

LM01 Capital Market Expectations Part 1: Framework and Micro Considerations

A framework for developing capital market expectations

The following framework can be used to set capital market expectations.

1. Specify the set of expectations that are needed, including the time horizon(s) to which they apply.
2. Research the historical record.
3. Specify the method(s) and/or model(s) that will be used and their information requirements.
4. Determine the best sources for information needs.
5. Interpret the current investment environment using the selected data and methods, applying experience and judgment.
6. Provide the set of expectations and document the conclusions.
7. Monitor outcomes, compare them with forecasts, and provide feedback.

Challenges in developing capital market forecasts

The challenges in developing capital market forecasts include:

- Limitations of economic data – lack of timeliness, changing definitions, and calculations
- Data measurement errors and biases – transcription errors, survivorship bias, appraisal data
- Limitations of historical estimates – regime changes, asynchronous observations, distributional considerations such as fat tails and skewness
- *Ex post* risk can be a biased measure of *ex ante* risk- such as when historical returns reflect expectations of a low-probability event that did not occur or capture a low-probability event that did happen to occur
- Biases in analysts' methods – data-mining bias, time-period bias
- Failure to account for conditioning information
- Misinterpretation of correlations
- Psychological biases – anchoring bias, status quo bias, confirmation bias, overconfidence bias, prudence bias, availability bias
- Model uncertainty, parameter uncertainty, input uncertainty

Exogenous shocks to growth

Growth trend changes arising from exogenous shocks are impossible to forecast. It is also difficult to identify, assess, and quantify the impact of these shocks on trend growth rate until the change is well-established.

The most important sources of exogenous shocks are:

- Policy changes
- New products and technologies
- Geopolitics
- Natural disasters
- Natural resources/critical inputs
- Financial crises

Application of growth analysis to capital market expectations

GDP growth rate can be split into two components: growth from labor inputs and growth in labor productivity. Each of these components can be forecasted separately and summed up to arrive at the forecasted trend growth rate.

Fixed income: The average level of real government bond yields is linked to the trend economic growth. Bond yields will be pulled toward this level over time. Therefore, the trend growth rate provides an important anchor for estimating long-term bond returns.

Equity: The trend growth rate also provides an anchor for long-run equity appreciation. The aggregate value of equity, V^e , can be expressed as:

$$V^e = \text{GDP} \times \frac{E}{\text{GDP}} \times \frac{P}{E}$$

Over long periods, capital's share of income and the P/E ratio cannot continually increase or decrease. Therefore, in the long run, the total value of equity depends on the growth rate of GDP.

Approaches to economic forecasting

The major approaches to economic forecasting include:

- **Econometric models** – Econometric models are expressed in the form of equations, where an output variable is predicted based on input variables. Econometric models can be further classified into:
 - Structural models that specify functional relationships among variables based on economic theory. They tend to be complex.
 - Reduced form models are more compact versions of the underlying structural models. These models impose discipline on forecasts, are robust enough to approximate reality, and can readily forecast the impact of exogenous variables. However, they tend to be complex and time-consuming to formulate, and they rarely forecast turning points well.
- **Econometric indicators** - Economic indicators are economic statistics published by official agencies and/or private organizations. They provide information about an economy's activity and help identify its position in the business cycle. Types include lagging, coincident, and leading indicators. Individual leading indicators can be combined into a 'diffusion index,' which measures how many indicators are pointing up and how many pointing down.

This approach is the simplest. However, it can generate false signals and is vulnerable to revisions that may overfit past data.

- **Checklist approach** - This method is subjective and involves putting together information that is considered relevant by the analyst. An analyst can then assess whether the measures indicate an equilibrium state or an extreme state for the economy.

This approach is the most flexible but also the most subjective.

