Module 1. Framework & Macro considerations.

1.a. Goal of capital market expectation

- CROSS-SECTIONAL CONSISTENCY.
  (consistency across asset classes)
- INTERTEMPORAL CONSISTENCY.
  (consistency a/c. various time horizon)

7 STEPS of formulating cap. mkt. expectation

1. Determine cap mkt needs for allowable asset classes & time horizon.
2. Investigate historical performance, identify drivers.
3. Identify valuation model.
4. Collect data
5. Investigate current investment condition & decide what value to assign to input.
6. FORMULATE CAP MKT EXPECTATION
7. Monitor performance.

1.b Problems in Forecasting

1. LIMITATION OF ECONOMIC DATA
   - Time lag b/w collection & distribution
   - Δ of data (i.e. data revision & methodology change) (e.g. CPI).
   - Data Indices rebasing

2. Data Measurement Error & biases

3. Limitation of HISTORICAL ESTIMATES.
   - Historical data must be adjusted as REGIME CHG. happens.
   - result in non-stationary data.

↑ political / regulatory & tech env. change

4. Ex-POST data to determine ex-ante risk/return (i.e. hindsight is 20/20 !!!).

e.g.

5. Historical Return Pattern discovered by data-mining but it might be rare.

6. Fail to account for Conditioning Information (e.g. when calculating beta, beta during RECESSION vs. EXPANSION might not be same)

7. Misinterpretting the correlation.

8. Phychological biases
- Anchoring bias (cognitive)
- Status quo bias (emotional)
- Confirmation bias. (cognitive)
- Overconfidence bias. (emotional)
- Prudence bias. (cognitive)
- Availability bias. (cognitive)

MODULE QUIZ 1.1

1. An analyst uses a variety of valuation approaches for different asset classes and collects the necessary data from multiple sources. The analyst does not make any effort to systematically compare the data used. As a result, the analyst uses relatively low discount rates for equity analysis (overestimating theoretical value) and high discount rates for fixed income (underestimating theoretical value). **Discuss** the likely effect on the analyst's asset allocation recommendations.
2. An analyst would like to forecast U.S. equity returns. He is considering using either the last 3 years of historical annual returns or the last 50 years of historical annual returns. **Provide** an argument for and against each selection of data length.
3. **Explain** why smoothed data may be present for some types of alternative investments and the consequences for their risk and correlation with other assets from using such data.

1. Inconsistent assumptions will make the equity more attractive & FI less attractive.
2. Argument for 3-yr: More likely to reflect current economic conditions
Argument against 3-yr: Small sample size, doesn't reflect the full economy cycle.
Argument for 10-yr: Large sample size reflect the full economy cycle
Argument against 10-yr: more subject to regime change, be non-stationary, reflect conditions that are no longer relevant

3. Some types of alt. investments are not regularly traded & only infrequent prices (smoothed return) are available. The correlation will appear to be less correlated

Module 1.2: The trend rate of growth

1.c. Exogenous Shocks.

- unanticipated events that occur outside the normal course of the economy

e.g. Change in gov. policy
Political events
Technological progress
Natural disasters.
Discovery of natural resources
Financial crises.

1.d. Trend Rate.

- used to forecast long-term economic growth rate
- DCF incorporates trend rate.
- ↑ trend rate ⇒ ↑ higher stock return
- ↑ trend rate ⇒ economy grows at a faster pace (before inflation gets out of control)

- 2 main components (Δ Employment levels, Δ Productivity)

Economic Growth Rate.
= Δ Growth in labor input.
+ Δ Growth in capital per worker
+ Δ Growth in total factor productivity

EXAMPLE: Forecasting the long-term economic growth rate

Assume that the population is expected to grow by 2% and that labor force participation is expected to grow by 0.25%. If spending on new capital inputs is projected to grow at 2.5% and total factor productivity will grow by 0.5%, what is the long-term projected growth rate?

Answer:

The sum of the components equals 2% + 0.25% + 2.5% + 0.5% = 5.25%, so the economy is projected to grow by this amount.

Answer: 2% + 0.25% + 2.5% + 0.5%
= 5.25%

Asset Returns & Trend Rate of Growth

EXAMPLE: Forecasting long-run equity return

Cindy Navaro is an equity analyst for Evergreen Asset Management. She has been asked to produce capital market expectations for asset classes in several different markets relevant to the company's Renewable Green Energies fund. Navaro is aware that long-term GDP trend forecasting is considered the starting point to form capital market expectations. In order to make a forecast of trend GDP growth in the domestic economy, Navaro collects the following data displayed in Exhibit 1.

