

# Principles of Macroeconomics

Econ 2

Lecture 1:  
Course Introduction





# Who am I?



Personal  
Website

- **Professor: Matt Lang**
- **Research Interests: Health Economics, Mental Health, Education Policy, Crime, Blockchain Technology**
- **Teaching Experience: Principles of Macro and Microeconomics, Stats, Econometrics, Game Theory, Health Economics, Macro, Macro, and more Macro!**
- **Unlikely Fact: Started playing ice hockey at 4 years old. Married another economist!**
- **Office Hours: North Hall 3032, Wednesday from 5 – 6:30pm**
- **“Coffee Hours: UCSB Campus/TBD**
  - Random Sign-Up Times
- **Email: langm@ucsb.edu**



# Who am I?



MSc in Economics  
2005



1982-1996



Professor of Economics  
2010-2016



1996-2000



BS in  
Economics  
2004



PhD in  
Economics  
2010



Teaching  
Professor  
2016-2024

# Course Overview

- Explore and understand fluctuations in the economy as a whole and assess economic policies in an **analytical** and **unbiased** way
  - Theory
  - Data
  - Conversation
- Course Guided by 3 Principles:
  - High Standard of Living
  - Stable Prices
  - Full Employment

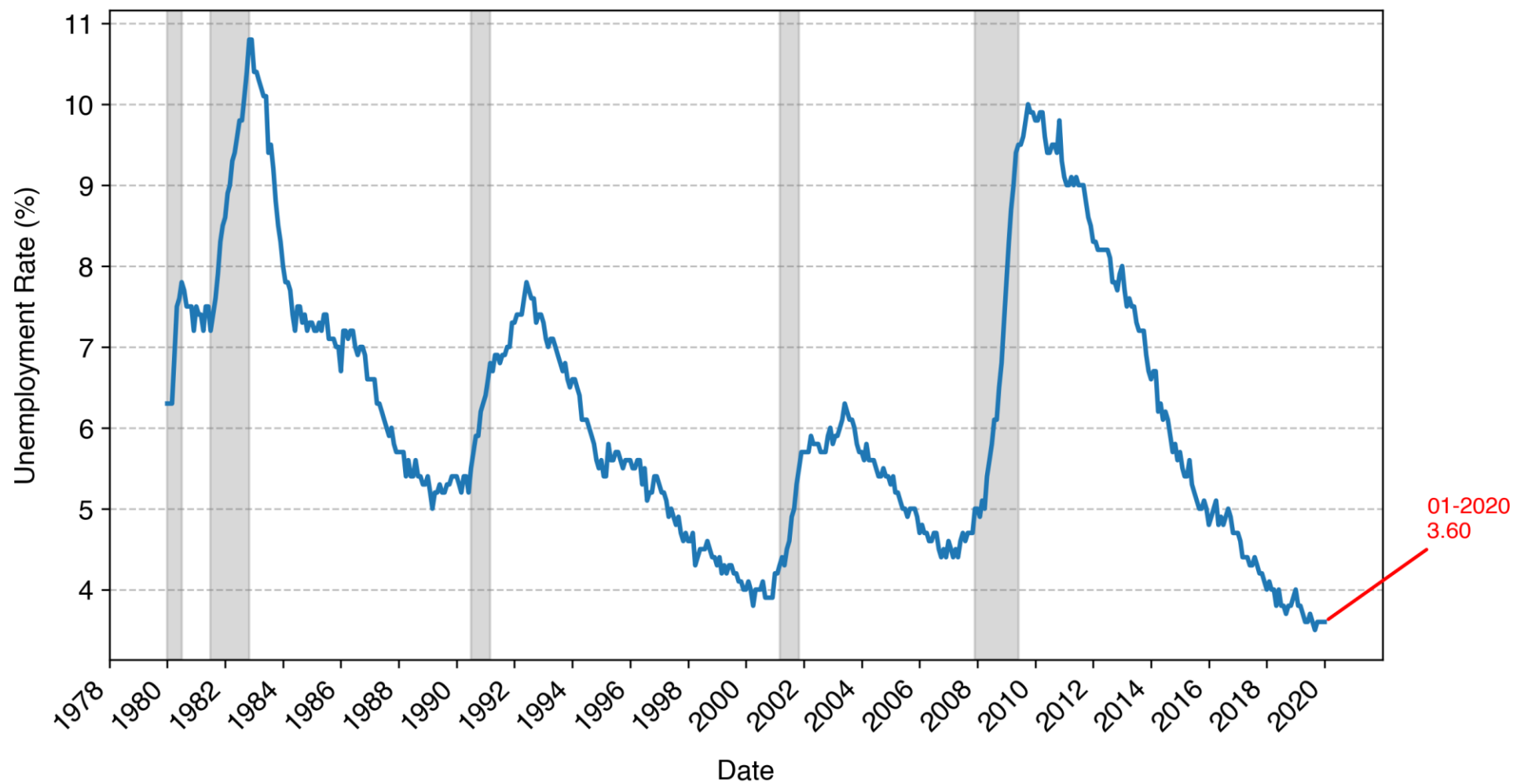


Course Website:

<https://matthewdlang18.github.io/principles-of-macroeconomics/>

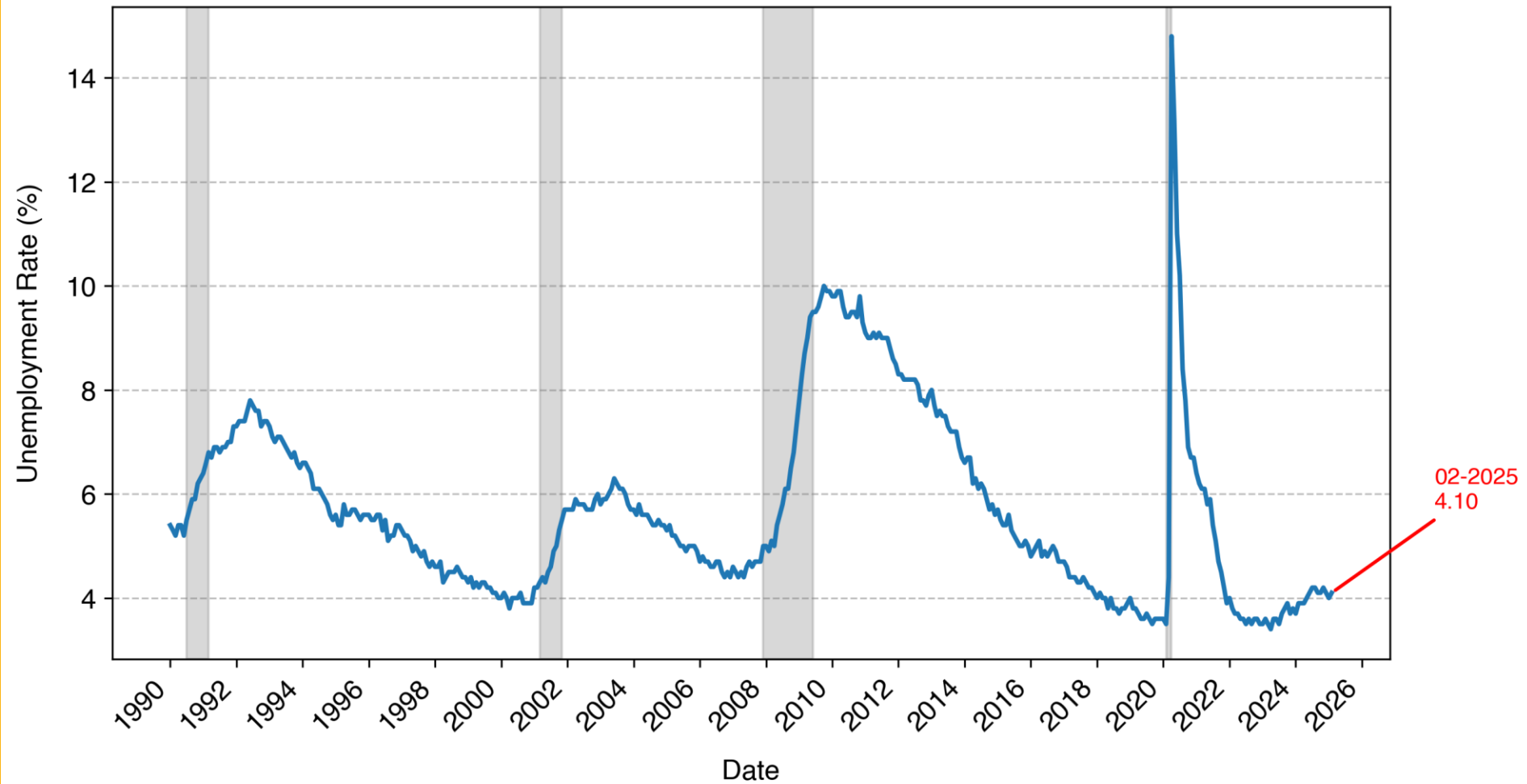


## Unemployment Rate, 1980 - 2020



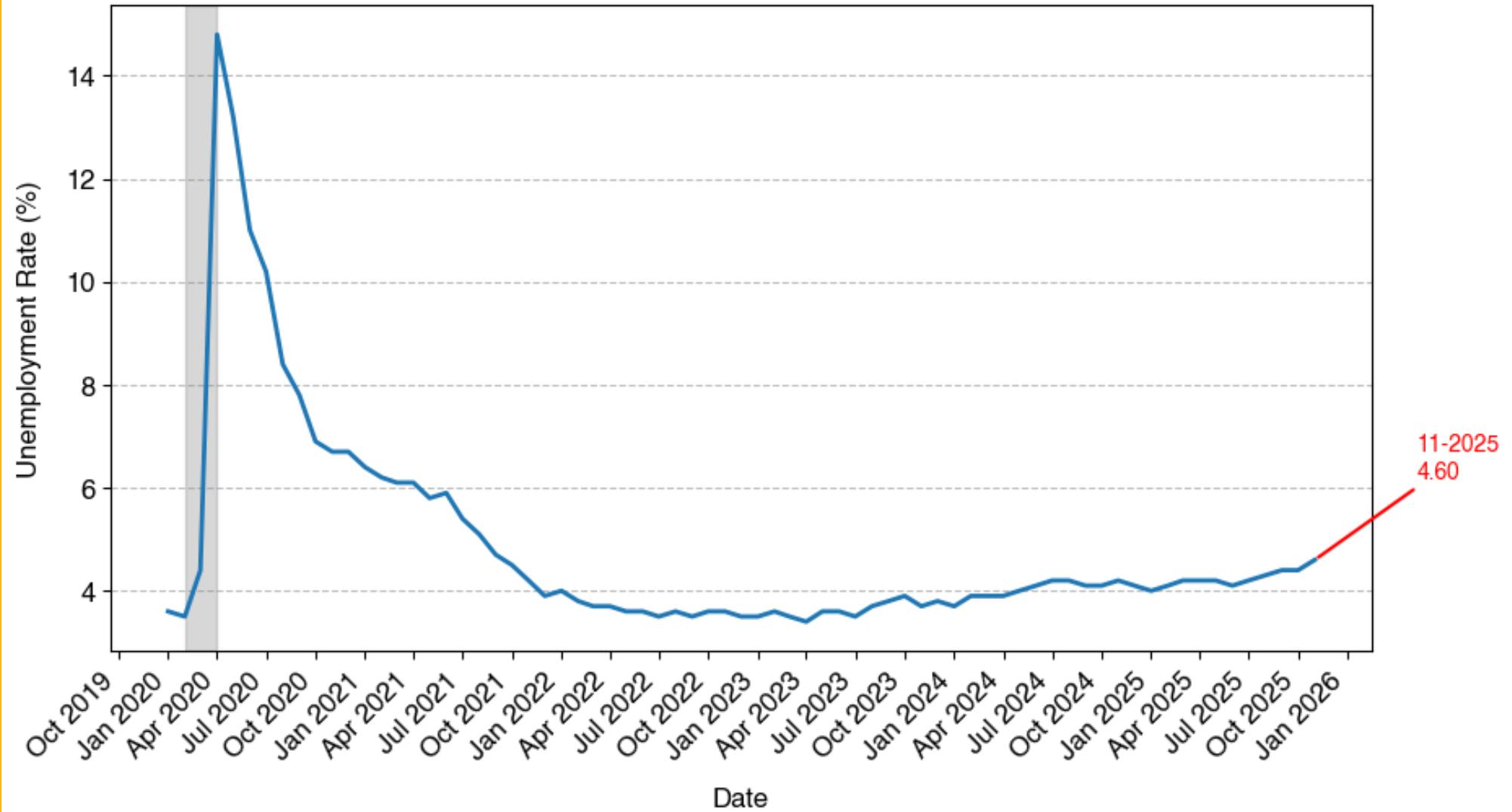