Effects of the business cycles on short- and long-term expectations

Phase	Capital market effects
Initial recovery Business confidence rises, stimulative policies in place. Recovery supported by upturn in spending on housing and consumer durables.	Short-term interest rates and bond yields are low. Stock markets may rise strongly. Cyclical/riskier assets perform well.
Early expansion Economy gaining momentum, unemployment starts to fall, the output gap remains negative. Consumer demand rises. Business production and investment rise. Demand for housing and consumer durables is strong.	Short rates are moving up. Longer-maturity bond yields are stable or rising slightly. Yield curve starts to flatten. Stocks trend up.
Late expansion Output gap closed. Boom mentality. Low unemployment. Strong profits. Rising wages and inflation. Capacity pressures boost investment spending. Debt ratios may deteriorate.	Interest rates rise, and the yield curve continues to flatten. Stock markets often rise but may be volatile. Cyclical assets may underperform. Inflation hedges outperform.
Slowdown Economy approaches peak level in response to rising interest rates, fewer investment opportunities, and accumulated debt. Business confidence wavers. Inflation continues to rise.	Short-term interest rates are at or near a peak. Government bond yields peak but may then decline sharply. The yield curve may invert. Credit spreads widen, especially for weaker credits. Stocks may fall. Interest-sensitive stocks and “quality” stocks with stable earnings perform best.
Contraction Firms cut production sharply. Central banks ease monetary policy. Profits drop. Tightening credit magnifies downward pressure on the economy. Unemployment rises.	Interest rates and bond yields drop. The yield curve steepens. Credit spreads widen and remain elevated until clear signs of a cycle trough emerge. The stock market drops initially but usually starts to rise well before the recovery emerges.

Effects of inflation on asset classes

Inflation is procyclical.

- It accelerates in the later stages of the business cycle when the output gap has closed.
- It decelerates during a recession or right after the recession. This puts downward pressure on wages and prices.

Given the cyclical pattern of inflation, inflation expectations are also procyclical.

Effects of inflation on asset classes: To assess the effect of inflation on asset classes, we must consider both the cash flows and the discount rates.

Asset class	Effects of Inflation
Cash: Short-term interest-bearing instruments	Cash earns a floating real rate if short-term interest rates adjust with expected inflation. Therefore, it is essentially a zero-duration, inflation-protected asset. Cash is attractive in a rising rate environment.
Bonds	Bond values are calculated as the present value of future cash flows. If inflation rises, the discount rate rises, which reduces the PV of future cash flows. Therefore, rising inflation leads to capital losses. If inflation remains within an expected range, short-term yields rise/fall more than longer-term yields but have less price impact because of shorter duration. If inflation moves out of expected range, longer-term yields rise/fall more sharply as investors reassess the long-run average level of inflation. Persistent deflation benefits the highest-quality bonds because it increases the purchasing power of the cash flows.
Stocks	If inflation stays within the expected cyclical range, there is little effect on stocks, because inflation expectations are already built into stock prices. However, unexpectedly high inflation may cause the central bank to slow the economy and impact stocks. Also, low/falling inflation might imply a recession and a decline in stock prices. High inflation benefits companies that can pass on inflation. Whereas deflation is detrimental for asset-intensive, commodity-producing, and/or highly leveraged firms.
Real Estate	If inflation stays within an expected cyclical range, the renewal of leases will increase rental income and property values will rise with inflation. Higher than expected inflation will lead to high demand for real estate. Lower than expected inflation (or deflation) will put downward pressure on expected rental income and property values.

Effects of monetary and fiscal policy on business cycles

Generally, fiscal policy is focused on the long term. However, some aspects of fiscal policy can be used to counteract cyclical fluctuations in the economy. For example, progressive tax regimes and means-based transfer payments.

Unlike fiscal policy, which is focused on the long term, monetary policy is specifically used as a mechanism for intervention in the business cycle. However, the impact of monetary policy suffers from 'long and variable lags.' Therefore, the central bank's ability to fine-tune the economy using monetary policy is limited. This is particularly the case at the top of the business cycle.

