: (0.8×1.06%) + (0.2×1.96%) = 1.24%

The expected return would equal the sum of the risk-free rate (4%) and the relevant risk premium. In the example above, it will equal: 4%+1.24% = 5.24%

NOTE:

Summarizing the Singer-Terhaar approach, we take the following steps:

1. Estimate the perfectly integrated and the completely segmented risk premiums.
2. Add the applicable illiquidity premium, if any, to the estimates of the prior step.
3. Estimate the degree of market integration.
4. Take a weighted average of the perfectly integrated and the completely segmented risk premiums.
5. Calculate the expected return as the sum of the risk free rate and the calculated RP.

Practice: Example 18 & 19, Volume 3, Reading 18, P. 46-51.

3.2 Survey and Panel Methods

The **survey method** involves asking a group of experts for their expectations and using the responses in capital market formulation.

If the group queried is stable, the analyst has a panel of experts and the approach is called a **panel method.**

Surveys may be sensitive to the professional identity of the respondents, e.g. the predictions of practitioners for ERPs have been found to be higher than those of academics.

Besides direct questions, there are also *commercial surveys* of analyst' forecast of long-term earnings growth rates.

Practice: Example 20, Volume 3, Reading 18, P. 52.

3.3 Judgment

The expectations setting process can give wide scope to applying judgment (economic and psychological insight) to improve forecasts.

Investors who rely on judgment may use checklists.

Investment experience, the study of markets, and intelligence are requisites for the development of judgment.

Practice: Example 21, Volume 3, Reading 18, P. 53.

4. ECONOMIC ANALYSIS

Asset pricing theory predicts that:

- Assets with low expected payoffs during business cycle troughs should bear *higher* risk premiums than assets with high expected payoffs in such periods.

The analyst who can discern or forecast a change in trend or ***point of inflection*** in economic activity has a competitive advantage over others because such points often present unique investment opportunities.

The economic output of economies has **two components**:

- **Trend Growth.** This is of relevance for setting *long-term* expectations for asset classes.
- **Cyclical Growth.** Cyclical variation affects variables such as corporate profits and interest rates and is important for short-term expectations setting.

4.1 Business Cycle Analysis

In business cycle analysis, two cycles are generally recognized: a short-term **inventory cycle**, typically lasting 2-4 years, and a longer term **business cycle,** usually lasting 9-11 years.

Cycles can be disrupted by major shocks and both the duration and amplitude of each phase of the cycle are hard to predict.
Cycles mark variation in economic activity. The chief **measures of economic activity** are as follows:

Gross domestic product (GDP): GDP is the total value of final goods and services produced in the economy during a year. The main expenditure components are Consumption, Investment, Change in Inventories, Government Spending, and Exports less Imports. To focus on increases in output of goods and services produced and the standard of living, economists focus on ***real GDP*** (reflecting an adjustment for price changes).

Output gap: The output gap is the difference between the ***potential output*** (trend growth path) and the ***actual value of GDP.***

- A positive output gap opens in times of recession or slow growth. During this time, inflation tends to decline.
- When GDP is above its trend value, the economy is under inflationary pressure.

Recession: A recession occurs when there are two successive quarterly declines in GDP.

4.1.1) The Inventory Cycle

The inventory cycle is the cycle measured in terms of fluctuations in inventories.

In the *up phase* of the inventory cycle, businesses are confident about future sales and are increasing production and building inventories. This tends to generate employment, which tends to boost the economy and bring further sales.

At some point, there is a disappointment in sales due to some event (e.g. tightening of monetary policy). Business cuts back production to try to reduce inventories and hires more slowly. The result is a *slowdown in growth*.

A good indicator of the inventory position is the ***inventory/sales ratio***.

- When the inventory/sales ratio has moved down, the economy is likely to be strong in the next few quarters as businesses try to rebuild inventory.
- When the ratio has moved sharply up, a period of economic weakness is expected.
- Overall, this indicator has been trending *down* because of improved techniques such as Just in time (JIT) inventory management.

