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MACRO MASTERS

Tutorial 3
Modules 11-14




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Module 11

Money Markets and Bonds

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Money Markets Eurodollars & Libor

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Money Markets

- Short term government bonds
- Bankers Acceptances
- Bank Deposit Notes
- Commercial Paper
- Money Market GIC

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Money Markets

- Many are sold at a discount and mature at face value
- Secured by bank or government
- In the case of commercial paper, it is unsecured promissory note for short term corporate funding
- Unlike most money markets, GICs have no secondary market



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Eurodollars

- Eurodollars are bank deposit liabilities denominated in U.S. dollars but not subject to U.S. banking regulations
- Most banks offering Eurodollar deposits are located outside the United States
- Largest short-term money market in the world
- Originated in London, but it refers to all deposits outside the U.S.

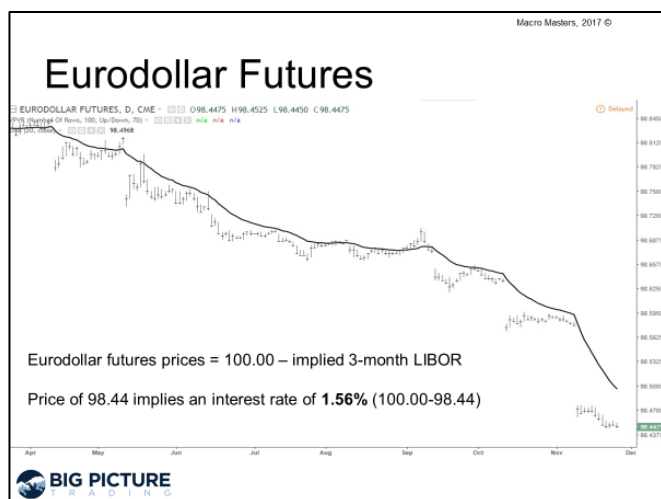


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LIBOR

- London Interbank Offered Rate (LIBOR)
- The rate at which major international banks are willing to offer term Eurodollar deposits to each other
- An active secondary market allows investors to sell Eurodollar CDs (certificate of deposit) before the deposits mature





Eurodollar Rates

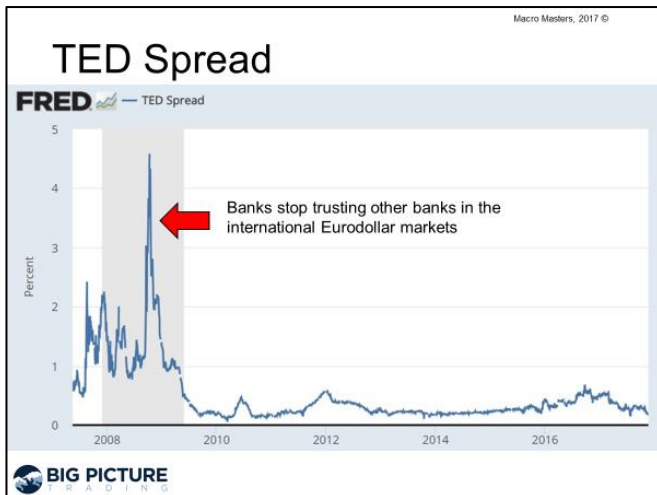
- The LIBOR rates are an near perfect substitute for the overnight funds rate (FED funds rate)
- Arbitrage keeps the rates close
- The difference between them reflects supply/demand issues, global dollar shortages and global risks
- Eurodollar Futures are the LIBOR instrument for tracking

TED Spread

- The TED spread is the difference between interest rates on 3 month Eurodollar futures (LIBOR) and 3 month U.S. Treasury bonds
- $$\text{TED spread} = 3\text{m LIBOR} - 3\text{m T-bill}$$
- Indicator of perceived credit risk in the general economy. T-bills are considered risk free while LIBOR has credit risk of lending to commercial banks

