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Interest Rates, the Fed and the Bond Market

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Interest rates have been very low for a few years. Since last year, there has been speculation of when the Federal Reserve will “raise interest rates”. Many worry about the effect of rising interest rates on bonds. Before discussing this effect, let us review what these interest rates are. There is a variety of rates, most of which are not controlled by the Fed, but let us start with the Fed. Then we will discuss the bond market.

The Fed and the Fed Funds rate

What is the Fed funds rate?

The rate most easily controlled by the Fed is the *Fed funds rate*. The FED’s open market committee (FOMC) meets 8 times a year to review their *target* for this rate. What has been discussed, for more than a year, is that the FOMC may soon raise the target. Financial institutions must keep cash reserves with the Fed – akin to a mandatory kitty in case of problems. Institutions review their positions nightly; they may need to add reserves to meet their requirement, or they may find that they have more than needed. Those short in reserves typically borrow overnight from those with an excess. The average rate at which institutions borrow overnight money from each other is the Fed funds rate. With this extremely short maturity, and a very low risk of default, the Fed funds rate is possibly the lowest of all interest rates.

The Fed Funds rate, economic activity, inflation

The Fed funds rate is the major tool available to the Fed to control the intensity of economic activity. Recall that the major task of the Fed is to not let inflation run out of control, as happened in the early 80s, when it topped 14%. The Fed will raise the rate if they see that the economy is overactive. An overactive economy leads to excess demand for real estate, goods and services and can trigger inflation. A higher Fed funds rate makes borrowing more expensive for institutions.



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In turn, these institutions raise a number of rates at the core of economic activity: short term (variable) rates for lines of credit and mortgages, short term rates for loans to businesses and individuals. As borrowing costs rise, businesses may drop projects that become less profitable. A project may be profitable at a 4% borrowing cost but not at 5%. This chain of actions, which takes several months, contributes to slowing down economic activity and controlling inflation. Conversely, the Fed may want to encourage economic activity in a sluggish economy. In this case they lower the target rate, and the chain of actions flowing from cheaper borrowing encourages the economy.

[How the Fed changes the Fed funds rate](#)

The Fed cannot “dictate” the rate. Instead, they engage in open market activity, ergo the name of the committee which decides on the target rate: FOMC Fed's Open Market Committee. Roughly speaking, to lower the rate, they buy back Treasury bills with cash, which increases the amount of money available to institutions, and in turn helps rates come down. To raise the rate, they can sell Treasury bills, and remove the cash proceeds from the money supply. As the supply of money shrinks, borrowing becomes more expensive and rates rise. This is all very technical. All we need to know is that the Fed can credibly “get” the Fed funds rate to its announced target.

[Where we are now?](#)

The Fed Funds rate is about zero. The Fed can't do better to encourage economic activity! In fact the economy is in no danger of triggering runaway inflation. Noted economists, e.g., Larry Summers and Paul Krugman, currently worry much more about deflation and recession than inflation. They reason as follows. If another shock hits the world economy, such as a protracted slowdown of emerging markets including China, the Fed has no tool left in the tool bag to help the economy restart. This is where they advocate a spending policy which only the government can effect – meaning congress would have to vote budgets with higher levels of spending and debt to prop up the economy. We know the chances of that happening currently! The cost benefit is more debt to get more growth. The economic thinking is that politicians grossly overestimate the impact of the debt burden relative to the potential of an unsupported economy going into a slump. For example, Larry Summers argues that the current debt burden is far less than mouthed by politicians since interest rates are near zero!¹

¹ See Larry Summers, “The economy is in danger”, Washington Post, October 7th 2015.



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Any rate hike would be small, up to what will still be a very low level, if the Fed sees that the economy can sustain itself. The Fed was about to do this when the Chinese alarm hit the markets a few weeks back. They are clearly hesitant to raise rates, giving some implicit credence to the above fears. This is in very sharp contrast with the older days of 5% Fed funds rates, or the days when Alan Greenspan was scolding the “irrational exuberance” of financial markets.

Is there cause for alarm if case of a rate hike? First, it would go in the box of “good news”, showing the Fed is more confident that the Economy can support itself. Second, the raise would be by no more than a quarter of a percent. A back of the envelope computation shows that a 0.25% rate hike would at the most trigger a 3% or 4% drop in long term bonds, the most exposed. It most likely won’t be that much for two reasons. First, the rate hike is already partially anticipated by the markets so it won’t come as a surprise. Second, the Fed funds rate has little impact if any, on longer term rates which are set in the bond market. In fact, most rates originate in the bond market, where the bonds we own, directly or through funds, trade.

The Bond Market

The Bond market includes government, state, municipal, and corporate debt. In contrast with stocks, bonds promise fixed payments, coupons and principal, at known future dates, therefore the term *fixed-income* market often used. Typical long term bonds make one final payment at maturity and bi-annual coupon payments until then. Shorter term bonds – bills, typically only make one final payment, hence their other name of zero-coupon bonds, or *zeros*. Most of us do not directly invest in individual bonds, but our portfolios often include funds which are portfolios of bonds. To understand the risk in our bond funds, we need to understand the risk in these individual bonds.