4.1.2) The Business Cycle

The business cycle represents fluctuations in GDP in relation to long-term trend growth. A typical business cycle has **five phases**:

Initial Recovery

The economy picks up from its slowdown or recession, confidence among businesses rises although consumer confidence may still be at low levels since unemployment is high.

Inflation will still be falling in the initial recovery phase. The output gap is still large.

Capital Market Effects:

- Bond yields may continue to come down but are likely to be bottoming.
- Stock markets may rise strongly at this point.
- Cyclical assets and riskier assets (small stocks, high-yield bonds) perform well.

Early Upswing

The economy gains momentum. This is the healthiest period of the cycle because growth increases without high inflation.

There is increasing consumer confidence, unemployment starts to fall and businesses build inventories. Profits rise rapidly.

Capital Market Effects:

- Short rates are moving up at this time.
- Longer bond yield are likely to be stable or rising slightly.
- Stocks are still trending up.

Late Upswing

- The output gap closes and the economy is in the danger of overheating.
- Confidence is high; unemployment is low. Inflation starts to pick up and shortages of labor develop.

Capital Market Effects:

- Interest rates are rising.
- Bond yields will be rising.
- Stock markets will often rise but may be nervous so that equities are volatile.

Slowdown

The economy is slowing; business confidence starts to waver; inflation continues to rise.

Companies try to reduce their inventory levels.

Capital Market Effects:

- Short-term interest rates are high and rising at first but then they peak.
- Bonds top out then rally sharply (fall). The yield curve often inverts.

- The stock market may fall, with interest-sensitive stocks such as utilities and financial services performing best.

Recession

There is often an inventory pullback.

Central banks ease monetary policy; consumer and business confidence decline and profits drop sharply.

Unemployment rises, putting downward pressure on inflation.

Capital Market Effects:

- Short-term interest rates drop, and so do bond yields.
- The stock market usually starts to rise in the later stages of the recession.

NOTE:

Each cycle is different because of specific events and trends that fall outside the stylized business cycle framework (as given above).

Read: Example 22, Volume 3, Reading 18, P. 57-58.

See: Exhibit 15, Volume 3, Reading 18, P. 58.

4.1.3) Inflation and Deflation in the Business Cycle

Inflation means *rising* prices, while **deflation** means *falling* prices. Consumer price indices, the GDP and consumer expenditure deflators, are used to discern the overall trend.

Inflation is linked to business cycle, tending to *rise* in the late stages of the cycle and to *decline* during recessions and the early stages of recovery.

Central bank's convention of dealing with inflation is based on **three principles**:

- Central bank's policy making decisions must be independent of political influence.
- Central banks should have an inflation target.
- Central banks should use monetary policy to prevent the economy from either over heating or languishing in a recession too long.

The challenge is to keep inflation low without succumbing to deflation. Deflation is a threat to the economy for **two reasons**:

- It tends to undermine debt-financed investments. If the price of a debt-financed asset declines in value, the value of 'equity' in the asset declines at a leveraged rate.
- Deflation undermines the power of central banks, since in a deflation, interest rates fall to levels close to zero so the central bank has less leeway to stimulate the economy by lowering interest rates.

In today's economies, with *no* ***gold standard currency system***, governments are able to expand money supply to any degree, so there is little threat of deflation.

Resistance to reduction in wages is a counterweight to deflationary pressures.

Effects on Asset Classes:

- During a recession, with falling inflation and interest rates, ***bonds*** generally post capital gains. In a strong upswing, bonds yields rise, resulting in capital losses to bondholders.
- For ***equities***, higher inflation should be reflected in higher profits, so stock will rise. However, rising inflation could mean that central banks may raise interest rates. Falling inflation, or deflation, is a problem because it threatens a recession.

Read: Example 23 & 24, Volume 3, Reading 18, P. 59 & 60-61.

See: Exhibit 18, Volume 3, Reading 18, P. 63.

4.1.4) Market Expectations and the Business Cycle

It is not easy to identify the current phase of the business cycle and to correctly predict when the next phase will begin. This is because the phases of the business cycle vary in length and amplitude (e.g. recessions can be short-lived or the weak phase of the cycle may not even involve a recession).

