Economic Environment for Stocks

SILC Business School

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Stocks, Bonds, and the Flow of Economic Data

Stocks, Bonds, and the Flow of Economic Data

★ Economic Data and the Market

News moves markets.

The timing of much news is unpredictable

- war, political developments, and natural disasters

In contrast, news based on data about the economy comes at preannounced times. Virtually all these announcements deal with

- the economy, interest rate, economic growth, and inflation, and all have the potential to move the market significantly.

Stronger economic growth or higher inflation increases the probability that the central bank will either tighten or stop easing monetary policy. All these data influence traders' expectations about the future course of interest rates, the economy, and ultimately stock prices.

Stocks, Bonds, and the Flow of Economic Data

★ Principles of Market Reaction

Markets do not respond only to what is announced. Rather, they respond to the difference between what the traders expect to happen and what is reported.

- If the market expects that 400,000 jobs were lost last month.
- But the report shows that only 200,000 jobs were lost.

This will be considered “stronger than expected” economic news by the financial markets–having about the same effect on markets as a gain of 400,000 jobs would when the market expected a gain of only 200,000.

The same principle applies to the reaction of bond and foreign exchange markets to economic data. If a firm is expected to report bad earnings, the market has already priced this gloomy information into the stock price. Therefore, to understand why the market moves the way it does, you must identify the market expectation for the data released (consumer estimate).

Stocks, Bonds, and the Flow of Economic Data

★ Information Content of Data Releases

The economic data are analyzed for their implications for future economic growth, inflation, and central bank policy.

Stronger-than-expected economic growth causes both long- and short-term interest rates to rise. Weaker-than-expected economic growth causes interest rates to fall.

Faster-than-expected economic growth raises interest rates for several reasons.

1. Stronger economic activity makes consumers feel more confident and more willing to borrow against future income, increasing loan demand. Faster economic growth also motivates firms to expand production. As a result, both firms and consumers will likely increase their demand for credit and push interest rates higher.
2. Such growth might be inflationary, especially if it is near the end of an economic expansion. Economic growth associated with increases in productivity, which often occur in the early and middle stages of a business expansion, is rarely inflationary.

Stocks, Bonds, and the Flow of Economic Data

★ Economic Growth and Stock Prices

Stronger-than-expected economic growth has two important implications for the stock market, and each tugs in the opposite direction.

- A strong economy increases future corporate earnings–bullish for stocks.
- It also raises interest rates, which raises the discount rate at which these future profits are discounted.

Similarly, a weak economic report:

- May lower expected earnings
- but if interest rates decline, stock prices could move up because of the decline in the rate at which these cash lows are discounted.

Stocks, Bonds, and the Flow of Economic Data

In a recession:

- A stronger-than-expected economic report increases stock prices, since the implications for corporate profits are considered more important than the change in interest rates at this stage in the business cycle.
- Inversely, a weaker-than-expected report depresses stock prices. During economic expansions, and particularly toward the end of an expansion, the interest rate effect is usually stronger since inflation is more of a threat.

Stocks, Bonds, and the Flow of Economic Data

The reactions of financial markets to the release of economic data are not random, but instead can be predicted by economic analysis.

- Strong economic growth invariably raises interest rates, but it has an ambiguous effect on stock prices, especially in the late stages of an economic expansion, as higher interest rates offset stronger corporate profits.
- Higher inflation is negative for the stock market, but worse for the bond markets.
- Faster-than-expected central bank easing (or slower-than-expected tightening) is very positive for stocks and has historically sparked strong stock rallies.

The Structure of Interest Rates

The Structure of Interest Rates

Interest rate is not randomly determined.

There are factors that systematically determine how interest rates on different types of loans and debt instruments vary from each other. We refer to this as the structure of interest rates.

The Structure of Interest Rates

★ The Base Interest Rate

The securities issued by the Department of the Treasury, popularly referred to as Treasury securities or simply Treasuries, are backed by the full faith and credit of the government.

