Chapter 5

Adjustable Rate Mortgage Loans ("ARM Loans")

Why ARM's?

- What is "interest rate risk"
  - Issue for a fixed rate mortgage lender
- How can a lender reduce this risk?
- How exactly would an ARM work?

Adjustable Rate Mortgages "ARMs"

- A new loan payment is computed at each reset date
  - Composite Rate = index + margin
  - Index
    - Interest rate that the lender does not control
      - Treasury securities (Constant Maturity Treasury)
      - Cost Of Funds Index (COFI)
      - London Interbank Offered Rate (LIBOR) [to be replaced by SOFR* in US]
  - Margin (*or spread*)
    - Premium added to the index

* Secured Overnight Financing Rate

Adjustable Rate Mortgage Concepts

- Index + Margin = Composite Rate (or *fully indexed rate*)
- Reset Date
  - When mortgage payment is readjusted; usually annually
- Caps *(more to come)*
  - True economic cap vs payment accommodation
  - Negative Amortization possible in latter case
    - Payment does not cover the interest due – and principal increases
- Floors
- Conversion fee (conversion to fixed rate)
- Other concepts – also in fixed rate mortgages
  - Assumability
  - Points
  - Prepayment

Basic Issues with Adjustable Rate Mortgages

- ARMs do not eliminate interest rate risk
- ARMs shift interest rate risk to borrower

- As the lender assumes less interest rate risk and the borrower assumes more risk:
  - Lender expects a lower return
  - Borrower can borrow at lower rate

- Which loan would you rather have?
  - 4.0 % fixed rate, 30 years
  - 3.7 % adjustable rate, 30 years, with annual adjustment

Adjustable Rate Mortgages

- Hybrid Loans are Common
  - Longer initial reset period, 3/1, 5/1, and 7/1

- Interest Only ARM and Floating Rate (less common)
  - I.O. for initial period
  - Then, depending on what has been negotiated
    - Pay interest only
    - Pay interest & some principal
    - Sometimes negative amortization
    - Fully amortizing payments required in future

Adjustable Rate Mortgages

- For residential loans, the teaser rate is important
  - Initial rate below market composite rate
  - Market Competition
  - Accrual Rate concept
  - Negative Amortization
  - Payment Shock
  - It is not clear whether all residential borrowers comprehend or appropriately price the inherent risks in adjustable rate mortgages.

Adjustable Rate Mortgages
Yield & Rates

- Yields to lender are a function of:
  - Initial interest rate
  - Index & margin
  - Points charged
  - Frequency of payment adjustments
  - Inclusion of caps or floors on the interest rate, payments, or loan balances

Adjustable Rate Mortgages
Yield & Risks

- Default Risk
  - Can borrower afford new payments?
    - Payment shock
  - Impact of negative amortization
- Pricing Risk – quoting rates
  - How does lender “price” a fixed rate vs adjustable rate
  - Allocation of *interest rate risk* – borrower/lender

Adjustable Rate Mortgage Example

- Example
  - Unrestricted ARM (unrestricted by any caps or floors)
  - Loan Amount = $100,000
  - LIBOR + 200 basis points
    - LIBOR currently at 3%
  - Starting Rate = 5% (3% libor + 2% margin*)
  - Term = 30 Years
  - Adjustment Interval = 1 Year

* Margin often referred to as “spread”

Adjustable Rate Mortgages

- Initial Payment (1st year):

PV = $100,000

n = 360

FV = $0

i = 5/12

CPT **PMT** = $-536.82

Adjustable Rate Mortgages

- Reset:
- EOY1 (end-of-year-1) Loan Balance
  - Change n and compute the present value of the remaining payments*

n = 348

CPT **PV** = $98,524.63

* I already have values in my calculator from prior calculation, so I only need to change n and recalculate PV.

Adjustable Rate Mortgages

- Assume LIBOR has increased to 5% by EOY1
- The new payment is based on loan balance of $98,524.63 @ 7%
- Recast the loan:

PV = $98,524.63

n = 348 (29 years remain)

FV = $0

i = 7/12

CPT **PMT** = $-662.21

Adjustable Rate Mortgages

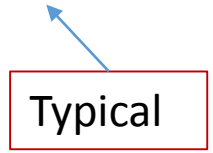
- Note the payment increase:
  - New payment: $662.21
  - Prior payment: $536.82
  - Increase: $125.39

    23% increase

- This could be a problem for a borrower on a tight budget.

Adjustable Rate Mortgages

- Adjustment "caps" are common
- Restriction on increase in rate or payment
  - Can be stated as *interest rate* change
    - i.e. *Rate* cannot increase by more than 1% at each adjustment date
    - Lifetime caps on total
  - Can be stated as *payment amount* change
    - i.e. New *payment amount* cannot increase by more than 7.5% of prior payment amount



Dodd Frank Legislation, Consumer Protection and "Qualified Mortgages"

- Legislation passed to prevent the abuses of mortgages leading to the financial crises
- Effective 2014
- Eliminates many of problems covered in next few slides.
  - Negative amortization
  - High points/fees

Some relaxation of these rules 2018

Adjustable Rate Mortgages

- Are the “caps” true economic caps?
- Does Negative Amortization exist
- In some cases, a restriction on payment increase may co-exist with an “accrual” clause.
- This merely allows borrower to pay a lesser amount – but accrual occurs at a higher rate – thus principal goes up
- See Problem 5-8 (rate cap) and 5-8_ALT (payment cap).
- Negative Amortization can cause severe problems for borrowers.