4.1.5) Evaluating Factors that Affect the Business Cycle

Business cycle analysis should be focused on **four areas**:

1. **Consumer spending.** This amounts to 60%-70% of GDP and is therefore the most important factor.
2. **Business.** Business investment has a smaller weight in GDP than consumer spending, but is more volatile.
3. **Foreign trade.** Foreign trade is an important component of smaller economies.
4. **Government activity.** This includes both ***monetary policy*** and ***fiscal policy***. Governments use them to control the cycle by trying to stimulate or constrain the economy.

4.1.5.1 Taking the Pulse of Consumers

The principal sources of data on consumer spending are retail sales, miscellaneous store sales and consumer consumption data.

The most important factor affecting consumption is *consumer income after tax*, which depends on wage settlements, inflation, tax changes, and employment growth.

If the household savings rate remains constant, then changes in income will exactly predict changes in spending. But the savings rate changes over time.

4.1.5.2 Taking the Pulse of Business

Data on business investment and spending on inventories reveal recent business activity.

A report of rising inventories may mean that businesses are confident of sales. This is usually the case in the early stages of an inventory cycle upswing and is bullish for economic growth.

At the late stage of the cycle, a rise in inventories has a negative effect since it is usually involuntary because sales are lower than expected.

4.1.5.3 Monetary Policy

Monetary policy is used to intervene in the business cycle.

- Monetary policymakers switch to ***stimulative measures*** (increasing money supply growth and/or lowering short-term interest rates) when the economy is weak, and ***restrictive measures*** (decreasing money supply growth and/or raising short-term rates) when the economy is in danger of overheating.

The **key variables** watched by monetary authorities are:

- The pace of economic growth;
- The amount of excess capacity still available;
- The level of unemployment;
- The rate of inflation.

Central banks strive to keep the growth rate of the economy as close to its long-term sustainable trend rate.

Lower rates stimulate the economy because they encourage borrowing, result in higher bond and stock prices, and encourage business to invest more. The opposite is true for a rise in rates.

The effect of a cut in interest rates depends not just on the direction of change, but also on the ***absolute level of interest rates.*** What matters is where the rates stand in relation to their average or 'neutral' level.

The 'neutral level' is a point of *interest rate equilibrium* and includes an inflation component and a real return component.

The Taylor Rule

The Taylor rule links the central banks' target short-term interest rate to the rate of growth of the economy and inflation. It provides a way to assess the central bank's stance and to predict changes. The equation is:

$$R_{Optimal} = R_{neutral} + [0.5 \times (GDPg_{forecast} - GDPg_{trend}) + 0.5 \times (I_{forecast} - I_{target})$$

where,

$R_{Optimal}$= the target for the short-term interest rate
$R_{neutral}$= the short-term interest rate that would be targeted if GDP growth were on trend and inflation on target.

Practice: Example 26, Volume 3, Reading 18, P. 67.

NOTE:

Historically, the Taylor rule has provided a reasonably accurate description of central banks' behavior.

Money Supply Trends

If money growth is particularly strong in relation to nominal GDP, chances are that growth will accelerate in the near future and that inflation will eventually accelerate.

What Happens When Interest Rates Reach Zero

Once interest rates are at zero, further monetary stimulus requires **new types of measures**:

- First, the central bank can push cash (reserves) directly into the banking system.
- A second possibility is to devalue the currency.
- A third option is to hold short-term interest rates low for an extended period.
- A final option is for the central bank to buy assets directly from the private sector.

Practice: Example 27, Volume 3, Reading 18, P. 69.

4.1.5.4 Fiscal Policy

Fiscal policy means manipulating the budget deficit to influence the economy.

- Governments increase spending or cut taxes to stimulate the economy and cut spending or raise taxes to slow the economy.

In analyzing fiscal policy, **two points** should be kept in mind:

- The focus should be on *changes* in the government deficit, not its level.
- It is only changes in the deficit due to *deliberate changes* in fiscal policy that matter (e.g. during recession, the deficit rises, and during expansion, it naturally falls. These changes are not stimulatory or restrictive).