- Free of default risk
- Benchmark interest rate

The base interest rate is the sum of the real interest rate and the rate of inflation.

$$\text{Base interest rate} = \text{Real interest rate} + \text{Expected rate of inflation}$$

- The interest rate appropriate for an investment with no default risk.

The real interest rate is the rate that would exist in the economy in the absence of inflation.

The Structure of Interest Rates

- The Risk Premium

Debt instruments not issued or backed by the full faith and credit of the government are available in the market at an interest rate or yield that is different from an otherwise comparable maturity Treasury security.

Spread = interest rate offered on a non-Treasury security
- interest rate offered on a comparable maturity Treasury security

Ex) If the yield on a five-year non-Treasury security is 5.4% and the yield on a 10-year Treasury security is 4%, the spread is said to be 1.4%.
Rather than referring to the spread in percentage terms, such as 1.4%, market participants refer to the spread in terms of basis points. A basis point is equal to 0.01%. Consequently, 1% is equal to 100 basis points. In our example, the spread of 1.4% is equal to 140 basis points.

The Structure of Interest Rates

The spread exists because of the additional risk or risks to which an investor is exposed by investing in a security that is not issued by the government. Consequently, the spread is referred to as a risk premium.
Thus, we can express the interest rate offered on a non-Treasury security with the same maturity as a Treasury security as:

$$\begin{aligned} \text{Interest rate} &= \text{Base interest rate} + \text{Spread} \\ &= \text{Base interest rate} + \text{Risk premium}. \end{aligned}$$

While the spread or risk premium is typically positive, there are factors that can cause the risk premium to be negative.

The Structure of Interest Rates

The general factors that affect the risk premium between a non-Treasury security and a Treasury security with the same maturity are:

- The market's perception of the credit risk of the non-Treasury security.
- Any features provided of the non-Treasury security that make it attractive or unattractive to investors.
- The tax treatment of the interest income from the non-Treasury security.
- The expected liquidity of the non-Treasury issue.

The Structure of Interest Rates

- Risk Premium Due to Default Risk

Default Risk:

- The risk that the issuer of a debt obligation may be unable to make timely payment of interest or the principal amount when it is due.

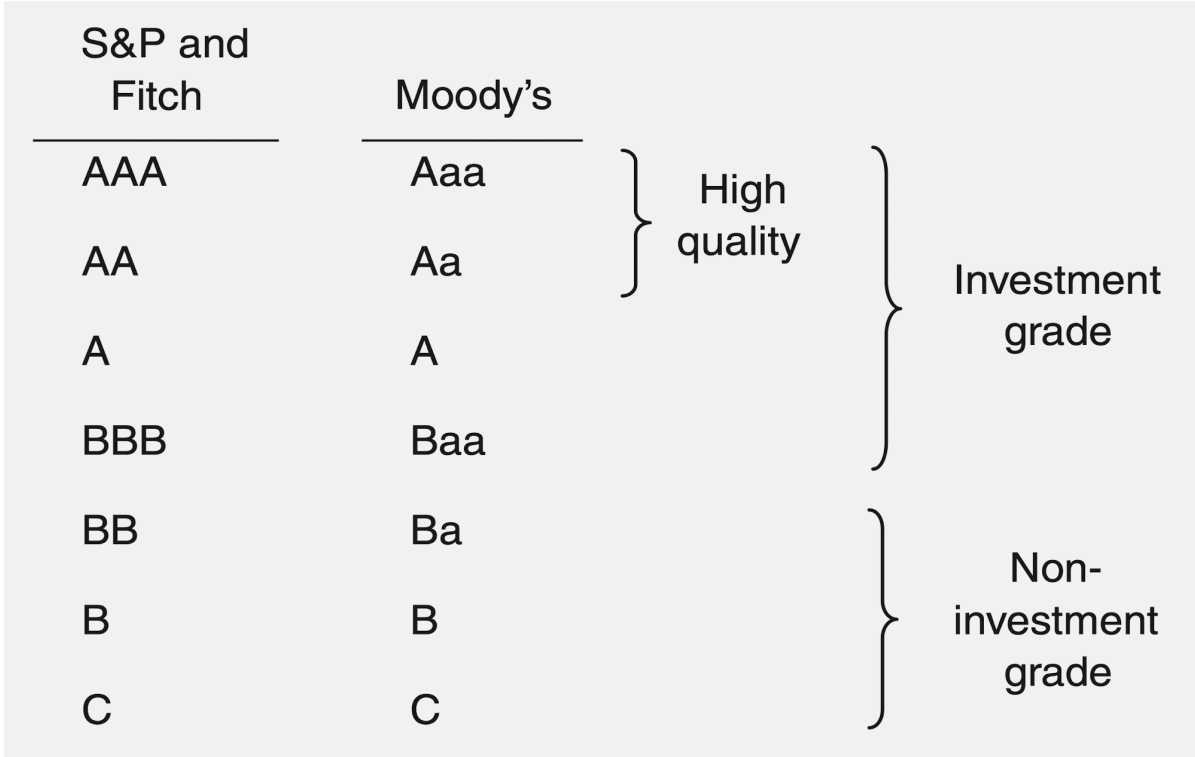
The three major commercial rating companies (rating agencies):