Trading the TED Spread

- Hedging interest rate risk or
- Speculator anticipating a change in the difference between Fed and LIBOR rates
- Involves:
 - Buy long treasury bill futures
 - Sell short Eurodollar futures





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Bonds

- Bonds are units of debt
- Bond issuer is indebted to the bond holders
- Most have fixed coupons (interest paid) and fixed maturities
- The bond markets are much larger than the size of the stock market
- Substantial influence on markets and currencies

Bonds

- Bonds have a duration and yield

Bond	Coupon
Government Bond 5.00% 1 Year \$1000.00	\$25.00 6 month
	\$25.00 6 month



- \$1000.00 units is the common breakdown
- Bonds are quoted as a percentage of value converted to a point scale
- 100 = par (face value)
- A quote for 99.25 or 99 ¼ is 99.25% or \$992.50 for a \$1000.00 face value



- Joe buys \$100,000 of government bonds at face value for \$100,000
- Current rates are 5.00%



Bond Price Change Example

- 1 month passes and Joe is suddenly needs the money and has to sell the bond early
- Over that month interest rates dropped rapidly to 4.00%

[illegible]

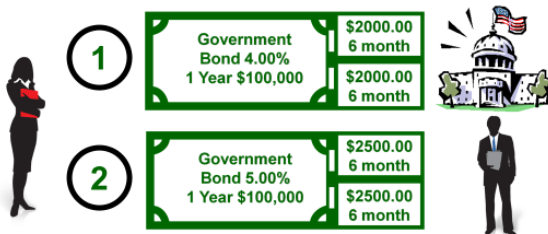
Bond Price Change Example

- Jenny wants to buy \$100,000 par value of government bonds
- At 4.00% rates Jenny can buy the following from the government

[illegible]

Bond Price Change Example

- Jenny can buy:



What is the right price for Joe's bond?



Bond Price Change Example

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1

Government Bond 4.00% 1 Year \$100,000	\$2000.00 6 month \$2000.00 6 month
--	--

Quote: 100.00
\$100,000.00 to buy

2

Government Bond 5.00% 1 Year \$100,000	\$2500.00 6 month \$2500.00 6 month
--	--

Quote: 100.91
\$100,910.00 to buy



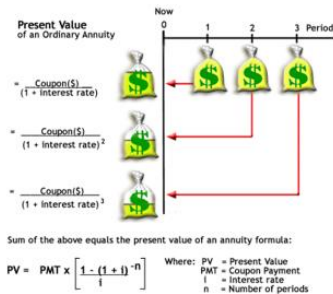
- Joe can now sell his bond for a \$910.00 profit 1 month later as he benefited from a decline in interest rates while he owned it



Present Value

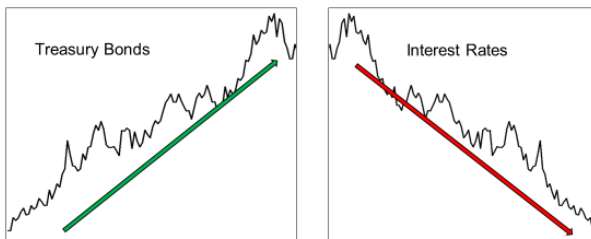
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Taking into account all future payments and return of principle and then discounting it to the present value at the prevailing interest rate



Interest Rates and Bonds

- Inverse relationship of interest rates to bonds
- Bond markets rise, it means that interest rates are dropping



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Coupons and Yields



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Coupon vs. Yield

- Coupon is the physical cash payment contractually paid as interest on the face value
- Yield is the return an investor is making on what the paid for the bond



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Coupon

Government Bond 10.00% 1 Year \$100,000	\$5000.00 6 month \$5000.00 6 month
---	--

Coupon
\$10,000
10.00%

Yield to Maturity

Investor buys the bond for \$101,000.00
The bond still offers a \$10,000 coupon

Government Bond 10.00% 1 Year \$100,000	\$5000.00 6 month \$5000.00 6 month
---	--