Exhibit 1: Domestic Economy Information

Annual labor input growth	0.4%
Annual labor productivity growth	1.4%
Annual inflation	3.8%
Dividend yield	2.6%
Long-term change in profits as a share of GDP	0%
Long-term change in PE multiples	0%

Real GDP
= labor input growth
+ labor productivity growth

Real GDP = 0.4% + 1.4% = 1.8%
Nominal GDP = 1.8% + 3.8% = 5.6%
Long-Term cap. gain in eq. mkt
= % Δ Nominal GDP
+ % Δ profits / GDP
+ % Δ PE
= 6.6% + 0% + 0%
= 5.6%

Long Term domestic market equity return
= 5.6% + 2.6%
= 8.2% //

1.e: Market Forecasting

Econometrics Analysis:
- uses statistical model to explain economic relationsh, & formulate forecasting models:
- Structural Models (based on econ. theory)
- Reduced-form Model (compact ver. of structural approaches

Advantages:
- can incorporate many variables.
- can reuse models once specified
- output is quantified & based on a consistent set of relationship.

Disadvantages:
- complex & time-consuming
- data may be difficult to forecast
- output may require interpretation & may be unrealistic
- can't forecast turning points well.

Economic Indicators.
- available from international org. and private org.
- most useful: leading indicators (move ahead of business cycle w/ stable lead time)
- multiple indicators can form a composite
- e.g. Conf. Board provide 10 leading indicators for the US & form an index
- Traditionally 3 months of increase/decreases.
  ⇒ signal start of expansion/contraction
- Can interpret composite as diffusion index
- Coincident & lagging indicators move with & after changes in business cycle.

Advantages:
- simple & intuitive
- usually readily available
- indicator lists can be tailored to meet specific need.

Disadvantages:
- Inconsistent forecasting results
- false forecasting signal
- constant revision of indicators may make them appear like they fit past business cycles better than they did when they were first released

Checklist Approach
Advantages:
- Less complex
- Flexible in mixing statistical analysis w/ personal judgement.

Disadvantages:
- Limited Complexity
- subjective
- time-consuming

Module 1.3: The Business Cycle
Business Cycle & Cap. Mkt expectations relationship are not straightforward b/c:
- cycles vary in durations & intensity, turning points are difficult to predict.

- we think of economic activities typically in terms of LONG-TERM TREND, but it can be difficult to distinguish the effects from short-term factors vs. longer-term
- Cap Mkt return also relies on investor expectations & risk tolerances.

IMPORTANT!!

Business Cycle Phases.

1) Initial Recovery.
   - durations of a few months
   - business confidence rising
   - Gov. stimulus provided by low int. rate and/or budget deficit.
   - Decelerating Inflation

	INITIAL RECOVERY	EARLY EXPANSION	LATE EXPANSION	SLOW DOWN	CONTRACTION
INFLATION	Decelerating	low but increasing	Increasing	still rising	topping out.
INTEREST RATE	LOW	Rising S.T. int rate.	Rising S.T. int rate.	Short term int. rate @ peak	Falling S.T. int. rate
OUTPUT GAP	Large	narrowing	none.		
BOND YIELD	Bottoming Out	Stable / rising	Rising	Peaking & Possibly falling (rising bond price). (possible inverted YC).	Falling Yield, Rising Prices
STOCK PRICES	Rising (Small cap doing well)	Rising	Risking/Peaking	Falling	Increasing (anticipating end of recession)

Inflation Implications.

Inflation:

- usually means rising prices.
- usually accelerates late in the business cycle. (near the peak).

Disinflation:

- still rising prices but @ a slower rate.
- usually occurs when the economy approaches recession

Deflation:

- means falling prices / negative inflation
- dangerous to economy b/c it encourages debt default & it limits the gov's ability to stimulate the economy.
- Central banks has used quantitive easing to stimulate economies when interest rate is very low.

	Cash. Eq.	Bonds.	Equity	Real Estate.
Inflation within Expectation	Earn real rate of interest	Short-term yield more volatile than Long-term yield	No impact (given predictable econ. growth)	Neutral Impact.
Inflation above/below expectations	Positive (negative) impact. w/ increasing (decreasing) yield	Long-term yield more volatile than Short-term yield	Negative b/c potential for central action & falling asset price	Positive.
Deflation	Positive as long as int. rate $\geq 0\%$	Positive as fixed future CF have greater purchasing power	Negative.	Negative.

MODULE QUIZ 1.2, 1.3

1. An analyst believes that GDP is best forecasted using a system of equations that can capture the fact that GDP is a function of many variables, both current and lagged values. Which economic forecasting method is she *most likely* to use?
2. The phase of the business cycle in which we *most likely* expect to observe rising short-term interest rates and stable bond yields is:
   A. late expansion.
   B. initial recovery.
   C. early expansion.
3. **Describe** how bonds and equities typically perform during deflationary periods.

