Capital Market Expectations, Part 1: Framework and Macro Considerations

Formulating Capital Market Expectations

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Formulating Capital Market Expectations

1. Determine the **capital market expectations (CME)** that are needed given the investor's **time horizon**, **allowable asset classes**, and other relevant factors.
2. Determine the **historical performance and driving factors** of the asset classes.
3. Identify the **valuation models and methods** that will be used.
4. Identify the **best sources of data possible to make better investment decisions**.

Formulating Capital Market Expectations (cont.)

5. Use **experience and judgment** to interpret current investment conditions.
6. Formulate and document the necessary **CME.**
7. **Monitor results and refine** the process.

Capital Market Expectations

Forecasts should be as follows:

- Objective, unbiased, and well supported
- Efficient in minimizing forecasting errors
- Consistent in terms of
  - **Cross-sectional consistency**
  - **Intertemporal consistency**

Challenges to Forecasting

Limitations in the economic data

- Data is available with time lags and is subject to revision.
- Inconsistent data definitions and methodology calculation methods change among sources.
- Indices can be **rebased** (i.e., the period upon which they are based can change).

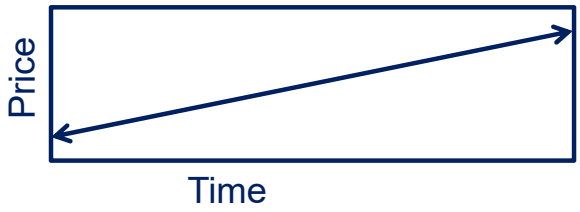
Challenges to Forecasting (cont.)

Data measurement errors and biases in the data

- Transcription errors—numbers are entered wrong
- Survivorship bias—overstating return and understating risk
- Appraisal (smoothed) data for illiquid assets

Smoothing Consequences

- Illiquid assets are infrequently traded and priced.



- Resulting analysis implicitly assumes a continuous price change between the two pricing points.
- Risk calculations are understated, and correlation is closer to 0.

Challenges to Forecasting

- *Ex post* may understate *ex ante* risk
  - Future can always be worse than the past—lower return and higher risk
- Limitations of using historical-based estimates
  - Future can be different from the past
  - Can be subject to **regime change** when fundamental driving factors change, leading to **nonstationarity** (statistical characteristics differ by time period)

Selecting the Time Period

- Longer time periods or more frequent observations (e.g., daily rather than quarterly) increase the quantity of the data
  - More frequent data may be *asynchronous* across markets
- Shorter periods are less likely to include regime changes.
- Use longer periods unless (1) there is a reason to believe fundamentals have changed, or (2) statistical analysis of subperiods reveals non-stationarity.

Challenges to Forecasting

- Analyst biases
  - Data mining—keep analyzing the data until a pattern emerges, even if it is not predictive
  - Time-period bias—relationship holds in one period but not another
- Failure to condition data
  - E.g., ignoring changing beta vs. market conditions

Challenges to Forecasting (cont.)

- Mistaking *correlation* for *causation*. If 'A' and 'B' are correlated does this mean:
  - A → B?
  - B → A?
  - C → A and B?
  - Relation is spurious?
- Zero correlation does *not* imply no *non-linear* relationship.

Challenges to Forecasting (cont.)

Psychological biases

- Anchoring bias
- Status quo bias
- Confirmation bias
- Overconfidence bias
- Prudence bias
- Availability bias

Challenges to Forecasting (cont.)

Model risk

- **Model uncertainty**—selecting the wrong model
- **Parameter uncertainty** —estimating incorrect coefficients for model
- **Input uncertainty**—using the wrong inputs

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The Trend Rate of Growth

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The Trend Rate of Economic Growth

- Economic growth **trend rate** = long-term average growth rate around which business cycle revolves
  - Trend rate is not constant
    - Some changes easy to forecast (e.g. demographic changes)
    - Some changes are more difficult to forecast, e.g. **exogeneous shocks:** unanticipated events outside the normal course of the economy; not built into current market prices.

The Trend Rate of Economic Growth (cont.)