Yield to Maturity
9.52%



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Nominal vs Real Yields

- Bonds discount the rate of inflation
- The coupon and yield to maturity are nominal rates of return
- Real rate of return is the yield minus the rate of inflation
- If yield is 3.00% and inflation is 2.00% then your real rate of return is
- **1.00%** (3.00%-2.00%)



Country	2-Year Yields		CPI	Real Yields
	2-year Yields			
SWEDEN	-0.683%		2.20%	-2.880%
UK	0.164%		2.60%	-2.436%
GERMANY	-0.749%		1.67%	-2.422%
BELGIUM	-0.549%		1.78%	-2.330%
DENMARK	-0.646%		1.49%	-2.139%
NETHERLANDS	-0.691%		1.33%	-2.021%
SPAIN	-0.356%		1.55%	-1.904%
FRANCE	-0.589%		0.72%	-1.307%
FINLAND	-0.699%		0.53%	-1.227%
ITALY	-0.073%		1.10%	-1.172%
SWITZERLAND	-0.815%		0.30%	-1.115%
NORWAY	0.596%		1.53%	-0.935%
USA	1.138%		1.73%	-0.590%
JAPAN	-0.148%		0.40%	-0.548%
IRELAND	-0.512%		-0.20%	-0.314%
POLAND	1.697%		1.80%	-0.108%
CANADA	1.237%		1.16%	0.073%
CHINA	3.573%		1.40%	2.173%
GREECE	3.174%		1.00%	2.175%
RUSSIA	7.820%		3.86%	3.955%
BRAZIL	8.265%		2.71%	5.553%

Nominal vs. Real Yields

The age of QE has led to massive negative real yields on a good part of government debt around the world

Criticism of Real Yield Calculations

- What if investors were to accept our assertion from "Module 2 on inflation", that financial assets should reflect the RMD (Rate of Monetary Dilution) rather than the CPI?
- This would demonstrate that over the last decade, almost all debt has been in a state of deeply negative real rates of return



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Understanding Duration



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Long vs. Short-term Bonds

- Because bonds discounted to the present value of all future returns, longer duration bonds are far more volatile
- Short-term bonds are far safer for preservation of capital
- Longer-term bonds are far more a position on future interest rate trends



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Changing Duration

- Long bonds are much more volatile
- Managers using tactical asset allocation will look to change the duration of the portfolio based on inflation and credit risks





Types of Bonds

Investment Grade Government Bonds

- Treasury/Government bonds of the developed nations (predominantly within the G20)
- Central banks dictate the cost of short term bonds by raising and lowering interest rates
- Longer duration bonds are pricing in inflation, growth, credit and business cycles
- The study of the steepness or inversion of the government bond yield curve is used in anticipating expansions and recessions

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High Yield Sovereign Bonds

- Below investment grade countries with increased risk of default or debt restructuring
- Emerging market bonds
- Higher yields to attract investors
- Risks:
 - Inflation
 - Currency
 - Liquidity
 - Political



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Bond Downgrades

- When sovereign nations and corporations get downgraded from BBB down to BB (or junk rating), the repercussions can be severe
- Limited financing options make it harder to raise capital
- Have to refinance at higher interest rates
- Run into difficulties in paying its debts

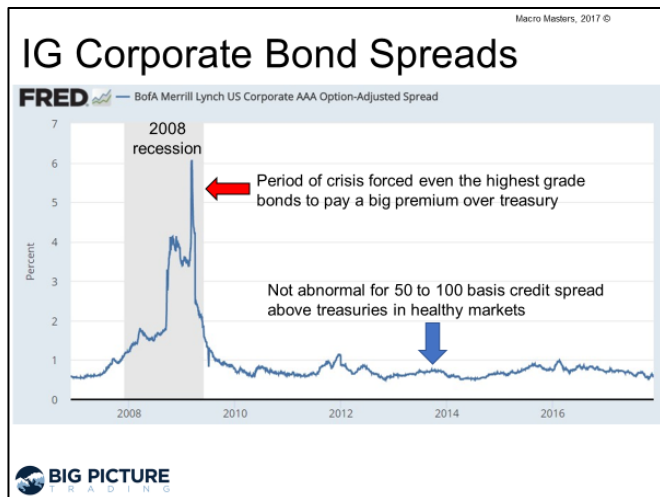


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Investment Grade Corporate Bonds