- Moody's Investors Service
- Standard & Poor's Corporation
- Fitch Ratings

These companies perform credit analyses of issuers and issues and express their conclusions by a system of ratings.

The Structure of Interest Rates

Fig 1 Credit Ratings



The term high grade means low credit risk or, conversely, high probability of future payments. Bonds rated AAA (or Aaa) through BBB (or Baa) are considered investment grade bonds. Issues that carry a rating below the top four categories are referred to as non-investment grade bonds, or more popularly as high-yield bonds or junk bonds.

The Structure of Interest Rates

Table 1 Credit Spread: Spread or risk premium between two-year Treasury securities and non-Treasury securities

Rating	Yield April 3, 2023	Credit Spread in Basis Points
2y T-bill	3.77%	-
AAA	4.27%	50
AA	4.53%	76
A	4.98%	121

Note that the lower the credit rating, the higher the credit spread.

The Structure of Interest Rates

- Inclusion of Attractive and Unattractive Provisions

The terms of the loan agreement may contain provisions that make the debt instrument more or less attractive compared to other debt instruments that do not have such provisions.

  - When there is a provision attractive to an investor, the spread decreases relative to a Treasury security of the same maturity.

The three most common features found in bond issues are the:

1. Call provision
2. Put provision
3. Conversion provision

A bond may have one of more of these features–or none of these features.

The Structure of Interest Rates

- A call provision (callable bond):

grants the issuer the right to retire the bond issue prior to the scheduled maturity date.

  - Benefits: The issuer by allowing it to replace that bond issue with a lower interest cost bond issue should interest rates in the market decline.
  - A call provision allows the issuer to alter the maturity of the bond issue.

A call provision is an unattractive feature for the investor because the bondholder will not only be uncertain about maturity, but faces the risk that the issuer will exercise the call provision when interest rates have declined below the interest rate on the bond issue. For this reason, investors require compensation for accepting reinvestment risk and they receive this compensation in the form of a higher spread or risk premium.

The Structure of Interest Rates

- A put provision (putable bond):

grants the bondholder the right to sell the issue back to the issuer at par value on designated dates. Unlike a call provision, a put provision is an advantage to the bondholder.

  - If interest rates rise after the issuance of the bond, the price of the bond will decline. market decline.
  - The put provision allows that bondholder to sell the bond back to the issuer, avoiding a market value loss on the bond and allowing the bondholder to reinvest the proceeds from the sale of the bond at a higher interest rate.

A bond issue that contains a put provision will sell in the market at a lower spread than an otherwise comparable-maturity Treasury security.