- Exogeneous shocks be caused by several factors:

1. **Changes in government policy**—can encourage long-term growth, including sound fiscal policy, minimal government interference, encouraging competition, supporting infrastructure and human capital, and sound tax policy

The Trend Rate of Economic Growth (cont.)

2. **Political events**—geopolitical tensions divert resources to less productive uses, which may decrease growth
3. **Technological progress**—new, innovative technology has potential to increase growth
4. **Natural disasters**—likely reduce short-term growth but could encourage long-term growth if more efficient capacity replaces previous capital

The Trend Rate of Economic Growth (cont.)

5. **Discovery of natural resources**—new supply / more efficient production can increase growth
6. **Financial crisis**—(i.e., 2007 and 2008) can impact both output levels and growth rates:
   - Type 1 crisis: Output down but growth rate unchanged
   - Type 2 crisis: growth rate reduced but no reduction in output level
   - Type 3 crisis: both output level and growth rate reduced

The Importance of Economic Growth Trends

- Forecasting returns with DCF models incorporates earnings growth rates consistent with the trend rate of growth in the economy.
- Higher trend growth rates may lead to higher stock returns.
- Higher trend growth means that the economy can grow at a faster pace before inflation becomes a major concern.
- Higher trend growth rates generate higher real bond yields.

Forecasting the Economic Growth Rate

The trend growth rate can be split into the following components:

- Growth in labor input, based on
  - growth in the labor force size
  - growth in labor force participation
- Growth in labor productivity, based on
  - increasing capital per worker ('capital deepening')
  - growth in total factor productivity, reflected in technological progress and changes in government policy

Trend Growth vs. Asset Returns

can not increase indefinitely

$$V^e = GDP \times \frac{Earnings}{GDP} \times PE\ ratio$$

=> long-term growth in equity = long-term growth in GDP

Economic Forecasting

Major approaches:

1. Econometrics
2. Economic indicators
3. Checklists

Economic Forecasting: Econometrics

Statistical models of economic relationships

- **Structural models:** based on economic theory
- **Reduced form models:** based more on data, less on theory

Economic Forecasting: Econometrics

Pros:

- Can simulate the effect of changes in key variables
- Internally consistent
- Objective: imposes discipline

Cons:

- Finding data
- Complex and time consuming
- Measurement and model errors
- Unstable relationships
- False sense of precision
- Poor at forecasting turning points

Economic Forecasting: Economic Indicators

Use of **leading indicators** which turn before the economy.

Pros:

- Simple and intuitive
- Makes no assumptions about variables
- Focuses on turning points
- Can be combined into *diffusion index*

Cons:

- Revisions to data causing 'look-ahead' bias
- Can provide false signals
- Little more than binary yes/no output

Economic Forecasting: Checklist

This is a list of factors the forecaster considers—essentially, a series of questions to consider in forming conclusions.

Pros:

- Straightforward and simple
- Flexible: mixes objective statistical analysis with judgment regarding changing relationships

Cons:

- Time-consuming
- Subjective
- Relies on manual interpretation of the information
- Potentially inconsistent

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The Business Cycle

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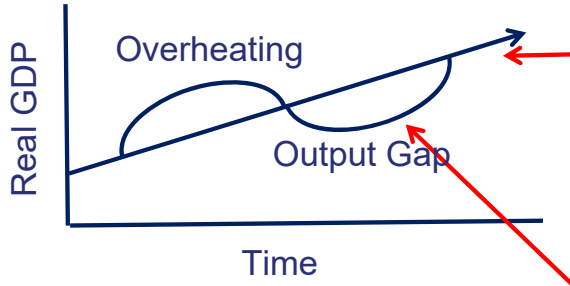
The Business Cycle and Growth



The slope represents the trend rate of growth over time.

There is variation around the trend due to the business cycle.

The Business Cycle

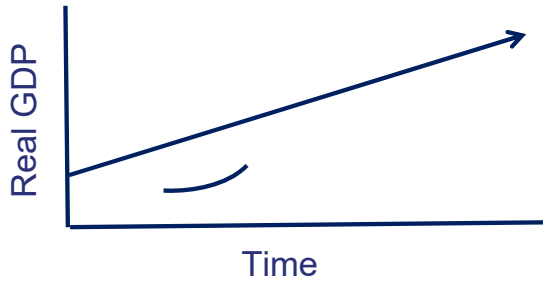
- A fundamental reason why economic activity is cyclical is the nature of business investment decisions.
  - Made on imperfect information
  - Require significant time/resources to implement
  - Difficult to reverse

The Business Cycle (cont.)