- Investment grade bonds are rated in the AAA to BBB credit rating
- The higher the rating the closer the company can finance to government rate of interest
- The general outlook for the economy influences the spread that these companies need to pay above government rates





High Yield Corporate Bonds

- Junk bond market are all bonds that do not qualify as investment grade
- Increased risk of default or debt restructuring
 - Uncertainty in revenue stream
 - Insufficient collateral
- Weakening economy or tightening credit conditions often lead to a higher percentage of these bonds to default



High Yield Corporate Bonds

- Higher yield corporate bonds need to discount the probability of default or restructuring
- Often during a crisis, junk bonds can be bought pennies on the dollar
- Junk bond funds need to discount the percentage of defaults into the yield
- So a 3% default rate in a fund needs to yield 3%+ higher rate of return to compensate the investor for losses



[illegible]

- It is important to consider not only the yield to maturity but where we are in the credit cycle
- Buying corporate and corporate junk bonds with tight spreads right before a recession will likely result in considerable volatility and drawdown
- Alternatively buying them when they are significantly discounted and paying high yields could lead a big equity style return when the credit spreads tighten

[illegible]

- Debentures are higher risk because it is an unsecured loan
- Pay much higher yields
- In the case of a default, investors are often at risk of the loss of the entire face value of the bond

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Convertible Bonds

- Bonds that can be converted into stock at the discretion of the bondholder
- Best way to think of it as an attached call option that:
 - Can be converted at a specific price
 - Can be converted at a specific time
- Attractive to many fund managers to fulfill the bond component of a portfolio but have an equity upside during a strong market



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Contingent Convertible Bonds

- Also know as COCO bonds
- Bond that is convertible into equity if a pre-specified trigger event occurs
- Predominantly now used by banking industry for crisis management
- Essentially this is the new regime of “Bail-in” bonds
- When a bank breaks a capital requirement threshold, the bonds convert to equity to rebalance reserves



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Mortgage Backed Securities MBS

- The securitization of mortgages
- Pooling of individual mortgages to increase the pools credit worthiness by rating agencies
- Two types:
 - Pass throughs which are structured as a trust
 - Collateralize mortgage obligations – pools of securities which are broken into tranches



Zero Coupon Bonds

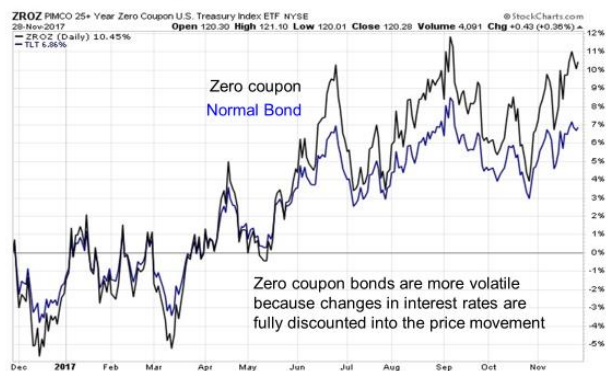
- The face value is discounted to present value of the current yields



- Quoted at 95.00 matures a 100.00



Zero Coupon Bonds



CDO Collateralized Debt Obligation

- Structured asset-backed security
- When purchased, investor is promised to be paid in an arranged sequence, based on the cash flow of the CDO basket of loans
- Sold in tranches with different seniority
- If loans within the CDO start to default, the junior, lowest rated tranches are the first to suffer the losses