The Structure of Interest Rates

- A conversion provision (convertible bond):

grants the bondholder the right to exchange the bond issue for a specified number of shares of common stock.

  - The conversion provision allows the bondholder the opportunity to benefit from a favorable movement in the price of the stock into which it can exchange the bond.
  - the conversion provision results in a lower spread relative to a comparable-maturity Treasury issue.

Ex) the provision may specify that the bond may be exchanged into 50 shares of the common stock of the issue. The investor then compares the value of the bond as a bond with the value converted into the common stock. Unlike a traded option, such as a stock option, these provisions are referred to as embedded options because they are options embedded in a bond issue.

The Structure of Interest Rates

- Expected Liquidity of a Bond Issue

When an investor wants to sell a particular bond issue, he/she is concerned whether the price that can be obtained from the sale will be close to the "true" value of the issue.

If recent trades in the market for a particular bond issue have been between $87.25 and $87.75 and market conditions have not changed, an investor would expect to sell the bond somewhere in the $87.25 to $87.75 range.

  - Liquidity Risk: The investor has when contemplating the purchase of a particular bond issue is that he/she will have to sell it below its true value where the true value is indicated by recent transactions.

The greater the liquidity risk that investors perceive there is with a particular bond issue, the greater the spread or risk premium relative to a comparable-maturity Treasury security. The reason is that Treasury securities are the most liquid securities in the world.

The Structure of Interest Rates

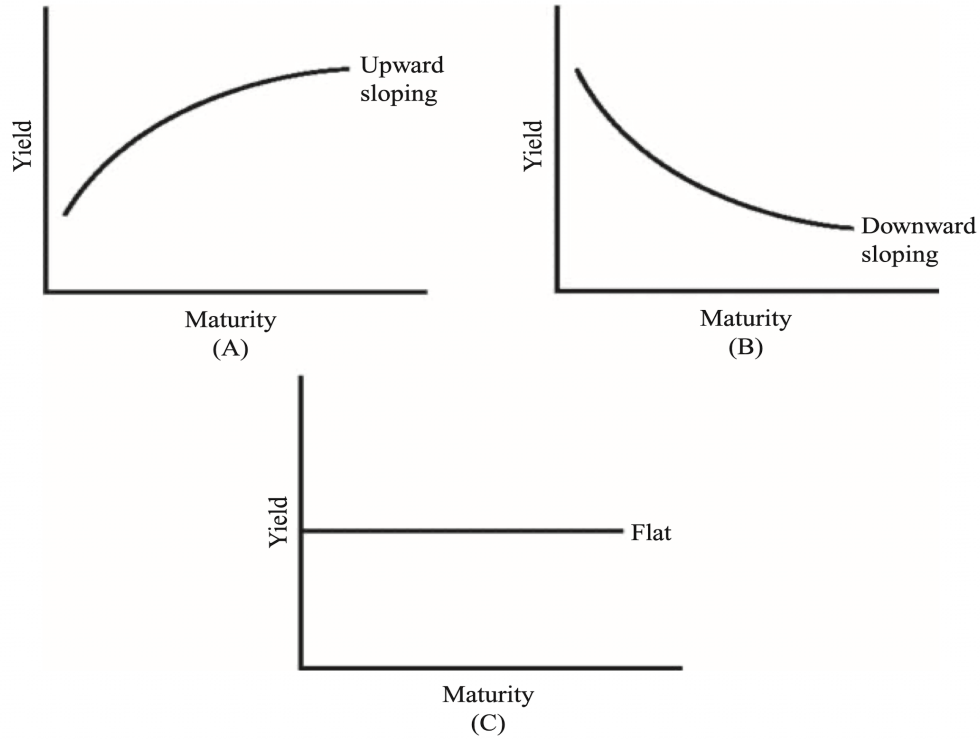
★ The Term Structure of Interest Rates

The price of a debt instrument will fluctuate over its life as yields in the market change. The price volatility of a bond depends on its maturity, among other things.
Holding all other factors constant, the longer the maturity of a bond the greater is the price volatility resulting from a change in market interest rates.

