READING 10: CAPITAL MARKET EXPECTATIONS, PART 1: FRAMEWORK AND MACRO CONSIDERATIONS

LESSON 1: A FRAMEWORK FOR DEVELOPING CAPITAL MARKET EXPECTATIONS

LOS 10a: Discuss the role of, and a framework for, capital market expectations in the portfolio management process. Vol 2, pp 168–172

The expected risk and return properties of investor-defined asset classes are known as **capital market expectations** (CME). CME are a critical input to an investor's strategic asset allocation; therefore, analysts must properly form the CME set with realistic risk and return projections to help investors reach their goals.

The technology bubble of the 1990s showed how using risk and return projections based on historical data can result in overoptimistic CME inputs that can put investor goals at risk. As a result, most institutions now use forward-looking rather than historical estimation for developing CME.

Although it's not always possible to have precise estimates of the future, it's important to ensure internal consistency across asset classes (**cross-sectional consistency**) and over time (**intertemporal consistency**) in order to best determine the strategic asset allocation likely to achieve risk–return objectives.

The following approach helps add discipline to setting CME:

1. Specify the expectations set (i.e., asset classes) and time horizons.
2. Research the historical record to develop some possible ranges for future results.
3. Specify the methods/models and their required inputs.
4. Determine the best information sources.
5. Implement the research and investment process. Apply experience and judgment to interpret the current investment environment. Make sure to apply consistent assumptions, compatible methods, and consistent judgments to ensure cross-sectional and intertemporal consistency.
6. Provide the necessary expectations set along with documented conclusions.
7. Use actual outcomes as feedback to the expectations setting process.While several cycles may be necessary to validate longer-term conclusions, the actual data may inform the current expectations-setting cycle.

Asset classification detail should guide formation of the input set for CME, but some general ways to slice the data include:

- Geographic, regional or country; political; economic bloc (e.g., European Union)
- Major asset class and subclasses
  - Equity—style, size, sector, industry
  - Fixed income—issuer, maturity, credit quality, securitization, fixed versus floating, nominal versus inflation-protected
  - Real assets—real estate, commodities, timber
  - Other alternative assets

Longer time horizons generally suggest using a discounted cash flow approach. Analysts should make sure to seamlessly integrate shorter-period estimates with longer timeframe projections in order to maintain intertemporal consistency.

Good forecasts are generally:

- Objective, unbiased, and well researched;
- Efficient in minimizing forecast errors; and
- Cross-sectionally and intertemporally consistent.

LOS 10b: Discuss challenges in developing capital market forecasts. Vol 2, pp 172–179

Forecasts generally are subject to three kinds of uncertainty:

1. Model uncertainty—Choosing the conceptually and structurally incorrect model.
2. Input uncertainty—Related to the errors in the underlying data.
3. Parameter uncertainty—Related to the errors in estimated parameters.

Analysts need to understand the limitations of the data they use with respect to accuracy, timeliness, variable definition, and series construction. In some cases, transcription errors or willful misreporting can limit data accuracy. Data from some sources may be reported at lags of up to two years, which means that such data will not be useful for assessing current conditions. Analysts must be aware of when indexes are rebased (i.e., the base year for index construction has changed) and the consistency of data used in other series.

Data may also be subject to **survivorship bias**, in which only successful entities are included in the reporting, or **smoothed data**, as with reporting appraised values rather than actual market values.

Data that has undergone **regime change** suffers from different data definitions in the distinct parts of the series. This gives rise to **nonstationarity**, in which the distinct parts have different variances and result in inaccurate models. When this happens, analysts should only use the longest available part of the time series relevant to present conditions.

Using more frequent observations tends to improve variance, covariance, and correlation estimates; it does not necessarily result in greater forecast accuracy for the sample mean. Using more data points also complicates estimating the correlation due to the sheer volume of calculations required. In some cases, more frequent correlation estimates are derived using returns from a smaller set of correlated common components (systematic) and uncorrelated asset-specific components (nonsystematic).

Analysts should be aware that correlation does not always lead to causation. Conversely, a lack of linear correlation may not indicate lack of correlation; the relationship may be nonlinear.

Data may also be **asynchronous**, meaning that the reporting period may not contain information from the same time period. For example, monthly observations may be drawn from the first through the end or from the 15th to the 15th or from some other period.

Ex post (historical) risk may be different than *ex ante* (future) risk. For example, historical data that includes a crash may not faithfully represent the current period that is not expected to include a similar event.