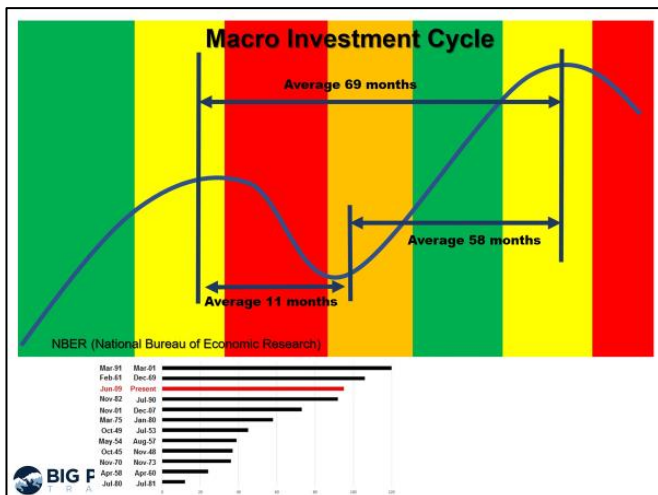
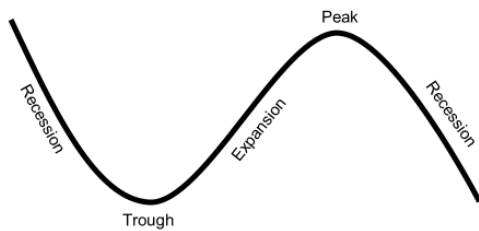
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CDS Credit Default Swap

- Essentially insurance on bonds
- Buyer of a CDS pays a quarterly payment for the insurance
- Seller of the CDS agrees that in the case of a default, the face value of the loan is paid in exchange for the defaulted loan



- The business cycle is the pattern of expansion, contraction and recovery in the economy



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Source: BofA Merrill Lynch Global Investment Strategy, Global Financial Data



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Fed = Federal Reserve, ECB = European Central Bank, 2H = Second Half


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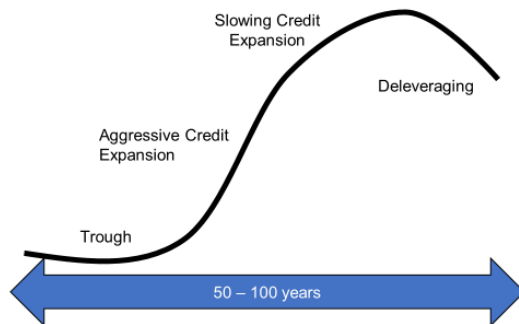
Economic Business Cycle

- The business cycle is important because it is a periodic detox of the bad credit and poorly managed companies
- The longer a cycle lasts, often spurred on by monetary policies, the more bad debt and excesses build making the recession larger



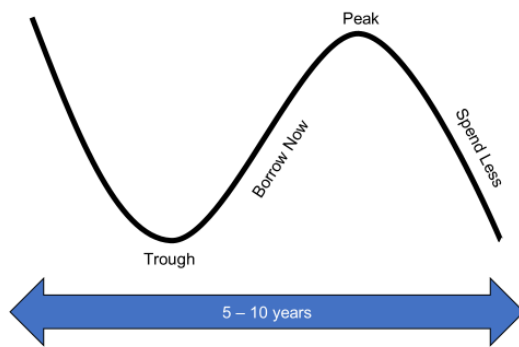
Big Picture Super Credit Cycle

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Credit Cycle

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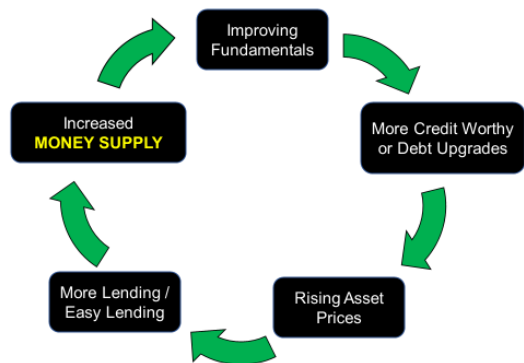