Source: U.S. Bureau of Labor Statistics

## Unemployment Rate, 1990 - Present



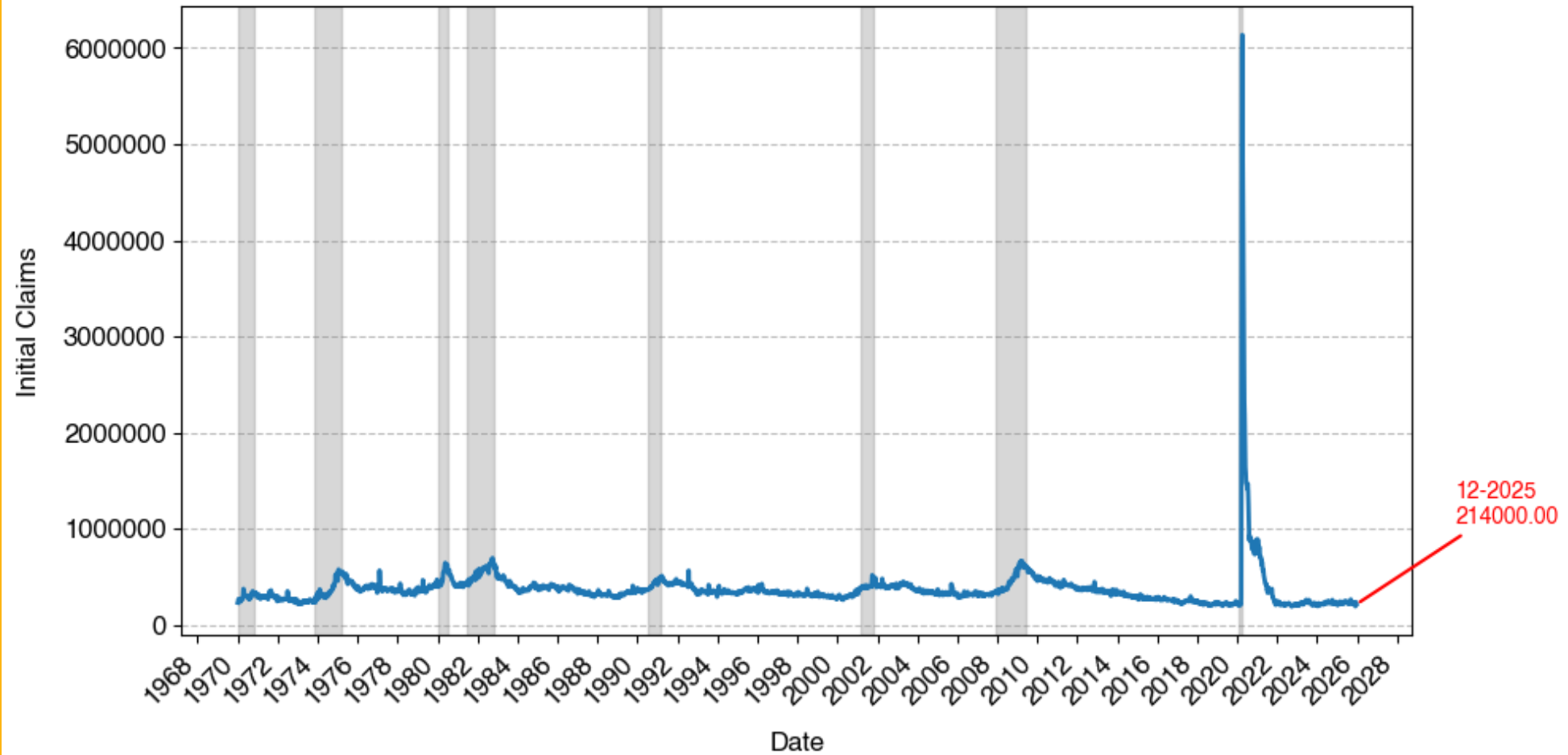
Source: U.S. Bureau of Labor Statistics

