

Capital Market Expectations, Part I: Framework and Macro Considerations - Answers

Reading 1

Q1.1–Q1.4

Jan Cambo is chief market strategist at a US asset management firm. While preparing a report for the upcoming investment committee meeting, Cambo updates her long-term forecast for US equity returns. As an input into her forecasting model, she uses the following long-term annualized forecasts from the firm's chief economist:

- Labor input will grow 0.5%.
- Labor productivity will grow 1.3%.
- Inflation will be 2.2%.
- Dividend yield will be 2.8%.

Based on these forecasts, Cambo predicts a long-term 9.0% annual equity return in the US market. Her forecast assumes no change in the share of profits in the economy, and she expects some contribution to equity returns from a change in the price-to-earnings ratio (P/E).

At the investment committee meeting, the firm's chief economist predicts that the economy will enter the late expansion phase of the business cycle in the next 12 months.

Cambo compares her business cycle forecasting approach to the approach used by the chief economist. Cambo bases her equity market forecast on a time-series model using a composite index of leading indicators as the key input, whereas the chief economist uses a detailed econometric model to generate his economic forecasts.

Question 1.1

Calculate the implied contribution to Cambo's US equity return forecast from the expected change in the P/E.

MODEL ANSWER / EXPLANATION

The growth rate in the aggregate market value of equity is expressed as a sum of the following four factors:

1. The growth rate of nominal GDP
2. The change in the share of profits in GDP
3. The change in P/E
4. The dividend yield.

The growth rate of nominal GDP is the sum of the growth of real GDP and inflation. The growth rate of real GDP is estimated as the sum of the growth rate in the labor input and the growth rate in labor productivity. Based on the chief economist's estimates, the macroeconomic forecast indicates that nominal GDP will increase by **4.0%** (= 0.5% labor input + 1.3% productivity + 2.2% inflation).

Assuming a 2.8% dividend yield and no change in the share of profits in the economy, Cambo's forecast of a 9.0% annual increase in equity returns implies a **2.2%** long-term contribution (i.e., 9.0% equity return – 4.0% nominal GDP – 2.8% dividend yield) from an expansion in the P/E.

SCORING RUBRIC

- 1 point for stating the factors of the growth rate in the aggregate market value of equity
- 1 point for showing the calculation of the growth rate of nominal GDP
- 1 point for calculating the implied contribution from the expected change in P/E

Question 1.2

Based on the chief economist's prediction about the economy in the next 12 months, **discuss** the implication for the following:

1. Bond yields
2. Equity returns
3. Short-term interest rates

MODEL ANSWER / EXPLANATION

Bond yields:

In the late expansion phase of the business cycle, bond yields are usually rising but more slowly than short-term interest rates are, so the yield curve flattens. Private sector borrowing puts upward pressure on rates while fiscal balances typically improve.

Equity returns:

In the late expansion phase of the business cycle, stocks typically rise but are subject to high volatility as investors become nervous about the restrictive monetary policy and signs of a looming economic slowdown. Cyclical assets may underperform while inflation hedges, such as commodities, outperform.

Short-term interest rates:

In the late expansion phase of the business cycle, short-term interest rates are typically rising as monetary policy becomes restrictive because the economy is increasingly in danger of overheating. The central bank may aim for a soft landing.

SCORING RUBRIC

3 points for explaining the implications for the three bullets (1 point for each bullet)

Question 1.3

Discuss strengths and weaknesses of the economic forecasting approach used by Cambo.

MODEL ANSWER / EXPLANATION

Strengths:

- The leading indicator-based approach is simple since it requires following a limited number of economic/financial variables.
- Can focus on individual or composite variables that are readily available and easy to track.
- Focuses on identifying/forecasting turning points in the business cycle.

Weaknesses:

- Data subject to frequent revisions resulting in "look-ahead" bias.
- "Current" data not reliable as input for historical analysis.
- Overfitted in sample. Likely overstates forecast accuracy.
- Can provide false signals on the economic outlook.
- May provide little more than binary directional guidance (no/yes).

SCORING RUBRIC

2 points for explaining two strengths of Cambo's forecasting approach

2 points for explaining two weaknesses of Cambo's forecasting approach

Question 1.4

Discuss strengths and weaknesses of the economic forecasting approach used by the chief economist.

MODEL ANSWER / EXPLANATION

Strengths:

- Econometric models can be quite robust and can examine impact of many potential variables.
- New data may be collected and consistently used within models to quickly generate output.
- Models are useful for simulating effects of changes in exogenous variables.
- Imposes discipline and consistency on the forecaster and challenges modeler to reassess prior view based on model results.

Weaknesses:

- Models are complex and time consuming to formulate.
- Requires future forecasts for the exogenous variables, which increases the estimation error for the model.
- Model may be mis-specified, and relationships among variables may change over time.
- Models may give false sense of precision.
- Models perform badly at forecasting turning points.