- Maturity spread: the spread between any two maturities in a sector of a market.
- Term structure (Interest rates): the relationship between the yields on comparable securities but different maturities.
- Yield curve: the relationship between the yields on Treasury securities with different maturities.
- Maturity spread = Yield curve spread.

The Structure of Interest Rates

Fig 2 Three observed shapes for the yield curve



The Treasury would have to pay for bonds with different maturities. These interest rates are referred to as the Treasury spot rates. We can obtain valuable information for market participants from the Treasury spot rates. These rates are forward rates.

The Structure of Interest Rates

- Forward Rates

Consider the following two Treasury spot rates:

1. The spot rate for a zero-coupon Treasury security maturing in one year is 4%
2. The spot rate for a zero-coupon Treasury security maturing in two years is 5%

Let's look at this situation from the perspective of an investor who wants to invest funds for two years. The investor's choices are as follows:

- Alternative 1: Investor buys a two-year zero-coupon Treasury security.
- Alternative 2: Investor buys a one-year zero-coupon Treasury security and when it matures in one year the investor buys another one-year instrument.

The Structure of Interest Rates

- With Alternative 1: The investor will earn the two-year spot rate and that rate is known with certainty: 5%.
- With Alternative 2: The investor will earn the one-year spot rate, 4%, but the one-year spot one year from now is unknown.

Therefore, for Alternative 2, the rate that will be earned over the two-year planned investment period is not known with certainty. Putting the number so this,

- Alternative 1: Annual return = 5%
- Alternative 2: Annual return = $\sqrt{(1+0.04)(1+f)}$,

where f is the unknown one-year spot rate one year from today.
Suppose that this investor expects that one year from now the one-year spot rate will be higher than it is today. The investor might then feel Alternative 2 would be the better investment. However, this is not necessarily true. To understand why it is necessary to know what the forward rate is, let's continue with our illustration.

The Structure of Interest Rates

If they produce the same total dollars over the two-year investment horizon: the investor will be indifferent to the two alternatives.
Given the two-year spot rate, there is some spot rate on a one-year zero-coupon Treasury security one year from now that will make the investor indifferent between the two alternatives.
We can determine the value of f given the two-year spot rate and the one-year spot rate by solving for the rate f such that the investment in the two-year security at 5% is equivalent to an investment in a one-year investment at 4% and a subsequent one-year investment at the rate f:

$$\begin{aligned}(1+0.05)^2 &= (1+0.04)(1+f)\\ (1+f) &= \frac{(1+0.05)^2}{(1+0.04)}\\ f &= 6.01\%.\end{aligned}$$

The Structure of Interest Rates

We can check our work to see if both alternatives provide the same number of dollars at the end of the two-year investment horizon:

- Alternative 1: If an investor placed $100 in the two-year zero-coupon Treasury security earning 5%, the total dollars that at the end of two years is $100 × (1.05)2 = $110.25.
- Alternative 2: The proceeds from investing in the one-year Treasury security at 4% generates $104 at the end of the first year. Investing this for the next period at 6.01% produces an end of period value of $104 × (1+ 0.0601) = $110.25.

The Structure of Interest Rates

Q. How we use this forward rate of 6.01%?

1. If the one-year spot rate one year from now is less than 6.01%
   - the total dollars at the end of two years would be higher by investing in the two-year zero-coupon Treasury security (Alternative 1).
2. If the one-year spot rate one year from now is greater than 6.01%
   - the total dollars at the end of two years would be higher by investing in a one-year zero-coupon Treasury security and reinvesting the proceeds one year from now at the one-year spot rate at that time (Alternative 2).

Of course, if the one-year spot rate one year from now is 6.01%, the two alternatives give the same total dollars at the end of two years.