Linkages with Monetary Policy

If both fiscal and monetary policies are tight, the economy is certain to slow and the yield curve is *inverted*.

If both monetary policy and fiscal policy are expansionary, then the economy will grow and the yield curve tends to be *steeply upward sloping*.

When fiscal policy is tightened while monetary policy remains loose, bond yields tend to fall and the yield curve has a more *moderate upward slope*.
When monetary policy is tight but fiscal policy is loose, the yield curve tends to be *flat*.

See: Exhibit 20, Volume 3, Reading 18, P. 69.

4.2 Economic Growth Trends

The economic growth trend is the long-term growth path of GDP (average growth rate around which the economy cycles).

Some trends or changes in trends are by definition not open to forecasting. These are often called `***shocks'***. Examples include wars and changes in tax/trade policies.

A higher trend rate of growth may offer equity investors a particularly good return and allows actual growth to be faster before there is a danger of inflation.

Emerging countries naturally can more easily have faster growth as they catch up with the leading industrial countries. The more developed they become, the more likely is that their growth will slow.

4.2.1) Consumer Impacts: Consumption and Demand

Consumers can be counted upon as the largest source of aggregate economic growth.

Overall, consumer consumption is quite stable over the business cycle. This stability is explained by the **permanent income hypothesis**, which asserts that consumers' spending behavior is largely determined by their *long-run* income expectations.

- When incomes rise the most (during expansion), spending increases less than income rises.
- When incomes fall the most (during slowdowns), consumption falls only a fraction and usually only for a short period of time. Hence, overall spending patterns remain stable.

4.2.2 A Decomposition of GDP Growth and Its Use in Forecasting

An economy's aggregate trend growth is the *sum* of the following:

Growth from changes in employment (growth from labor inputs), comprising:

- growth in potential labor force size.
- growth in actual labor force participation, plus

Growth from changes in labor productivity, comprising

- growth from capital inputs, and
- growth in total factor productivity (TFP) (i.e. growth from increase in the productivity in using capital inputs).

NOTE:

TFP is often taken as a `residual'—that is, output growth that is not accounted for by the other factors.

Stock market returns depend on the rate of return on invested capital. If capital is growing faster than returns (due to rapid investment), returns on invested capital are driven down.

Economic trend growth rates will be relatively low:

- if labor force growth is low due to slow population growth;
- if the population is relatively old;
- the labor force participation rate is low.
- Trend growth will also be low if investment is not strong.

Practice: Example 29, Volume 3, Reading 18, P. 73.

4.2.3) Government Structural Policies

Government structural policies refer to government policies that affect the limits of economic growth and incentives within the private sector. The following are elements of a ***pro growth*** government structural policy:

1. Fiscal policy is sound.

Decreasing a budget surplus may be an economic stimulus during a recession. But economies that run large deficits tend to have **three problems**:

a. First, it often brings a current account deficit, which increases borrowing and the level of foreign debt, and usually requires a large and potentially destabilizing devaluation of the currency.
b. Second, if the deficit is financed by printing money, inflation rises.
c. Third, the financing of the deficit takes resources away from private sector investment, which is usually more productive for the economy as a whole.

2. The public sector intrudes minimally on the private sector.

The market usually provides the right incentives to individuals and businesses and leads to an efficient

allocation of scarce resource. Regulations, like labor market rules, tend to raise the **structural level of unemployment** (unemployment resulting from scarcity of a factor of production).

3. **Competition within the private sector is encouraged.**

Competition is important because it drives companies to be more efficient and therefore boosts productivity growth. The reduction of trade tariffs and barriers, advances in networking technologies, and openness to foreign investment have served to increase competition.

4. **Infrastructure and human capital development are supported.**

Building health and education infrastructure has important economic benefits.

5. **Tax policies are sound.**

Sound tax policy involves simple, transparent, and rarely altered tax rates; low marginal tax rates; and a very broad tax base.