## Unemployment Rate, 2020 - Present



Source: U.S. Bureau of Labor Statistics

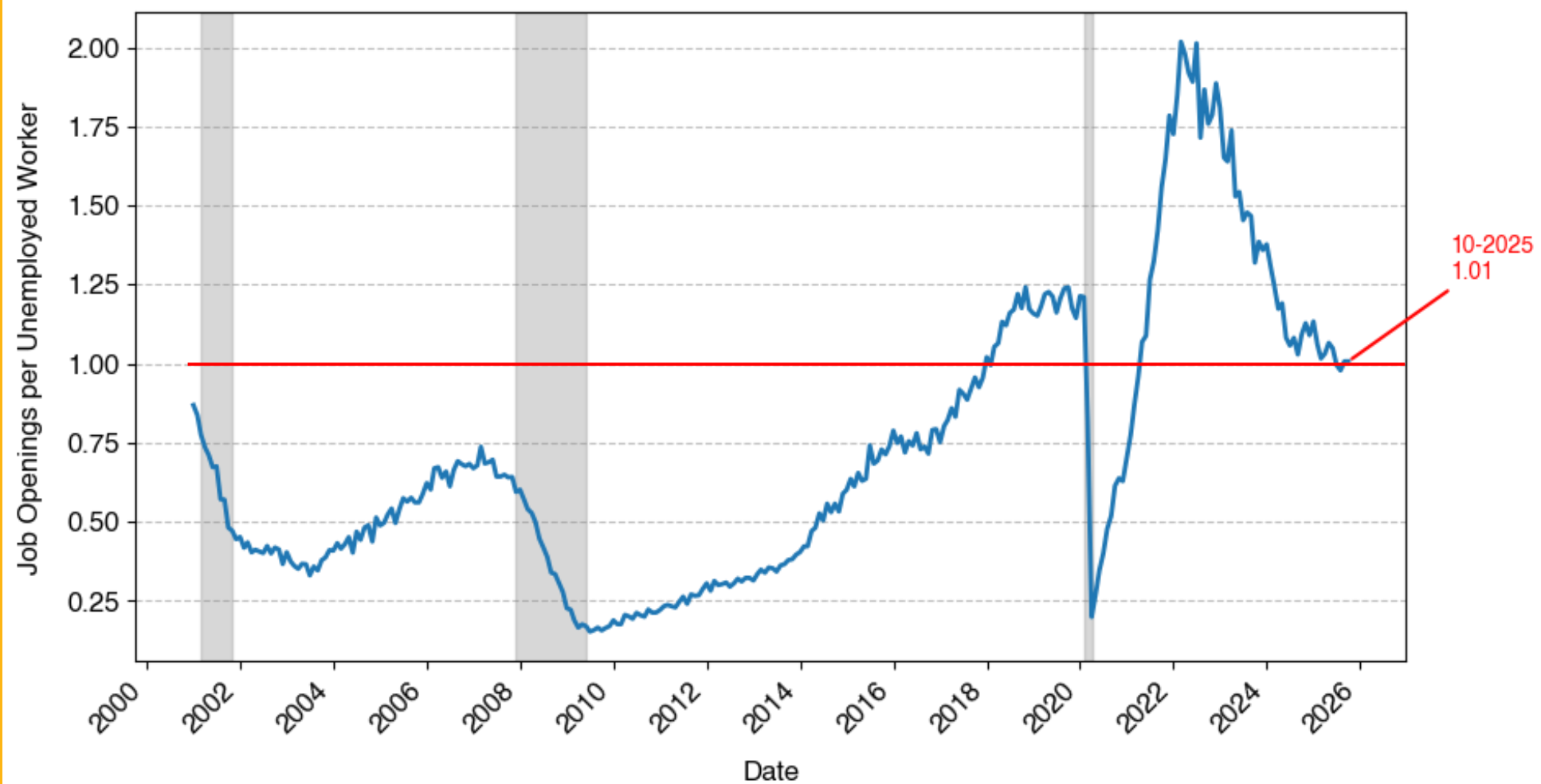
## Initial Unemployment Claims, 1970 - Present