Analysts should be wary of inventing a story to describe a relationship that exists in the data but not in reality (**data mining**), as well as selecting starting and ending dates that correspond to a convenient measurement period (**time-period bias**) but don't fit with different data regimes.

Forecasts should reflect **conditioning information**; that is, information expected to change the direction, amount, rate, timing, or duration of a variable over the forecast period. Averaging across long periods to develop unconditioned inputs often leads to wide forecast errors.

A few **behavioral biases** that could lead to forecast errors include:

- Anchoring bias—Giving too much weight to initial information with insufficient adjustment when new information is received.
- Availability bias—Overemphasizing recent events because they have a stronger impression than other possible outcomes.
- Confirmation bias—Seeking and overweighting evidence that confirms existing or preferred beliefs.
- Status quo bias—Perpetuating initial information through a desire to avoid errors involved with change.
- Overconfidence bias—Overestimating the ability to understand and use information, which often results in failing to consider possible outcomes, especially in the "unknown unknowns" category.
- Prudence bias—Avoiding forecasts that appear extreme so that they might be more believable, even when evidence points toward a high probability of the extreme outcome.

LESSON 2: ECONOMIC AND MARKET ANALYSIS (PART 1)

LOS 10c: Explain how exogenous shocks may affect economic growth trends. Vol 2, pp 181–183

Trends are related to long-term rates of change; cycles are shorter-term fluctuations around the longer-run trend. Some series, such as demographic trends, may be easy to forecast based on slowly evolving data. However, trends may be interrupted by regime change, described earlier, or by some other exogenous shock.

Exogenous shocks involve changes from outside the existing system, such as policy changes, geopolitics, natural disasters, or financial crises. For our purposes, exogenous shocks may also include disruptive changes in technology or impacts to a supply chain.

Financial crises may be grouped into three types:

- Type 1—A permanent, one-time decline with resumption of the trend rate after the initial shock.
- Type 2—No persistent one-time decline but continuing at a lower trend rate.
- Type 3—Both a permanent, one-time decline and continuation at a lower trend rate.

In some cases, policy missteps result in the one-time shock whereas new structural considerations may contribute to continuation at a lower trend rate.

LOS 10d: Discuss the application of economic growth trend analysis to the formulation of capital market expectations. Vol 2, pp 183–185

Trend growth rates are useful when forecasting earnings. For example, a company cannot grow indefinitely at a greater-than-GDP trend because it will become the entire economy. However, if greater growth has not been factored into earnings, investors may earn economic return in excess of required return as the rest of the market catches up to the early insight.

Trend analysis is generally decomposed based on inputs to economic growth:

- Labor input growth
  - Increases in hours worked
  - Increase in labor force size (population growth)
  - Increase in labor force participation rate
- Labor productivity growth
  - Increasing capital inputs
  - Total factor productivity (TFP) increase (i.e., technology improvement)

Default-free bond rates (e.g., US Treasuries) tend to be linked to the trend rate of GDP growth and should serve as a guiding factor in forecasts. Similarly, aggregate equity market value is related to GDP growth:

$$V_t^e = \text{GDP}_t \times S_t^k \times PE_t$$
$$= \text{GDP}_t \times \frac{E_t}{\text{GDP}_t} \times \frac{P_t}{E_t}$$

Where GDP is gross domestic product, S^k equals capital's share of income (i.e., corporate earnings as a percentage of GDP), and PE is the price-to-earnings ratio. S^k and PE can change in the short term with economic cycles, but, over longer horizons, GDP growth must increase for aggregate equity market value to rise.

LOS 10e: Compare major approaches to economic forecasting. Vol 2, pp. 186–190

1. There are three distinct approaches to forecast economic change (illustrated in Table 2-1):
   - Econometrics—Uses statistical methods to model relationships among economic variables
   - Structural models—Use underlying economic theory to develop a functional form and parameters for the model
   - Reduced-form models—Compact representations of more complicated structural models
2. Economic indicators—Economic statistics representing information on an economy's past (**lagging economic indicator**), concurrent, or likely future activity (**leading economic indicator**). A diffusion index compiles many leading economic indicators and determines a direction based on how many point up and how many point down.
3. Checklist approach—A more subjective approach in which an analyst examines a broad spectrum of economic data and checks which data point in one direction or the other.