Option ARM mortgages

- Limited since 2014 by Dodd Frank and Consumer Financial Protection Bureau Qualified Mortgage Rules

- “Option ARM” (“pick a pay”) mortgages
  - Borrower options on payment levels
  - Choosing “minimum payment” often results in Negative Amortization
  - Lender limits this if loan balance goes too high (ie 115% of original loan)

ARM Quote

4.2%, 30 day lock, 5/1 ARM, 30 year am, Caps 3/1/6

- 4.2% rate; 30 day lock
  - Initial *composite* rate on loan; quote good 30 days
- 5/1 ARM
  - Fixed rate for 5 years; then adjustable annually
- Term: 30 Years
- Adjustment Caps: 3/1/6
  - First adjustment (after 5th year) no more than 3%
  - 1% max adjustment (annually) thereafter
  - 6% maximum cumulative lifetime rate adjustment

For This Course

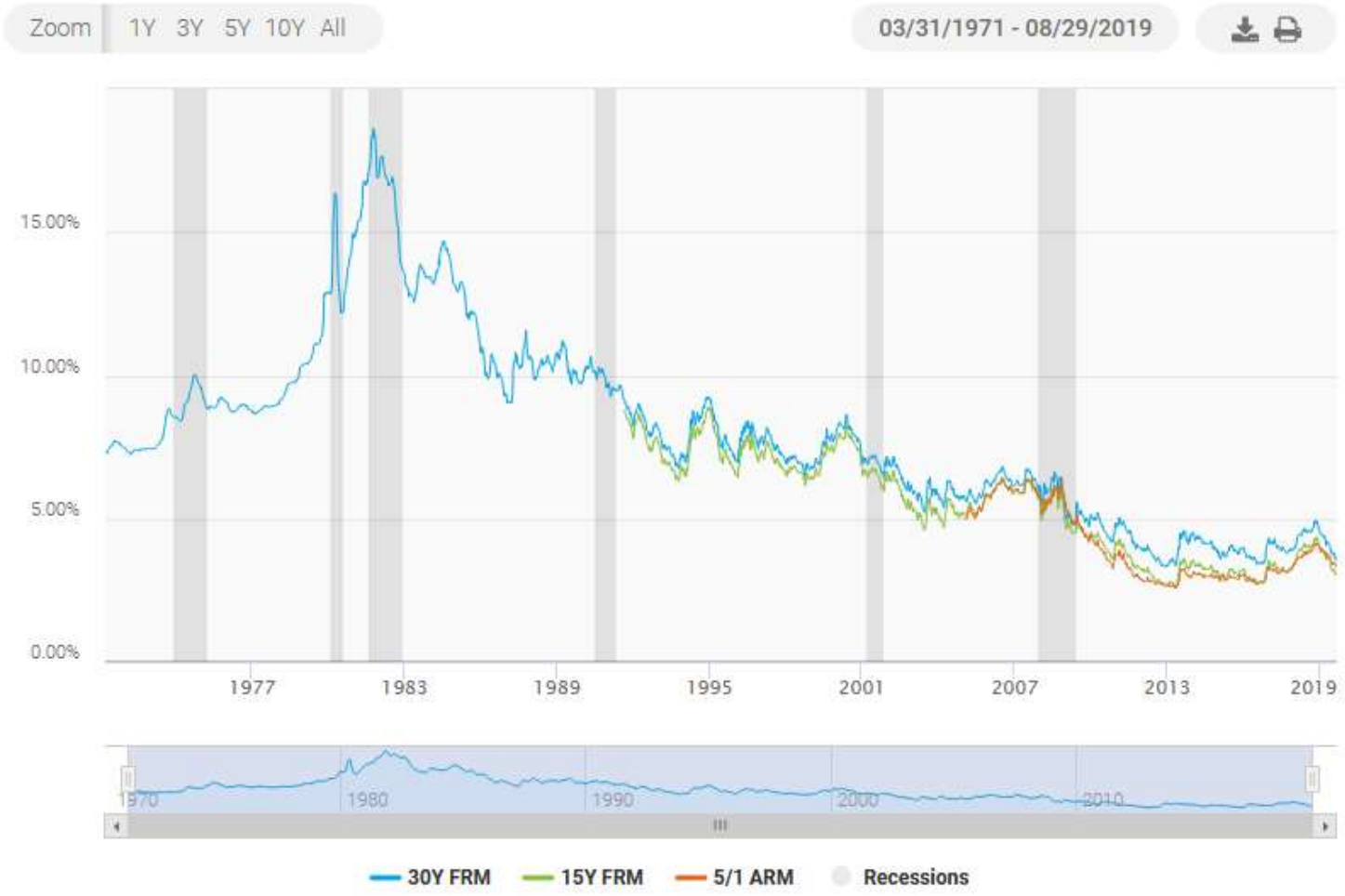
- We will usually be assuming:
  - Fixed rate financing
  - Amortization (usually 30 years)

- Be aware that many alternatives exist.

Mortgage Rates 2010-2019

Source: http://www.freddiemac.com/pmms/

Mortgage Rates: Historical



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