Source: U.S. Employment and Training Administration

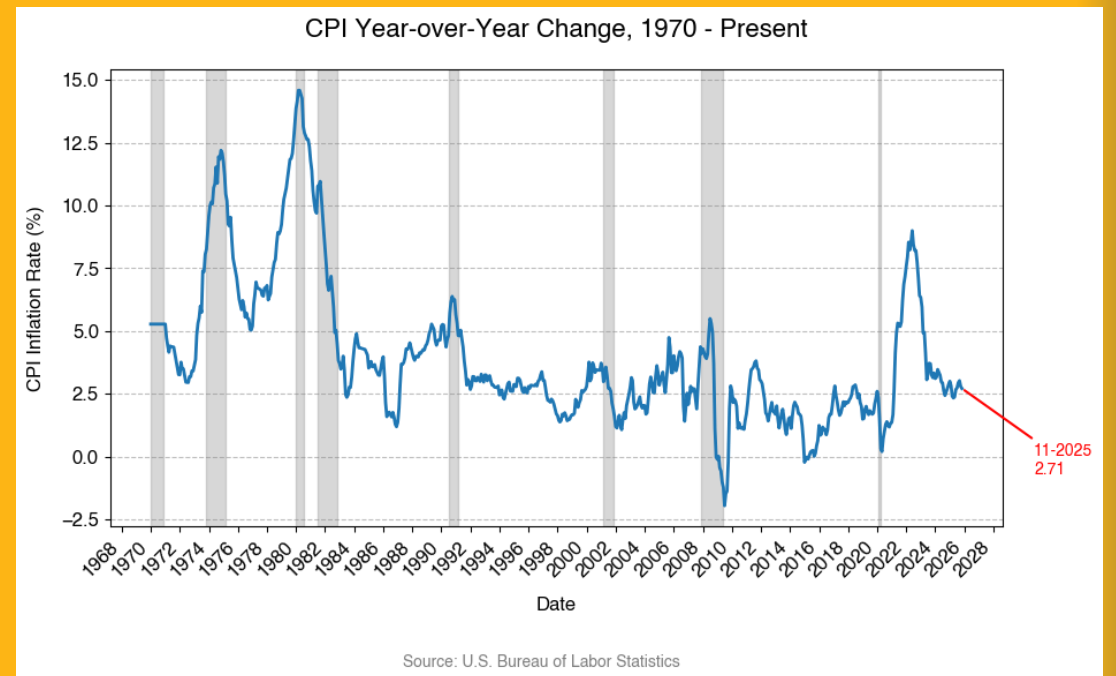
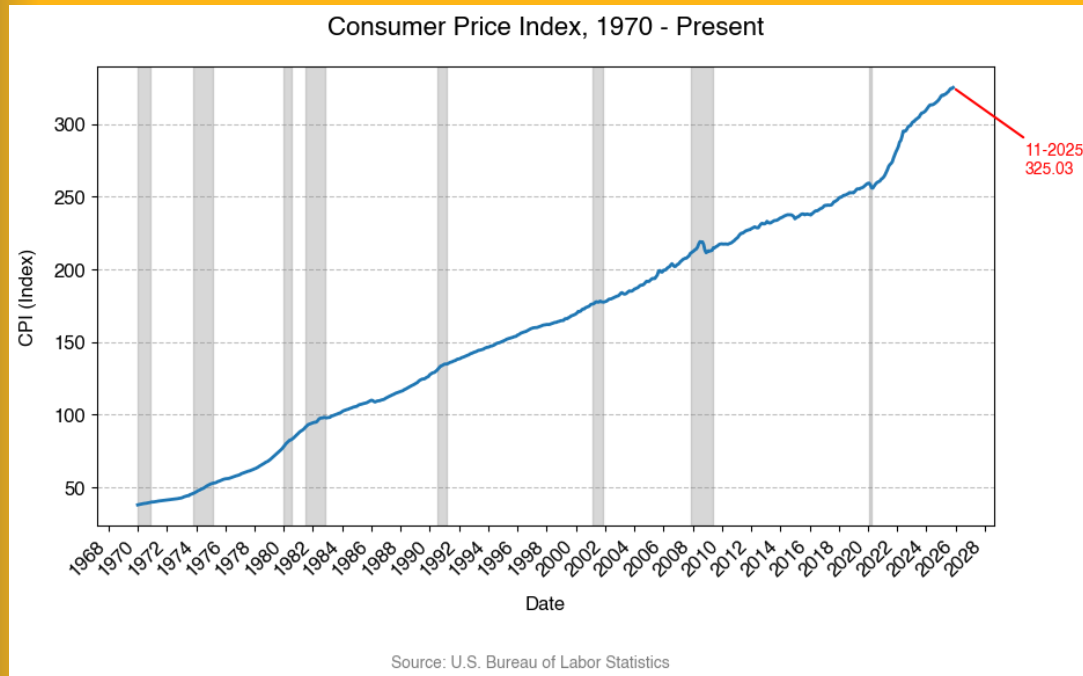