Table 2-1: Strengths and Weaknesses of Economic Forecasting Approaches[1]

Forecast Type	Strengths	Weaknesses
Econometric	• Many factors help represent reality; robust (valid statistical relationship) • Quickly updated using new data • Provides quantitative estimates • Imposes analytical discipline/ consistency	• Complex, time-consuming to formulate • Forecasting inputs difficult • Model may be misspecified due to changing relationships • False precision impression • Turning points hard to forecast

Leading indicators	• Intuitive and simple
	• Focuses on turning points
	• Available from third parties
	• Easy to track
		• Can provide false signals
		• Binary (yes/no) directional guidance
		• Subject to frequent revision
		  ○ Historical data may not be appropriate for forecasting current data
		  ○ Overstates accuracy due to overfitting in sample

Checklist approach	• Not overly complex
	• Can include a wide variety of check points (breadth)
	• Flexible
	  ○ Easily incorporates structural changes
	  ○ Items easily added/dropped
		• Arbitrary, judgmental, and subjective
		• Manual process that limits ability to combine different types of information
		• Time consuming

LOS 10f: Discuss how business cycles affect short- and long-term expectations. Vol 2, pp 190–193

A **business cycle** results from many intermediate frequency cycles that cause oscillations around the trend. Business cycles represent differences between expectations underlying business decisions and what really happens that affects investment outcomes. The business cycle is not well defined; it varies in both intensity and duration and thus turning points become difficult to forecast.

Business cycles are often characterized into expansion and contraction phases marked by changes in direction at the peak or trough of the phase. Changes in capital market expectations tend to correlate with the economic indicators present during each phase (see Table 2-2).

[1] Exhibit 4, Volume 2, CFA Program Curriculum 2020.

Table 2-2: Phases of the Business Cycle

Phase	Economic Features	Capital Market Features
Initial recovery (a few months)	• After the low point, the output gap is large, inflation is decelerating, stimulative policies remain in place, and the economy starts to grow.	• S-T and L-T government bond yields are likely to be bottoming but may still decrease. • Stock markets may begin to rise quickly as recession fears subside. • Riskier small-cap stocks, high-yield bonds, and emerging market securities start to do well.
Early expansion	• Output gap remains negative, but unemployment starts to fall. • Consumers start to borrow to spend; housing and consumer durable demand increases. • Businesses step up production; profits begin to expand rapidly. • Central bank begins to remove stimulus.	• Short rates begin to increase; long rates remain stable or increase slightly. • Flattening yield curve. • Stock prices trend upward.
Late expansion	• Positive output gap and danger of inflation; capacity pressures boost investment spending. • Low unemployment, strong profits, rising wages and prices (inflation). • Debt coverage ratios may deteriorate as business borrows to fund growth. • Monetary policy becomes more restrictive.	• Private sector borrowing causes rates to rise. • Yield curve continues to flatten as short rates rise faster than long rates. • Stocks are volatile as investors watch for deceleration. • Inflation hedges (e.g., commodities) may begin to outperform other cyclical assets.
Slowdown	• Fewer viable investment projects and overleveraging cause slowing growth; business confidence wavers. • Inflation continues to rise as business pricing attempts to outpace rising input costs. • The economy is vulnerable to shocks.	• L-T bonds may top but S-T rates continue to rise or may peak; yield curve may invert. • Credit spread widens, depressing bond prices for lower credit issues. • Stocks may fall; utilities and quality stocks are likely to outperform.

Contraction (12 to 18 months)	• Firms cut investment spending, then decrease production; unemployment can rise quickly (which hinders household formation).
	• Profits drop sharply; credit markets tighten, accounting transgressions are uncovered, and bankruptcies can result.
		• S-T and L-T rates begin to fall; yield curve steepens
		• Credits spread widens; remains wide until trough.
		• Stock market
		  ○ Early phase—Declining
		  ○ Late phase—Begins to rise

Forecasting the market based on economic cycles is not as easy as this may suggest. While the relationship between the real economy and capital markets is strong, different investors tend to have different viewpoints on the outlook for the phase of the business cycle.

While business cycle analysis sometimes sends a noisy signal, it is likely to be strongest during the one to three years of the expansion or contraction phase. Beyond that range, returns increasingly reflect averaging of an expectation of a turning point.

LOS 10g: Explain the relationship of inflation to the business cycle and the implications of inflation for cash, bonds, equity, and real estate returns. Vol 2, pp 194–196

Deflation damages the economy because repayment of a loan becomes more expensive to the debtor and results in less available capital for continued economic growth. Also, the central bank has fewer monetary policy options because interest rates may already be low or negative.

In contrast, moderate inflation imposes only small costs while allowing the flexibility for the economy to grow. Central banks, then, target low inflation and investors consider this in their capital market expectations. Credible central bank targets will tend to result in larger output gaps during the beginning of a recession and greater inflation as the peak approaches, with average inflation near the target over the cycle.