Long-Term Credit/Debt Cycle

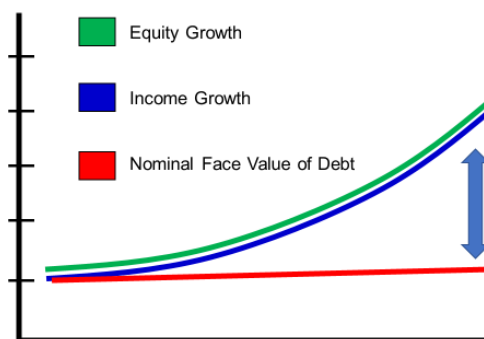
- Since debt and money are intertwined, a debt super cycle is a monetary event
 - Leveraging
 - Depression
 - Reflation
- A long-term debt cycle can be associated with a failure of a currency



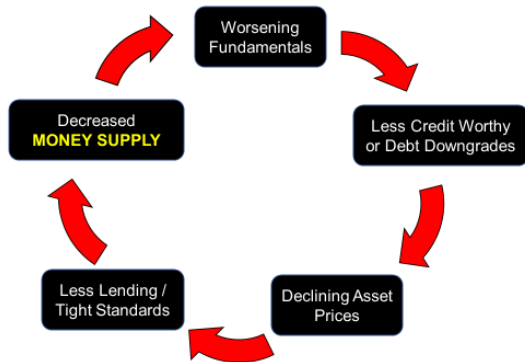
Credit Cycle - Positive Feedback Loop



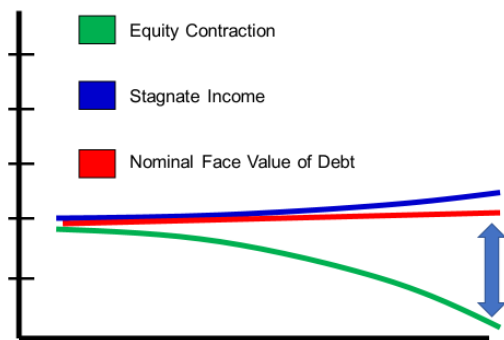
Positive Credit Cycle



Credit Cycle - Negative Feedback Loop



Negative Credit Cycle



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Assessing the Risks

- It is important to recognize the stage in the cycle
- This is what we do during our Macro Fundamental Analytics webinars
- What is the unfolding reality before us?

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Module 13

Utilizing Debt and Margin



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Debt

- The general public is trained that debt is bad
- Goal is to get out of debt
- This would be true in the pre-1971 currency world
- In the fiat world, debt is a powerful wealth tool



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Debt

- The vast majority of debt and mortgages are issued at face value and can be repaid in the future with substantially devalued money
- Financial institutions price in the decay in the purchasing value of the money into the interest rate paid



Debt Example

Interest Paid	Real Inflation	Real Cost
5.00%	4.00%	1.00% (5.00-4.00)
3.00%	3.50%	-0.50% (3.00-3.50)

- Because of the exponential growth of debt, we today are seeing negative real cost
- The most credit worthy companies can now borrow at a negative real cost (or positive gain)



Negative Benefit Debt

- Consumer debt is bad
- It is commonly very high in cost
- It is commonly a loan against the future time and labor of the borrower
- This is very cyclical because at some point consumers need to spend less



Positive Benefit Debt

- The purchase of any real asset that retains its value while money depreciates (ideally generates an inflating income)
 - Real Estate
 - Stocks
 - Businesses
 - Assets that do not depreciate (gold, fine art ect.)