4.3 Exogenous Shocks

Exogenous shocks are events from outside the economic system that affect its course (e.g. political events, changes in government policy, or natural disasters).

They are typically not built into prices or at most are only partially anticipated.

Most shifts in trends are likely to come from shifts in government policies (e.g. a new government or a major institutional shift). However, some shocks do not affect trends but are felt in a more immediate or short-term manner.

There are **two types of economic shocks** that often involve a degree of *contagion*: oil shocks and financial shocks.

4.3.1) Oil Shocks

A sudden rise in oil prices affects consumers' income and reduces spending. Although inflation moves up initially, the contractionary effect of higher oil prices restricts employment and opens up an output gap so that, after a period, inflation slows.

4.3.2) Financial Crises

Periodic financial crises affect growth rates either directly through bank lending or indirectly through their effect on investor confidence. Financial crises are potentially more dangerous in a low interest rate environment.

4.4 International Interactions

Large and diverse economies tend to be less influenced by developments elsewhere than small economies whose production depends significantly on a few commodities. However, increasing globalization of trade, capital flows, and direct investment means that all economies are affected by international interactions.

4.4.1) Macroeconomic Linkages

Economies are directly affected by changes in the *foreign demand for their exports*. Hence, the business cycle in one country can affect that in others.

There are other international linkages such as those resulting from *cross-border direct business investments.*

However, the economies of developed countries are clearly not perfectly integrated.

4.4.2) Interest Rate/Exchange Rate Linkages

Sometimes, short term interest rates are affected by developments in other countries because one central bank pursues an exchange rate link with another currency.

Some governments *unilaterally* **peg** their currencies to one of the major currencies, usually the U.S. dollar. A high degree of confidence in the exchange rate peg means that the interest rate differential can converge to near zero. The pegging strategy has **two benefits**:

- First, the exchange rates don't fluctuate wildly.
- Second, by pegging, a 'pegged' country often hopes to control inflation.

If a country is known to be linking its currency to another, then bond yields of the weaker currency are nearly always higher.

Nominal bond yields vary between countries according to those countries' different inflation outlooks.

The key factor linking bond yields is world supply and demand for capital. Long-term and short-term interest rates would go up if demand for world savings exceeded the supply.

4.4.3) Emerging Markets

There are special considerations in setting capital market expectations for emerging countries.

4.4.3.1 Essential Differences between Emerging and Major Economies

Emerging economies:

Need higher rates of investment than developed countries, have inadequate domestic savings and therefore, rely heavily on foreign capital.

Have a more volatile political and social environment than developed countries and tend to have a relatively large percentage of people with low income and a small middle class.

Need major structural reform to unlock their potential.

Are often concentrated in a few areas such as particular commodities or a narrow range of manufactured goods.

4.4.3.2 Country Risk Analysis Techniques

Investors in **emerging bonds** focus on the risk of the country being unable to service its debt.

Investors in **stocks** need to assess the growth prospects of emerging countries.

Following are *six questions* that country risk analysis seeks to answer:

1. ***How sound is fiscal and monetary policy?***

a. A persistent ratio of *fiscal deficit to GDP* above 4% is regarded with concern. Countries with ratios of 2% or less are doing well.
b. Countries with a *ratio of debt of more than 70-80% of GDP* are extremely vulnerable.

2. ***What are the economic growth prospects of the economy?***

Annual *growth rates* of less than 4% generally mean that the country is catching up slowly with industrial countries, and that population growth is faster than economic growth, meaning that per capita income is either falling or growing very slowly.

3. ***Is the currency competitive, and are the external accounts under control?***

a. If the currency is overvalued for a prolonged period, the country is likely to be borrowing too much, creating a large current account deficit and a growing external debt.

b. The *size of the current account deficit* is a measure of competitiveness and the sustainability of the external accounts. Any country with a deficit persistently greater than 4% of GDP is uncompetitive to some degree, because if the deficit is financed through debt, currency depreciation and economic slowdown are likely to follow.