The Structure of Interest Rates

Suppose the investor expects that one year from now, the one-year spot rate one year from now will be 5.5%.

- the investor expects the one-year spot rate one year from now will be higher than its current level.

Q. Should the investor select Alternative 2 because the one-year spot rate one year from now is expected to be higher?
A. No, because this produces a value less than investing at 5% for two years:

$$\text{Investment value at the end of two years} = \$100 \times 1.40 \times 1.055 = \$109.72.$$

In this example, if the spot rate in the second year is less than 6.01%, then Alternative 1 is the better alternative. If this investor expects a rate of 5.5%, then he or she should select Alternative 1 despite the fact that he or she expects the one-year spot rate to be higher next year than it is today.

The Structure of Interest Rates Theories

There are two major economic theories that have evolved to account for the observed shapes of the yield curve:

1. Expectations theory
2. Market segmentation theory

The Structure of Interest Rates Theories

- Expectations theory

There are two forms of the expectations theory:

1. Pure expectations theory: no systematic factors other than expected future short-term rates affect forward rates.
2. Biased expectations theory: the biased expectations theory asserts that there are other factors.

Both theories share a hypothesis about the behavior of short-term forward rates and also assume that the forward rates in current long-term bonds are closely related to the market's expectations about future short-term rates.

The Structure of Interest Rates Theories

- Pure Expectations Theory

It assumes that the forward rates exclusively represent the expected future rates–the entire term structure at a given time reflects the market's current expectations of the family of future short-term rates. Under this view

- An upward-sloping yield curve indicates the market expects short-term rates to rise throughout the relevant future.
- A flat term structure reflects an expectation that future short-term rates will be mostly constant.
- A falling term structure must reflect an expectation that future short rates will decline steadily.

The Structure of Interest Rates Theories

- A major shortcoming of the pure expectations theory:
It ignores the risks inherent in investing in debt instruments.

With uncertainty about future interest rates and hence about future prices of bonds, these debt instruments become risky investments in the sense that the return over some investment horizon is unknown.

From a borrower's perspective, with uncertainty about future interest rates, the cost of borrowing is uncertain if the borrower must refinance at some time over the period in which the funds are initially needed.

The Structure of Interest Rates Theories

- Biased Expectations Theory

Biased expectations theories take into account the shortcomings of the pure expectations theory.

1. Liquidity theory: The forward rates will not be an unbiased estimate of the market's expectations of future interest rates because they embody a premium to compensate for risk; this risk premium is a liquidity premium.

Therefore, an upward-sloping yield curve may reflect expectations that future interest rates will either rise, fall, or remain the same, but with a liquidity premium increasing fast enough with maturity so as to produce an upward-sloping yield curve.

The Structure of Interest Rates Theories

2. Preferred habitat theory: Preferred habitat theory rejects the assertion that the risk premium must rise uniformly with maturity.

However, the proponents of the preferred habitat theory say that the latter conclusion could be accepted if all investors intend to liquidate their investment at the first possible date, while all borrowers are eager to borrow long. However, this is an assumption that can be rejected for a number of reasons.

The argument is that different financial institutions have different investment horizons and have a preference for the maturities in which they invest. The preference is based on the maturity of their liabilities. Consequently, forward rates do not reflect the market's consensus of future interest rates.

The Structure of Interest Rates Theories

- Market Segmentation Theory:
  - recognizes that investors have preferred habitats dictated by saving and investment flows.
  - proposes that the major reason for the shape of the yield curve lies in asset/liability management constraints (either regulatory or self-imposed) and/or creditors restricting their lending or borrowers restricting their financing to specific maturity sectors.

The market segmentation theory assumes that neither investors nor borrowers are willing to shift from one maturity sector to an- other to take advantage of opportunities arising from differences between expectations and forward rates. Thus, according to the market segmentation theory, the shape of the yield curve is determined by the supply of and the demand for securities within each maturity sector.