Job Openings per Unemployed Worker, 2001 - Present

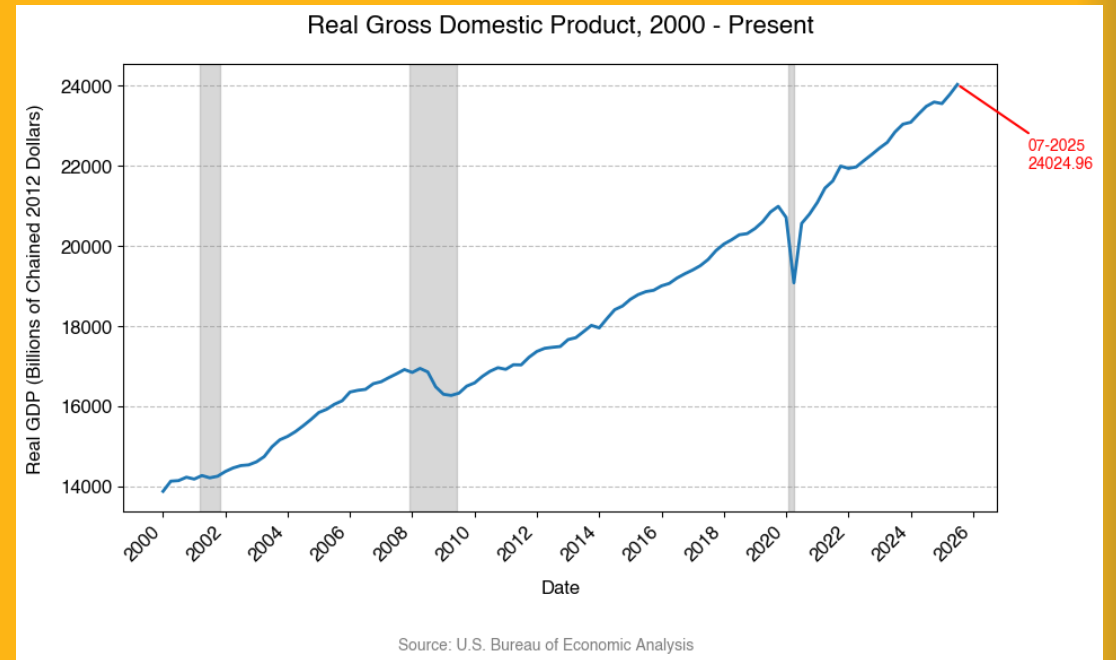
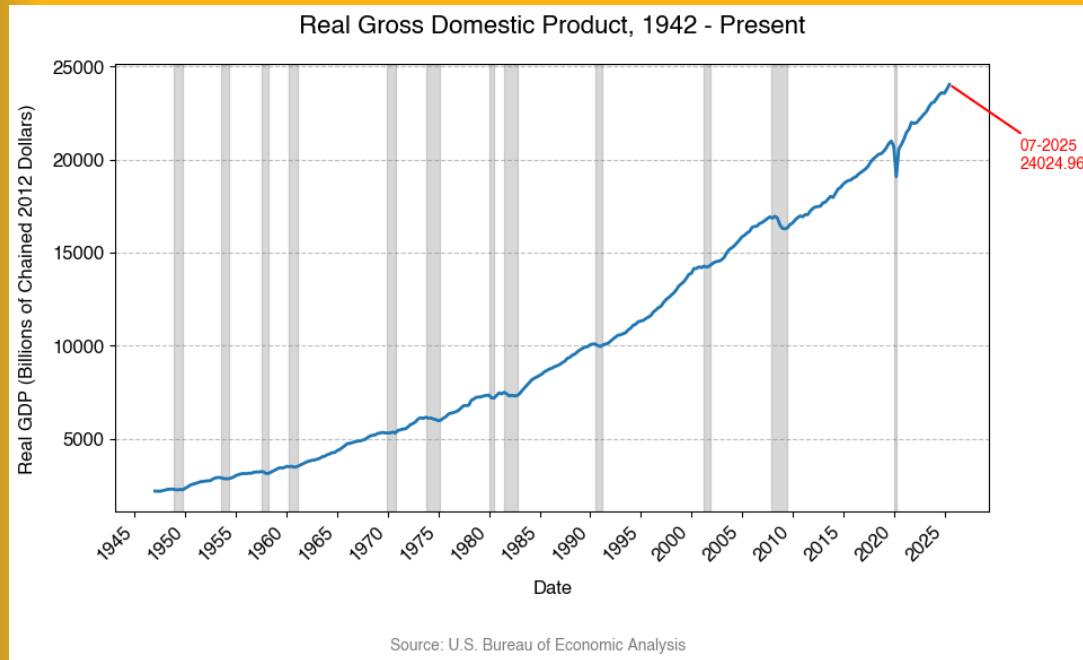