1. Econmetric.
2. B x C.
   A is wrong b/c. BOTH short term & long term interest rates increase. in late expansion
   B is wrong b/c. short-term int. rate is falling & yield is bottoming out in init. recovery.
3. Bonds tend to perform well during falling inflation & deflation. b/c. int. rates are declining

   Equity does poorly.

Module 1.4: Monetary & Fiscal Policy

1.e: effects of Monetary & Fiscal Policy

Monetary Policy

ultimate goal: keep. growth near its sustainable rate.

lower interest rate ⇐> spur growth, greater spending, higher stock & bond prices

neutral rate = inflation + real growth
(+ judgement from policy makers).

Taylor Rule:

$$n_{target} = r_{neutral} + i_{expected} + \left[0.5\left(GDP_{expected} - GDP_{trend}\right) + 0.5\left(i_{expected} - i_{target}\right)\right]$$

i = inflation

n_{target} = target nominal short-term int. rate.

$r_{neutral}$ = neutral real short-term int. rate

EXAMPLE: Calculating the short-term interest rate target

Given the following information, **calculate** the nominal short-term interest rate target.

Neutral rate	3%
Inflation target	2%
Expected inflation	4%
GDP long-term trend	2%
Expected GDP growth	0%

Nominal short-term int rate

$= 3\% + 4\% + 0.5(0\% - 2\%) + 0.5(4\% - 2\%)$.

$= 7\%$

Negative Interest Rates.

- did not actually cause the expected large move into physical cash b/c daily exchange of funds is too large
(i.e. negative int. rates were sustainable for the extended periods.)

QE policies: larger injection of funds by central banks to stimulate commercial lending & econ activity.

Negative Int. Rate complicates cap. mkt. exp:

- need to replace it with a sustainable expected risk-free rate as starting point of the model.
- need to also consider how long it will take for negative int. rate to converge to a long-run sustainable risk-free rate.
- Another approach = interpret risk-free rate as consistent w/ contraction or early recovery stage of cycle
- Problematic to use historical data b/c of lack of comp.

Fiscal Policy

- using tax. and spending as tools.

Yield Curve.

Expansive Fiscal + Monetary (i.e. stimulative). ⇒ Sharply Upward Slope (economy likely to expand)

Restrictive Fiscal + Monetary ⇒ Downward (i.e. inverted (economy likely to contract)

Restrictive Monetary, Stimulative Fiscal ⇒ Flat YC.

Stimulative Monetary, Restrictive Fiscal ⇒ Steep YC.

Int'l Considerations.

Macroeconomic links can produce convergence among economies. (e.g. int'l trade).

Measurement of macro linkages: Current a/c & capital a/c.

↑ net investment flow

↑ net export

Current A/C:

$$(X - M) = (S - I) + (T - G)$$

X = export.
M = import
S = private saving
I = investment spending
T = Tax.
G = Gov't spending

Int rate & FX rate also forms a linkage.
"Peg" will form a linkage b/w the two economies.
Pegged currency country will have to follow the economic policies of the country to which it pegs the currency to otherwise the peg will fail.

Generally, the pegged currency will have a higher int. rate than the country to which it pegs the currency to. (the differential will fluctuate w/ the market's confident in the peg)

Several factors of int. rate differential & currency movement (in the absence of peg):

- if currency is overvalued & expected to decline, bond int. rates are likely to be higher to compensate investors for the expected decline.

- Yield (Long & Short Term) increases w/ strong economic activity & increases demands

- Savings, investments & Capital productivity drives REAL RATES. & real rates tend to move up & down together

1. During an economic expansion, an analyst notices that the budget deficit has been declining. She concludes that the government's fiscal policy has shifted to a more restrictive posture. **Comment** on her conclusion.
2. **Calculate** the nominal short-term interest rate target given the following information.

Neutral real rate	2%
Inflation target	3%
Expected inflation	5%
GDP long-term trend	3%
Expected GDP	4%

3. A forecaster notes that the yield curve is steeply upwardly sloping. **Comment** on the likely monetary and fiscal policies in effect and the future of the economy.
4. An analyst is evaluating two countries. Maldavia has a GDP of $60 billion and an economy that is dominated by the mining industry. Ceania has a GDP of $1.2 trillion and an economy that sells a variety of items. He is predicting a global economic slowdown. Which country is at greater risk?
5. At a conference, Larry Timmons states that a pegged exchange rate allows a less developed country to achieve greater currency and economic stability, as well as relatively lower and more stable interest rates, and to pursue the fiscal and economic policies to maximize the country's real economic growth. **Explain** what is correct and incorrect in Timmons's statement.

/ /