Analysts should assess both the discount rates and cash flows of investments to determine the effects of inflation:

- Cash equivalents (do not include currency or zero-interest deposits)—Relatively attractive when rates rise and unattractive when rates fall due to its short duration.
- Bonds—Persistent deflation can benefit higher-credit issues because cash flows become worth more. Lower-credit issues, however, may find additional financing hard to find and this can damage business opportunities. Due to fixed nominal cash flows, inflation effects are transmitted to yield via price changes:
    - Within the expected inflation range—Shorter-term yields rise or fall more than longer-term yields, but the price impact is less due to duration.
    - Outside the expected inflation range—Longer-term yields may rise more quickly.
- Stocks—The valuation process considers inflation in the discount rate applied to cash flows; inflation within an expectation range will have little impact on stock prices. Higher inflation raises the discount rate and decreases valuations. Higher inflation benefits companies that can pass on costs to consumers but harms companies that have little pricing power.
    - Real estate—Lease rates include an inflation expectation, and inflation expectations within an expectation range will have little impact on asset prices. The effect on asset prices of inflation outside the expectation range will depend in part on the length of underlying leases; shorter leases may be replaced with higher-rent leases at a faster rate. Less-than-prime properties are most adversely affected by deflation, as they may have to cut rents to avoid losing renters.

LESSON 3: ECONOMIC AND MARKET ANALYSIS (PART 2)

LOS 10h: Discuss the effects of monetary and fiscal policy on business cycles. Vol 2, pp 197–204

Most central banks have the mandate to achieve low inflation and unemployment consistent with the economy's potential growth. Toward that end, central banks employ monetary policy to help offset the business cycle and maintain a more stable growth environment.

A central bank's ability to counter business cycles will be adversely affected, however, by the lag in deciding and implementing monetary policy. The result of such policy also tends to be

uncertain. Therefore, central banks find it difficult to fine-tune the economy based on monetary policy and, in fact, they may reinforce rather than mediate the cycle.

The government may also use fiscal policy (government spending and taxation) to mediate business cycles, also sometimes with the unfortunate effect of reinforcing the cycle instead. Most of the time, the government uses fiscal policy for longer-term objectives rather than short-term fine-tuning. First, the legislative lag in democracies compounds with the recognition lag; it takes a long time to decide and implement policy changes. Second, short-term changes large enough to make a meaningful change endanger ongoing government services.

Therefore, monetary policy shoulders most of the responsibility for cyclical mediation, although the government may have processes in place with countercyclical consequences. For example, countries with a progressive income tax regime—where taxes increase as income rises—automatically slow the economy as people make more money. Also, means-based transfer payments essentially provide an earnings floor if people become unemployed.

Central banks may use a variant of the Taylor rule to establish an interest rate target that maintains stable growth:

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

where:

$$\begin{aligned} i^* &= r_{\text{neutral}} + \pi_e + 0.5(\widehat{Y}_e - \widehat{Y}_{\text{trend}}) + 0.5(\pi_e - \pi_{\text{target}}) \\ i^* &= \text{target nominal policy rate} \\ r_{\text{neutral}} &= \textit{real} \text{ policy rate targeted with trend growth and target inflation} \\ \widehat{Y}_e - \widehat{Y}_{\text{trend}} &= \text{expected and trend } \textit{real} \text{ GDP growth rates} \\ \pi_e, \pi_{\text{target}} &= \text{expected and target inflation rates} \end{aligned}$$

Subtracting expected inflation from the left side leaves the realization that the real interest rate targeted is the neutral rate plus 50% each on the excess of expected GDP and inflation over their trend/target rate.

Although this method of targeting interest rates provides a sense of security, it demands considerable judgment in the choice of targets and measurement of inputs. In fact, none of the variables is observable! Monetary policy, then, cannot be reduced to the Taylor rule or other equation.

Capital market expectations are sometimes made by adding various risk premiums to the risk-free rate under the assumption that it is at its long-term equilibrium level. Under a scenario of negative interest rates (which may be implemented in times of financial crisis), however, analysts may use the long-run equilibrium *short-term* rate in place of an observed negative interest rate. Estimating this rate involves the Taylor rule r_{neutral}, adjusted for the difference between policy rates and default-free rates available to investors.

The path of short-term rates under negative interest rate scenarios may require starting from a negative rate. The shorter the horizon, the more important it becomes to consider variances from the most likely path.