The Taylor Rule is a useful tool for assessing a central bank's stance and for predicting how that stance is likely to evolve.

$$i^* = r_{\text{neutral}} + \pi_e + 0.5(\hat{Y}_e - \hat{Y}_{\text{trend}}) + 0.5(\pi_e - \pi_{\text{target}})$$

If the inflation and GDP growth rate are too high and the economy is overheating, then the central bank will set a high interest rate to cool down the economy and vice versa. An analyst can look at the policy rate to infer the central bank's stance on the economy.

Monetary and fiscal policy mix

The combined impact of monetary and fiscal policy on the average level of interest rates is summarized in the table below.

		Fiscal Policy	
		Loose	Tight
Monetary Policy	Loose	High Real Rates + High Expected Inflation = High Nominal Rates	Low Real Rates + High Expected Inflation = Mid Nominal Rates
	Tight	High Real Rates + Low Expected Inflation = Mid Nominal Rates	Low Real Rates + Low Expected Inflation = Low Nominal Rates

Rates, policy, and the yield curve over the business cycle

The slope of the yield curve is useful as a predictor of economic growth and as an indicator of where the economy is in the business cycle. For example, at the bottom of the business cycle, the short-term rates are likely to be the lowest and the yield curve will be the steepest.

Changes in the slope of the yield curve are largely driven by the evolution of short rate expectations, which are driven mainly by the business cycle and policies.

Cycle Phase	Monetary Policy & Automatic Stabilizers	Money Market Rates	Bond Yields and the Yield Curve
Initial Recovery	Stimulative stance. Transitioning to tightening mode.	Low/bottoming. Increases expected over progressively shorter horizons.	Long rates bottoming. Shortest yields begin to rise first. Curve is steep.
Early expansion	Withdrawing stimulus	Moving up. Pace may be expected to accelerate.	Yields rising. Possibly stable at longest maturities. Front section of yield curve steepening, back half likely flattening.
Late expansion	Becoming restrictive	Above average and rising. Expectations tempered by eventual peak/decline.	Rising. Pace slows. Curve flattening from longest maturities inward.
Slowdown	Tight. Tax revenues may surge as accumulated capital gains are realized	Approaching/reaching peak.	Peak. May then decline sharply. Curve flat to inverted.
Contraction	Progressively more stimulative. Aiming to counteract downward momentum	Declining.	Declining. Curve steepening. Likely steepest on cusp of Initial Recovery phase.

Macroeconomic, interest rate, and exchange rate linkages between economies

Macroeconomic Linkages

- Macroeconomic linkages between countries are expressed through their respective current and capital accounts.
- There are four primary mechanisms by which the current and capital accounts are kept in balance: changes in income (GDP), relative prices, interest rates and asset prices, and exchange rates.
- In the short run, interest rates, exchange rates, and financial asset prices must adjust to keep the capital account in balance with the more slowly evolving current account. The current account, in combination with real output and the relative prices of goods and services, reflects secular trends and the pace of the business cycle.

Interest Rate/Exchange Rate Linkages

- There is a strong relationship between interest rates and currency exchange rates.
- With fixed exchange rates, two countries will share a default-free yield curve if and only if there is perfect capital mobility and the exchange rate is credibly fixed forever. However, if there is a lack of credibility about fixed exchange rates, the yield curves will not have perfect correlation across markets.

- With floating exchange rates, the link between interest rates and exchange rates depends on expectations. Interest rates should be higher in a currency that is expected to depreciate and lower in a currency that is expected to appreciate.
- An investor is concerned about the real return that he or she expects to earn in his or her own currency. Therefore, when investing in foreign assets, an investor will not only look at the nominal return in the foreign currency but also consider the change in the exchange rate.
- Although real interest rates around the world need not be equal, they are linked through the requirement that global savings must always equal global investment. Hence, real exchange rates around the world tend to move together.