Example of Good Debt



- Investor buys a sixplex apartment \$1,000,000 with a \$100,000 annual gross revenue (10% cap rate)
- Investor gets \$500,000 mortgage at 5.00%, interest only with no principle repayment
- Mortgage is 50% of the principle
- \$25,000 in annual interest payments (25% of gross revenues)

[illegible]

Example of Good Debt

10 year projection (constant interest%)



- 3% annual revenue increase would have the annual revenue at \$135,000
- At a 10% cap rate the property is valued at \$1,350,000
- The mortgage is still \$500,000 (37.00% of the property value)
- \$25,000 in interest payments (18.50% of gross revenues)

[illegible]

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Module 14

Real Estate



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Real Estate Markets

- Individual properties are not exchange traded because it cannot be standardized on a large scale
- Real estate has a material impact on the psychology of investors because of the wealth effect
- Highly sensitive to interest rate movements and the availability of capital



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Non-Financial Variables

- Demographics
- Immigration
- Regional trends



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Financial Variables

- Cost of capital
- Availability of capital
- Economic strength and credit worthiness of consumers
- Foreign Investment



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Residential Property and Land

- In most part, the property is utilized and is not a profitable source of income
- Key considerations are location, condition of the property, zoning, permits, etc.
- Has many of the same pricing considerations like a zero coupon bond



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Income Properties

- Includes residential, commercial and industrial properties
- The cash flow income stream becomes the most important pricing variable
- Rising income streams (inflation adjusted) and declining cap rates (linked to interest rates) have been a strong trend for the last 30 years



Mortgages

- Gross Debt Service Ratio (GDS) is the percentage of the borrower's income that is needed to pay all required monthly housing costs. Usually acceptable in the 30-35% range
- Total Debt Service Ratio (TDS) is the percentage of the borrower's income that is covering housing costs (GDS) + all other monthly obligations (credit, line, car, etc.)
Usually acceptable in the 50% range



Mortgages

- Gross Debt Service Ratio (GDS)

$$\text{GDS} = \frac{\text{Annual Mortgage Payments} + \text{Property Taxes}}{\text{Gross Family Income}}$$

$$\text{GDS} = \frac{\$24,000 + \$5,000}{\$90,000}$$

$$\text{GDS} = 32.22\%$$

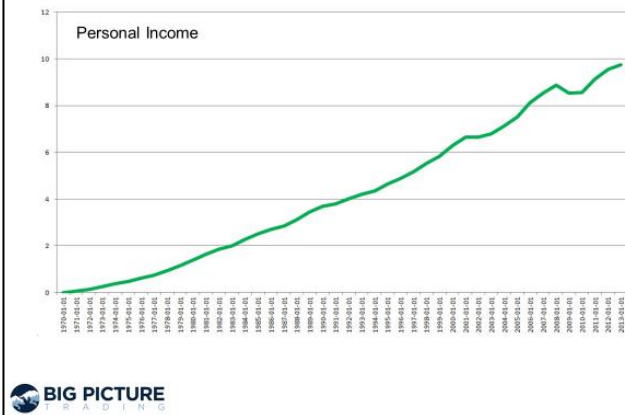


Canadian Mortgage Rates

Historical 5-year mortgage rates



Personal Income



Influences on Affordability

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- Like all assets, real estate is a function of supply and demand
- If real estate exceeds the prices that can be afforded, demand shrinks and prices correct
- The ability for a family to be able to be approved for a mortgage is a key precipitating factor
- Broader credit cycle has an important influence
- A healthy bank credit market is critical



Influences on Affordability

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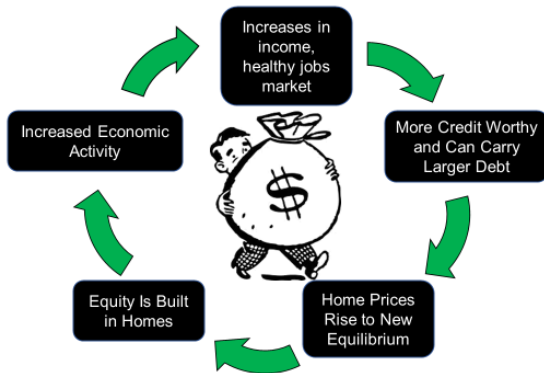
Changes in mortgage interest rates

Year	Household Income	Mortgage Rate	Pre-Approved Mortgage at 35% GDS
2000	\$50,000	7.50%	\$200,000
2015	\$76,000	4.00%	\$420,000
2016* hypothetical	\$76,000	7.50% (+3.50%)	\$300,000 (-\$120,000)