Monetary and fiscal policy should be viewed as affecting either the (1) interest rate *level* or (2) yield curve *shape*.

Everything else equal, large deficits (loose fiscal policy) crowd out domestic private borrowing and raise the *real* interest rate level as available capital diminishes. Tight fiscal policy lowers the *real* interest rate.

Persistently loose monetary policy allows higher actual and expected inflation, which the central bank will be unable to lower, and that will result in higher *nominal* interest rates. Persistently tight monetary policy reduces actual and expected inflation, resulting in lower *nominal* rates.

Table 3-1 shows the interaction of the effects.

Table 3-1: Effects of Persistent Monetary-Fiscal Policy Mixes[2]

		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

LOS 10i: Interpret the shape of the yield curve as an economic predictor and discuss the relationship between the yield curve and fiscal and monetary policy. Vol 2, pp 204–205

The business cycle and fiscal/monetary policy mixes also affect the yield curve slope, which depends on:

1. Expected short-term rates—The business cycle and government policies drive short-term rates and cause the yield curve to flatten or steepen.
2. A risk premium that increases with maturity—The risk premium explains the normally upward slope.
3. The bond supply at various maturities—Government debt issued at specific maturities (due to demand/funding costs) may affect the yield curve shape.

Further, a government with persistently high debt and debt service may use accommodative monetary policy to "inflate away" the real cost of the debt. This will result in lower nominal rates.

In general, however, the yield curve steepens as the business cycle bottoms, flattens during expansion, becomes flat to inverted toward the peak as interest rates rise, and re-steepens during contraction (see Table 3-2).

[2] Exhibit 5, Volume 2, CFA Program Curriculum 2020.

Table 3-2: Policy, Rates, and the Yield Curve over the Business Cycle[3]

Phase	Money Market Rates	Bond Yield and Curve Effects
Initial recovery	• Low/bottoming due to stimulative transition to tightening	• Steep yield curve initially • Shortest yields rise first • Longer yields bottom
Early expansion	• Rising, starting to accelerate	• Rising; longer may be stable • Short maturities steepen; longer maturities flatten
Late expansion	• Change to restrictive monetary policy; automatic stabilizers • Above average; rising	• Rising at a slower pace • Curve flattening inward from longest maturities
Slowdown	• Approaching peak under tight monetary policy	• Peak; may decline sharply • Flat to inverted curve
Contraction	• Declining as policy becomes more stimulative	• Declining • Curve steepening

LESSON 4: INTERNATIONAL INTERACTIONS

LOS 10j: Identify and interpret macroeconomic, interest rate, and exchange rate linkages between economies. Vol 2, pp 205–209

Relative size and degree of specialization determine the effects of international interactions on a country. For example, a large economy like that of the United States will be less affected by business cycles in other countries. On the other hand, a country with a single raw materials export that dominates its economy may be deeply affected by a slowdown in economies of large developed countries with falling demand for the export.

A country's **current account** reflects exports and imports of goods and services, investment income flows, and unilateral transfers. Its **capital account** reflects foreign direct investment (FDI), involving productive asset purchases and sales, and portfolio investment (PI), involving financial asset transactions.

Net exports, usually the largest current account component, link directly to the demand for a country's output:

$$Y = C + I + G + (X - M)$$
where:
$$Y - T - C = S$$
$$(X - M) = (S - I) + (T - G)$$

Changes in the current account must be offset by changes to the capital account to balance the two accounts. Because financial markets react more quickly to change than the real markets, changes to the current account reflect quickly in the capital account via short-term interest rates, exchange rates, and financial asset prices.

Global investment must be linked to global savings, and each country's savings or investment decisions are determined via its current account.

[3] Exhibit 6, Volume 2, CFA Program Curriculum 2020.

At the logical extreme, given the relationship between exchange rates and interest rates, the interest rates in two countries should then be *the same* when their currencies are exactly pegged to each other. This must assume unrestricted capital flows to equalize risk-adjusted returns and, a more difficult condition, credible exchange rate equilibrium forever. Otherwise, bond yields in the weaker currency will always be higher, although the difference in vary short-term rates will be slight (absent the threat of the weaker currency devaluing).

When looking at a nondomestic asset, investors care about (1) nominal return and (2) any change in exchange rates. In a floating currency regime, interest rates must be *higher* in a currency expected to depreciate because investors will seek more compensation for the greater risk of loss in currency value; that is, the interest rate and exchange rate linkages must be as expected. Empirical evidence suggests that *real* interest rate differences are not exploitable with regularity across currencies; however, nominal differences may be exploitable.