4. ***Is external debt under control?***

a. If the *ratio of foreign debt to GDP* is above 50%, it enters a dangerous territory, while 20-50% is the ambiguous area.

b. A reading above 200% of the *ratio of debt to current account receipts* puts the country into the danger zone A reading below 100% does not indicate danger.

5. ***Is liquidity plentiful?***

a. An important ratio is *reserves divided by short-term debt*. A safe level is over 200%, while a risky level is under 100%.

b. Excess short-term borrowing can increase the chances of a crisis.

6. ***Is the political situation supportive of the required policies?***

a. For an economy with fast growth, policy liberalization, low debt and high reserves, a supportive political situation matters less.
b. Key policy changes include reforms such as privatization and ending of monopolies.

NOTE:

Despite serious risk caused by political instability and periodic crises, many emerging countries grow faster than developed countries and offer good investment opportunities.

4.5 Economic Forecasting

Some of the approaches that the analyst can apply to economic forecasting include:

Econometric models, the most formal and mathematical approach to forecasting.

Leading indicators: variables that have been found to lead (precede) turns in the economy.

Checklists, requiring the subjective integration of the answers to a set of questions.

4.5.1) Econometric Modeling

Econometrics is the application of quantitative modeling and analysis grounded in economic theory to the analysis of economic data.

Econometric models vary from small models to complex models with hundreds of equations. However, it is by *no* means certain that larger models are superior to smaller models.

Optimization is used to estimate the parameters of the equations. The estimated system of equations is used to forecast future values of variables, with the forecaster supplying values for the *exogenous* variables.

Limitations of econometric models:

- First, they require the user to find adequate measures and relationships to be modeled.
- Variables may also be measured with error.
- Relationships among variables may change over time; as a result, the model may be misspecified.

Benefit:

- The great merit of such models is that they constrain the forecaster to a certain degree of *consistency* and also challenge the modeler to reassess prior views based on what the model concludes.

4.5.2 Economic Indicators

Economic indicators contain information on an economy's recent past activity or its current or future position in the business cycle.

Lagging economic indicators and **coincident indicators** are indicators of recent past and current economic activity, respectively.

A **leading economic indicator (LEI)** provides information about upcoming changes in economic activity, inflation, interest rates, and security prices. LEI based analysis provides the *simplest* forecasting approach.

Analysts may use both **composite LEIs and individual LEIs**, reflecting a collection of economic data releases that together produce a given reading. For example they can be combined in a so-called ***diffusion index*** which measures how many indicators are pointing up and how many down.

4.5.3) Checklist Approach

Checklist assessments are straightforward but time-consuming because they require looking at the widest possible range of data.

The data provided by checklists can be extrapolated into forecast via objective *statistical methods*, such as time-series analysis, or via more *subjective or judgmental* means. The analyst then assesses whether the measures are in an equilibrium state or nearer to an extreme value.

The subjectivity of the checklist approach is perhaps its main **weakness**. Its main **strength** is its flexibility (the forecaster can quickly change the variables/weights depending on changes in the economy).

Read: Example 30, Volume 3, Reading 18, P. 89-90.

4.5.5) Economic Forecasting Approaches: Summary of Strengths and Weaknesses

See: Exhibit 25, Volume 3, Reading 18, P. 91.

4.6 Using Economic Information in Forecasting Asset Class Returns

Following is an explanation of how asset classes are moved by different economic variables.

4.6.1 Cash and Equivalents

Managers lengthen or shorten maturities according to their expectations of where interest rates will go next.

- Longer-maturity paper will pay a higher interest rate than shorter maturity paper.
- If rises in rates are expected over time, then 6-and 12-month paper should offer even higher rates than shorter-term paper.
- The overnight interest rate is targeted by the central bank and will normally vary only slightly from the target set (e.g. the federal funds rate in the U.S. and the repo rate in the Eurozone).
- The yield curve of a particular security reflects the markets' expectations of rates over that period. Managers try to forecast interest levels before others do.

Read: Example 31, Volume 3, Reading 18, P. 92-93.