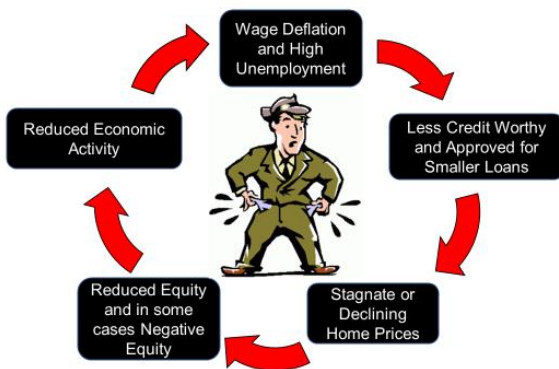
*A structural rise in interest rates would materially influence demand at the existing price levels.



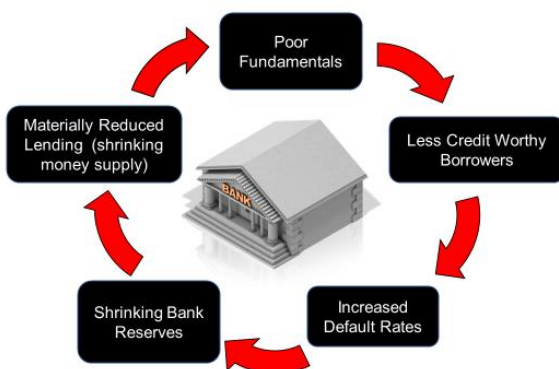
Credit Cycle - Positive Feedback Loop



Credit Cycle - Negative Feedback Loop



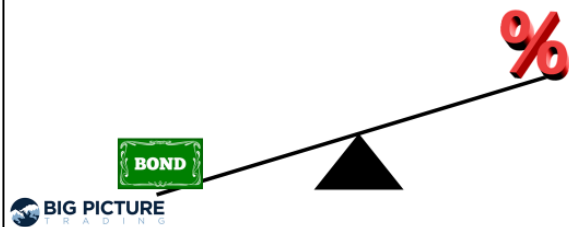
Credit Cycle - Negative Feedback Loop



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Cap Rate on Investment Property

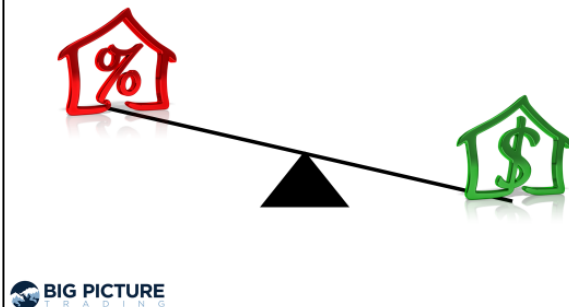
- Capitalization Rate for real estate investment is the properties net operating income divided by its purchase price
- CAP Rate has the same relationship to real estate as bond yields have to a bond price



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Cap Rate on Investment Property

- The key observation is that changes in interest rates change the value of the income property



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Example of Changes in Cap Rate

- Investor owns a sixplex with an annual operating income of \$100,000
- The current cap rate is 5%
- Reviewing the impact of changes in interest rates

Cap Rate	NOI	Value	Change
5.00%	\$100,000	\$2,000,000	\$0
6.00% (+1.00%)	\$100,000	\$1,666,666	-\$333,334
4.00% (-1.00%)	\$100,000	\$2,500,000	+\$500,000



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Real Estate Investment Trusts

- Allows average investors to invest in large scale commercial and residential properties
- Invested as equity the same way a stock including a dividend income
- Allows for portfolio diversification, liquidity and transparency



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Different REIT ETFs

- Country specific (ie. U.S)
- Residential Capped Index
- Mortgage REITs – companies and trusts specializing in mortgage loans
- Dividend Focused
- Market Cap Focused