It is important to form capital market expectations (CME), but understanding the business cycle is difficult for various reasons:

- Business cycles vary in duration and intensity, and their turning points are difficult to predict.
- It is difficult to separate cyclical forces from secular longer-term forces.
- Returns in capital markets are strongly related to activity in the real economy, but they are also affected by investors' attitudes toward risk and return over all horizons

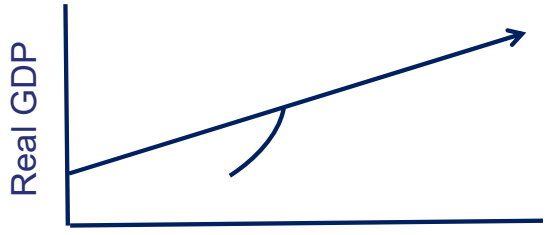
The Business Cycle: Initial Recovery



The economy exits recession; government policy stimulative; improving business confidence; inflation declining

- ST rates low or declining
- LT rates bottoming and bond prices peaking
- Stocks and cyclical assets do well

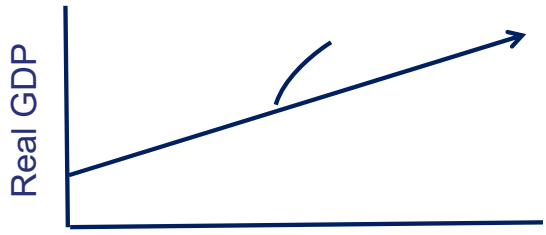
The Business Cycle: Early Expansion



Economy grows faster than trend and the output gap shrinks; policy less stimulative; increasing consumer spending and business investment

- ST rates increasing
- LT rates bottoming or increasing; bond prices begin declining, yield curve flattens
- Stock prices increasing

The Business Cycle: Late Expansion



GDP above trend but growth slowing; unemployment low; low capacity boosts investment; inflation increasing

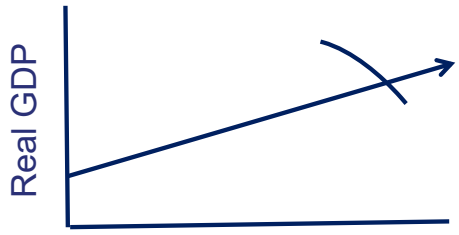
- ST rates increasing with restrictive monetary policy
- LT rates increasing with bond prices declining, yield curve continues to flatten
- Deteriorating credit conditions, stocks volatile and peaking

The Business Cycle: Slowdown

GDP growth slowing; policy turning neutral; high debt levels; confidence wavers; inflation still increasing

- ST rates peaking
- LT rates high - may decline sharply; bond returns favorable. Yield curve may invert.
- Stocks decline; ‘quality’ outperforms. Credit spreads widen.

The Business Cycle: Recession/Contraction



Investment falls; policy easing; profits falling; unemployment rising; duration of 12–18 months

- ST and LT rates fall; bonds do well. Yield curve steepens
- Stocks decline but rise later in the recession
- Credit spreads widen, bankruptcies and fraud cases emerge

Inflation Implications

- Inflation is pro-cyclical (high when late in the cycle)
- Disinflation (falling inflation rate) frequently occurs as an economy enters a recession.
- Deflation (negative inflation) problematic since:
  - Increases real value of debt
  - Central banks struggle to control cycle
- Central banks generally target low, moderate inflation

Inflation Expectations

- Shorter-term inflation expectations will be pro-cyclical
- Long-term inflation expectations should be unaffected by cycle (as long as central bank is credible)
  - counter-cyclical 'horizon structure' of inflation expectations
  - Yield curve slope is counter-cyclical
    - Steep in recession, flat/inverted in expansions

Inflation Expectations and Asset Classes

- Cash
  - If ST rates move in line with expected inflation => attractive in high-inflation environments
  - Attractive in deflationary environment if lower bound exists on ST rates