4.6.2) Nominal Default-Free Bonds

Nominal default-free bonds are conventional bonds that have no default risk. The yield on such bonds can be broken down into **two components**: real bond yield (determined by GDP growth) and forecasted inflation. Hence, the investor needs to forecast the inflation rate over the long-term.

- If ***inflation*** is thought to accelerate, bonds can be unattractive because they will not compensate for higher inflation and will fall below par value as yields rise. Bond investors can suffer losses in real terms because of unexpected inflation.

News of stronger ***economic growth*** usually makes bond yields rise (prices fall) because it implies greater demand for capital and perhaps higher inflation too.

Changes in ***short term rates*** have less predictable effects on bond yields. A rise in rates will lead to a rise in longer-term bond yields. However, a rise in rates will sometimes be expected to slow the economy, and bond yields could fall as a result. If the central bank achieves its inflation objectives, then bond yields should not change on inflation expectations but may go up and down according to changes in short rates.

4.6.3) Defaultable Debt

Defaultable debt is debt with some amount of credit risk—in particular, corporate debt.

During a business cycle, spreads tend to rise during a recession because companies are under stress. Investors demand higher rates to pay for the uncertainties and surprises, such as fraud.

In contrast, during periods of strong economic growth, spreads narrow as fears of default decline.

4.6.4) Emerging Market Bonds

Emerging market debt refers here to the sovereign debt of nondeveloped countries.

Emerging market bonds are different in that the country is borrowing in foreign currency, so the risk of default is correspondingly higher. This risk can be assessed using *country risk analysis*.

Such bonds are usually analyzed by developed market investors in terms of their spread over domestic Treasuries compared to similarly rated domestic corporate debt.

4.6.5) Inflation-Indexed Bonds

Many governments issue bonds linked to inflation.

Government issued inflation-indexed bonds are perfectly risk-free, since they entail no risk from unexpected inflation. However, the yield on indexed bonds still changes over time with **three economic factors:**

- First, the yield changes with the real economy and with the level of short-term interest rates. If real yields are high because of a strong economy, then real yields on TIPS will be higher.
- Second, yields fall if inflation accelerates because these securities are more attractive when inflation is volatile.
- Finally, the yields can vary according to institutional supply and demand.
- In practice, tax effects and the limited size of the market may also distort the real yield.

See: Exhibit 26, Volume 3, Reading 18, P. 95.

4.6.6) Common Shares

4.6.6.1 Economic Factors Affecting Earnings

In the long-term, the trend growth in aggregate company earnings is mainly determined by the trend rate of growth of the economy. A faster growing economy is likely to show faster average earnings growth.

Over the short-term, the share of profits in GDP varies with the business cycle:

- Companies that can maintain earnings growth through recessions receive high market valuations from investors (called **defensive stocks)**. Companies with large fixed costs and a pronounced sales cycle are more sensitive to the business cycle than others. These are called **cyclical stocks.**
- During the early stages of an upswing, earnings recover strongly; there is a rise in capacity utilization and increasing employment. Wages remain low, so that productivity gains flow straight into profits. A leaner, fitter company emerges from recession.
- Later in the upswing, wage growth starts to quickly rise, profits contract, and earnings growth slows.

Read: Example 32 & 33, Volume 3, Reading 18, P. 96 & 97.

4.6.6.2 The P/E Ratio and the Business Cycle

During the business cycle, the P/E ratio tends to be high and rising when earnings are expected to rise (during the early stages of a recovery).

Conversely P/Es are likely to be low and falling if the outlook for earnings worsens (during a slump).

However, P/Es of cyclical companies may be above their own historical means during downturns as investors anticipate a sharp future earnings recovery when the economy turns up (a phenomenon called the ***Molodovsky effect).***

High inflation rates tend to depress P/E ratios. Consequently, comparison of current P/E with past P/E that do not control for differences in inflation may be suspect.

4.6.6.3 Emerging Market Equities

Ex post equity risk premiums for emerging markets are on average *higher* and *more volatile* than those in developed markets. In addition to evaluating linkages, the analyst needs to do considerable country and sector-specific research to appraise the prospects for equity investments in an emerging country.