Source: U.S. Bureau of Labor Statistics

# CPI/Inflation, 1970 – Present



# Gross Domestic Product



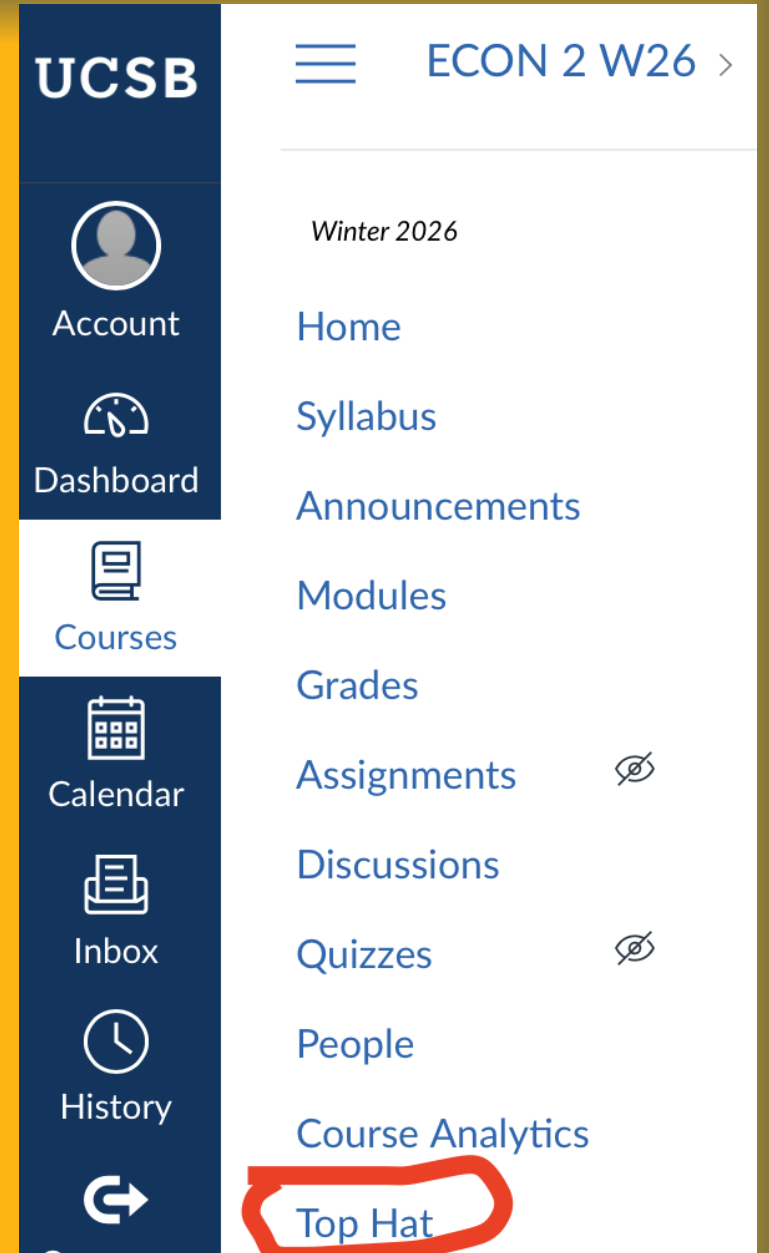
# Course Materials



- **Textbook with TopHat subscription**
  - Lower fee of \$25 (contact me if you have financial constraints)
  - In-Class Questions
- **Textbook Written by...me!**
  - In the process of updating the book
  - Need your feedback!
- **Traditional Textbooks...dated, but:**  
**Macroeconomics: Principles & Applications by Hall & Lieberman (cheap on Amazon, used)**

# TopHat Interactive Classroom

- Instructions:
- Go to the Canvas Page for Econ 2
- Click on the TopHat link
- Create an account if needed
- If you click “Next” enough, the price should only be **\$25 for a 4-month subscription.**





# Course Grading

- Recent Confusion about Grading in Pre-Major Courses
- Department Grading Guidelines Instituted this Year
  - ~20% of students with A, A- (~140 students)
  - ~35% of students with B's (~245 more students)

## ***Economics Department Grading Consistency Statement***

*In this course, grades will be assigned based on the following typical distribution:*

***A 20%, B 35%, C+ 10%, C 20%, C- or less 15%***

- Course difficulty is set up to achieve this distribution
- I will not “curve” down, but may curve up and the minimum grade you can receive will still follow a standard grading scale

A: 93 – 100%	B+: 88 - 89%	C+: 78 - 79%	D+: 68 - 69%	F: <60%
A-: 90 - 93%	B : 83 – 89%	C: 73 - 78%	D: 63 – 68%	
	B-: 80 – 83%	C-: 70 – 73%	D-: 60 - 63%	

# Course Grading

## Baseline Portion (30% of total grade)

### Weekly Lecture Quizzes (10%)

- Starting in week 1, released Wednesdays, due before next lecture (most Mondays)
- Participate in lecture (>50% of in-class questions answered)
  - Each lecture quiz question is worth 0.25% of your total grade, up to 10% (40 questions)
- Do not participate (<50% of in-class questions answered)
  - Each lecture quiz question is worth 0.2% of your total grade, up to 10% (50 questions)

### Discussion Activities (15%)

- Weeks 2, 3, 6, 8, 10
- Top 3 of 5 activities worth 5% each, 15% total
- Gamification/AI in economics

### Participation (5%)

- Don't be a story

## Midterm Exam (30% of total grade)

### Midterm Exam, February 2<sup>nd</sup>

- 30 Multiple Choice Questions
  - ~20 - 23 Questions align relatively closely to Practice Questions, Exams, Quizzes, etc.
  - ~7 – 10 Questions use tools you have learned about on questions that are new/different
  - Ranging from small extensions to difficult applications

- If you miss the midterm with an excused absence, your final may be worth 70% of your total grade

## Final Exam (40% of total grade)

### Final Exam, March 18<sup>th</sup>

- 40 Multiple Choice Questions
  - ~28 to 30 Questions align closely with Practice Questions, Exams, Quizzes, etc.
  - ~10 to 12 Questions use tools you have learned about on questions that are new/different
  - Ranging from small extensions to difficult applications
- If you miss the final exam with an excused absence, you may receive an incomplete for the course and take the final in the fall quarter