SCORING RUBRIC

2 points for explaining two strengths of the chief economist's forecasting approach

2 points for explaining two weaknesses of the chief economist's forecasting approach

Victoria Drew and David Garnett are currency analysts with Winchester Bank. The two colleagues use a number of different proprietary models to forecast exchange rates for various currency pairs.

While discussing one of her current assignments, Drew tells Garnett that she has decided to use a data series of weekly values for the CHF/EUR exchange rate rather than a data series of monthly values. She justifies this decision on the grounds that she is able to base her analysis of the last three years on 156 data points rather than 36. Garnett offers the following comment: "Compared to a set of monthly observations, a set of weekly observations is more likely to be asynchronous and it does not improve the precision of the sample mean."

For a separate assignment, Drew has been asked to provide a one-year forecast for the EUR/USD exchange rate. After analyzing some newly issued employment data, Drew maintains her target of 0.8293 but revises her range downward from +/-12 pips to +/-8 pips. The consensus target is 0.8290 with a range of 0.8250 to 0.8330.

Garnett mentions that his preferred quantitative model generated a one-year forecast of 1.4155 for the CAD/EUR exchange rate. This result, which was based on 12 months of daily data, was inconsistent with Garnett's prior expectations. He tells Drew that, when he did not get the result that he had been expecting, he responded by running the data through a different model and using its output as a check on his original forecast.

During a discussion of their forecasts for the NZD/USD rate, Garnett shares his latest macroeconomic expectations: "My analysis indicates that, over the next year, real interest rates will rise in New Zealand and fall in the United States."

Question 2.1

Garnett's comment about using higher frequency data is *most likely*:

A. correct. 

B. incorrect with respect to asynchrony.

C. incorrect with respect to the precision of the sample mean.

Correct Answer: A

EXPLANATION

Garnett's comment is accurate. Relative to lower frequency data series, higher frequency data series are more sensitive to asynchrony, which is characterized by data points that are not concurrent despite being labeled for the same period.

Using higher frequency data will improve the precision of sample variances, covariances, and correlations. However, this practice will not improve the precision of the sample mean.

Question 2.2

In revising the range of her EUR/USD forecast, Drew has *most likely* exhibited:

A. prudence bias.

B. status quo bias.

C. overconfidence bias.



Correct Answer: C

EXPLANATION

Drew exhibits the effects of overconfidence bias by offering an unduly narrow range of possible outcomes. She narrows the range for her EUR/USD rate forecast, which was already significantly narrower than the consensus range even before this adjustment. She is failing to adequately account for the uncertainty associated with her forecast.

There is no evidence of Drew exhibiting prudence bias, which is observed when analysts adjust their forecasts for no apparent reason other than to avoid being associated with an extreme position that deviates significantly from the consensus. The fact that she has narrowed the range of her prediction does not indicate that she is tempering her forecast to avoid appearing extreme. Indeed, narrowing a range that was already very narrow relative to the consensus range is making an extreme position even more extreme.

Status quo bias is observed when analysts offer forecasts that align closely with recent observations or trends. In the absence of any information about the recent performance of the EUR/USD rate, it is impossible to determine whether Drew has exhibited this bias.

Question 2.3

In using the results of an alternative model as a check on his CAD/EUR forecast, Garnett is *most likely*:

A. assessing the level of model uncertainty. ✓

B. exhibiting the influence of data-mining bias.

C. attempting to mitigate the impact of nonstationary data.

Correct Answer: A

EXPLANATION

Model uncertainty is the possibility that an analyst has not used the correct model when making a forecast. When one model produces a forecast that does not appear consistent with the analyst's expectations, he or she may assess the level of model uncertainty by comparing this forecast with the results of a different model.

Data-mining bias is observed when analysts repeatedly "drill" down into a dataset until they detect a statistically significant relationship, even if it is not supported by an economic rationale. Using an alternative model as a check on one's original forecast is not evidence of data-mining bias.

Nonstationarity is found in datasets that contain observations from periods with fundamentally different conditions. A nonstationary dataset includes data from more than one regime. There is no evidence of Garnett attempting to mitigate the impact of nonstationary data.

Question 2.4

Given his conclusion about real interest rates in the United States, Garnett *most likely* believes that the country's fiscal policy will:

- A. loosen and nominal interest rates will increase.
- B. tighten and the trend rate of real GDP growth will fall. ✓
- C. loosen and the trend rate of real GDP growth will rise.

Correct Answer: B

EXPLANATION

Garnett believes that real US interest rates will fall over the next year. The relationship between real interest rates and real trend GDP growth is positive. Real rates will be higher if real trend GDP growth increases and lower if it falls.

A decrease in real interest rates is also consistent with tighter fiscal policy. When governments are borrowing less, real rates do not need to be as high to induce private savings and attract foreign capital flows.