An obvious risk is the possibility of default, aka credit risk. We leave it for another discussion. We consider the US Government bond market. Despite periodic congressional antics, market participants generally do not think the US Government is likely to default. The US Government bond market had a total capitalization of about 13 trillion dollars at the end of 2014. Compare with the US stock market worth about 27 trillion. The entire US fixed-income market, with corporate bonds and mortgages, was worth about 38 trillion at the same time, larger than the stock market. These two markets trade very differently. It all starts when ...



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[Bonds are issued in the primary market](#)

The US Government regularly issues new bonds bought by bond traders in very efficient auctions. Bills with up to 1 year maturity are issued weekly. Bonds with 2, 3, 5, 7, 10, 30 years maturity are issued monthly. There is not a week without the Government issuing new bonds. This is the *primary* market. In 2014, the US Government sold us \$7 **trillion** of new bonds; into a market with a \$13 trillion value. Compare this enormous turnover to the stock market: 2014, a banner year for IPOs saw about \$90 **billion** of new stocks issued in a \$27 trillion market! In the stock market, the volume is in the secondary market, i.e., NYSE, NASDAQ, where stocks trade after being issued. In the bond market, the volume is in the primary market, at the auction when the bonds are issued.

New bonds are typically bought by bond traders who sell them right away, mostly to bond portfolio managers. The bonds then become far less liquid, because bond portfolio managers do not routinely buy and sell existing bonds to rebalance their portfolios, unlike what stock fund managers do. They mostly rebalance their bond portfolio if interest, coupon rates, or default risk change markedly, or if a bond matures, with new ones of similar characteristics. Due to this low volume, there is no secondary bond market as a NYSE or NASDAQ: Individual trades occur “over the counter”.

The Bond market is mostly driven by the regular government auctions (primary market) while the Stock market is mostly driven by the secondary markets (NYSE, NASDAQ)

Next week, there will be auctions. How much will bond traders decide to pay for Government bonds? The Fed has about no impact on this.

[Link between bond price and interest rate](#)

Bond traders decide what they pay for the bond. If a trader pays \$P for a bill that will give her \$100 in one year, her 1-year return R is known: $\$P(1+R) = \100 . This return is the interest rate embedded in the bond price. The trader jointly sets the price and the return she wants for the coming year. Traders pay more today if they accept a lower return, and pay less if they want a higher return.



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When interest rates rise, bond prices go down.
There is an inverse link between interest rates and current bond prices

How traders set the interest rate

The trader must decide what to pay now for a bill that will return, say, \$100 in one year. With no default risk, she **will** get \$100, so, what she pays now locks in her rate of return for the year. Paying \$93.45 now locks a return R as $93.45(1+R) = 100$, that is 7%. So, if she wants to get a sure 7%, she bids \$93.45.

At the auction, traders bid prices that guarantee them their desired *nominal* rate of return.

Why would the trader want to get 7% on the bill, why not 10%, or 0.5% as currently? The first critical input is what traders think about future inflation. If inflation turns out to be 7%, we earned 7%, our purchasing power went down 7%, we end up no richer in *real* terms. Our *real return* is 0%.² Traders bid to at least recover the purchasing power they expect to lose due to inflation. If I expect 7% inflation, I bid \$93.45 to at least to cover that 7% loss in purchasing power. Is this good enough? Bidding 7%, I now expect to be no richer no poorer on average, in fact poorer half the time if inflation ends up above the forecast. This is not good enough! Traders want to 1) get richer in real terms on average and 2) have a little protection in case the inflation forecast was too low. So they will bid above the inflation forecast. Say I bid \$90.9 to get a 10% nominal return, thinking inflation will be 7%. I just built in a 3% protection.

² Inflation measures the loss in the purchasing power of one dollar. The real return on an investment is our return after accounting for inflation.



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I can now afford an inflation 3% higher than my forecast without becoming poorer in real terms. So, the more unsure traders are about future inflation, the bigger the cushion built in their bids. In our current situation, inflation forecasts are very low and not very volatile, this cushion (aka the real interest rate) is very low, close to zero. Recall the early eighties when inflation was above 10%! Inflation uncertainty was also very high and the cushion was high.

Interest rates are mostly set by the bids of bond traders.
They rise with inflation forecasts and also with the uncertainty of the forecasts.

Every time the bond market views about future inflation change, the bids for bonds change, and bond prices move. A revision in inflation forecasts will readjust bond prices within hours. Currently, inflation views are very low, much more likely to rise than decrease. So interest rates are much more likely to rise, and in turn, bond prices are much more likely to fall. How big could the fall be? The bond market is essentially driven by professionals who keep up to date with economic forecasts. Any upward revision in inflation is likely to be small, as the market constantly analyzes inflation and future rates.

In the next note, we will look at long term bond risk, and a simple measure (duration) that gives us a handle on the sensitivity of our long-term bonds to interest rates changes. But it is important to understand that most bonds we own are not directly affected by the Fed's action. Rather, their prices are set from the bond traders' constantly revised expectation about future inflation and future rates, which does incorporate what they think the Fed's actions will be. Also remember that any upcoming rate hike by the Fed will be small, and that a number of economists worry also about the opposite problem; a recession with deflation, for which the Fed has few tools left in the bag.

This material was created to provide accurate and reliable information on the subjects covered but should not be regarded as a complete analysis of these subjects. It is not intended to provide specific legal, tax or other professional advice. The services of an appropriate professional should be sought regarding your individual situation.