4.6.7) Real Estate

Growth in consumption, real interest rates, the term structure of interest rates, and unexpected inflation are generally systematic determinants of real estate returns.

In general, lower rates are net *positive* for real estate valuation, resulting in lower capitalization rates.

Read: Example 34, Volume 3, Reading 18, P. 100-102.

4.6.8) Currencies

The exchange rate between two countries reflects the balance of buyers and sellers.

- If a country begins to import more, its currency will tend to depreciate.
- Strong domestic economic growth and an opening of new industries to foreign ownership are two possible drivers of a rise in foreign direct investment that will likely push up a currency.
- When interest rates are high, inflows are likely to be higher and the currency value rises. Conversely, falling interest rates often weaken a currency.

NOTE:

The link between interest rates and the currency sometimes works the other way. Higher interest rates can be seen as slowing the economy. A slow economy can cause the currency to depreciate.

4.6.9) Approaches to Forecasting Exchange Rates

There are **four broad approaches** to forecasting exchange rates, and most forecasters use a combination of them all.

4.6.9.1 Purchasing Power Parity

Purchasing power parity asserts that movements in an exchange rate should offset any difference in the

inflation rates between two countries. For example if the Canadian-Eurozone inflation differential is -5.52%, PPP would predict that the Canadian dollar will appreciate against the euro by approximately the same percentage. For example if C$1.3843/euro, then PPP would predict an exchange rate of (1-0.0552)(1.3843) = C$1.3079 per euro.

- PPP is often not a useful guide to the direction of exchange rates in the short or even medium term. However, it does seem to be useful in the long run.

4.6.9.2 Relative Economic Strength

The relative economic strength forecasting approach focuses on *investment flows* rather than trade flows:

- It suggests that a strong pace of economic growth in a country creates investment opportunities, increasing the demand for the country's currency and causing it to appreciate.
- Sometimes, demand for the currency comes from higher short-term deposit rates in the country coupled with an expectation that rates will remain the same or appreciate, since when rates are high, capital moves into the country. As a result, the currency strengthens.

NOTE:

The relative strength approach indicates the response to the news on the economy but does *not* tell us about the *level* of exchange rates. The PPP approach indicates what level of the exchange rate can be regarded as a *long-term equilibrium*.

4.6.9.3 Capital Flows

The capital flows forecasting approach focuses on *expected capital flows*, particularly long-term flows such as equity investment and foreign direct investment (FDI).

- Inflows of FDI into a country increase the demand for the country's currency, causing it to appreciate.
- Capital flows may have the effect of *reversing* the usual relationship between interest rates and currency. A cut in short-term rates can be expected to boost economic growth and the stock market, thereby making long-term investments more attractive, causing the currency to appreciate.

4.6.9.4 Savings-Investment Imbalances

The savings-investment imbalances approach explains currency movements in terms of the effects of domestic *savings-investment imbalances* on the currency.

- If an economy suddenly begins to expand and domestic savings do not change, investment would exceed savings. The excess investment may need to be financed with foreign reserves, requiring a current account deficit (via imports exceeding exports). However, if such financing is not sufficient, exchange rates will need to rise. If capital flows are attracted to the country, either due to high interest rates or due to attractive expected returns, the exchange rate will rise.
- If the economy becomes weak, and domestic investments no longer exceed domestic savings, then the currency will *weaken*.

Read: Example 36, Volume 3, Reading 18, P. 105-106.

See: Exhibit 23, Volume 3, Reading 18, P. 107-108.

4.6.10) Government Intervention

Periodic attempts have been made by governments to control exchange rates. However, there are **three challenges** confronting governments:

- First, the total value of foreign exchange trading is large relative to total foreign exchange reserves.
- Second, many believe that market prices are determined by fundamentals and governments are just another player.
- Third, experience with trying to control foreign exchange trends is not encouraging in the absence of capital controls.

Practice: End of Chapter Practice Problems for Reading 18 & FinQuiz Item-set ID#12513.