# Grading Thoughts and Policies

- GPA Requirement for Pre-major courses  $\leftrightarrow$  Athletic Race
  - Limited spots at the top, not everyone can get an A or B regardless of effort
  - Participation does not guarantee success
  - There are no “do-overs” or extra credit opportunities (30% of the course is “free”)
    - Special assignments are unfair to your peers and creates inequities, please don’t ask
    - Professional environments do not offer make-up work after deadlines
  - Doing the majority of training the night before will lead to a poor performance
    - Coming in stressed in week 9 or later is too late
- Goal is to
  - Reward learning – if you make learning as much as possible your goal, you will do well
  - Prepare you for success in upper division economics courses

# Other Thoughts

- **“What if I have an emergency?!”**

- First, reassess if it's an emergency: a breakup is not equivalent to a relative being diagnosed with cancer.
- If it is an emergency, prioritize class appropriately. My experience is that students with the most serious emergencies do not care about their course points, they want support. I am happy to always offer that support!
- Lots of “drops”...you can still get full credit on quizzes and activities if you start doing them by week 5!
- If you notify me before the midterm with a **documented reason for missing** → the final exam may be worth 70% of your grade
- If you notify me before the final with a **documented reason for missing** → you will get an incomplete in the course and take the final in the fall quarter

- **Do not let grades impact your self-worth or well-being**

- Everyone is used to being at the top of their class
- Employers are becoming frustrated with grade inflation, the lack of problem solving and work ethic of new hires.
- Interview = Work Assignments = Grades are not an indicator of success
- I don't know what your plans are for the future, but the likelihood of anyone's grade in their Intro to Macro course making a difference in their outcome in life is nearly 0%. Not figuring out how to prioritize learning can be costly.
- “If I don't get my C+ bumped up to a B+, I won't get into the major.” That may be the best thing that happens!

# Important Dates

- Lecture Quizzes done on TopHat
  - Due before the first lecture of weeks 2, 3, 4, 5, 7, 8, 9, and 10
  - Last Quiz due before the Final Exam on 3/18
  - Get 40 to 50 questions correct for full credit (10%)
- Discussion Section Activities
  - AI/Gamification Activities in weeks 2, 3, 6, 8, 10
  - Google Form Quizzes (simulate difficult exam questions) in weeks 1, 4, 5, 7, 9
  - Top 3 of 5 Activities needed for full credit (15%)
- Midterm on Monday, February 2<sup>nd</sup> (Week 5)
  - 30 Multiple Choice Questions (30%)
- Final Exam on Wednesday, March 18<sup>th</sup> (9 – 11 am)
  - 40 Multiple Choice Questions (40%)



Federal Reserve is scheduled to meet on:  
January 27<sup>th</sup>/28<sup>th</sup> (1 week after midterm)  
March 17<sup>th</sup>/18<sup>th</sup> (press conference at 11am)



# Discussion Section Activity Example

- Week 2 (Activity #1): Housing Market Analysis
  - In groups of 2-3, choose a state, navigate to the Redfin Data Center
    - <https://www.redfin.com/news/data-center/>
  - Under Monthly Housing Market Data, download chosen state-level data
  - Upload data to Discussion Activities Website:  
<https://matthewdlang18.github.io/principles-of-macroeconomics/activities/activity1/index.html>
  - Examine 4 housing metrics (price, months of supply, days on market, price drops, sale-to-list)
    - Provide weights for each metric
    - Evaluate if the metric is signaling a balanced, buyers, or sellers market
    - Calculate a value for the health of the housing market
  - Feed data it into AI platform and ask for analysis
  - Compare your analysis to AI
  - Input results onto Google Sheet and TA will aggregate results on a separate webpage
  - Short reflection questions
- Discussion Activities will be posted on Website, Canvas and TopHat before sections

# A Note on AI Usage

- Economics/Finance can handle AI better than other subjects
  - Lots of uncertainty in the subject
- AI is powerful if it is combined with critical thinking skills
- AI can create things quickly...if you know what to do
- But learning a new topic takes time and need to move slow
- Think of this course as having an AI Component and non-AI Component
  - Problem Sets, Exams = Critical Thinking Skills (non-AI)
  - Project= What can we accomplish with these new tools? (AI)
- If you find that using it is stopping you from thinking and learning, step away!



# AI is Too Agreeable

- <https://chatgpt.com/share/695583fc-7450-8012-9cea-a4c8961959e1>

# Possible AI Tools Used This Quarter



- Each week in Discussion Section there will be a small group activity merging course topics with an AI activity. You will turn in something by the end of each section.
  - ChatGPT: <https://chatgpt.com>
  - Perplexity: <https://www.perplexity.ai>
  - Claude: <https://claude.ai/new>
  - Google Gemini and Notebook LM (need personal account): <https://gemini.google.com/app> and <https://notebooklm.google.com>
  - Mistral AI: <https://mistral.ai>
  - Probably more! Let me know if you find good ones!
- Course Textbook is Connected to “Ace”
- Top 3 of 5 activities count towards grade

# Additional Resources

- Each week, difficult short-answer questions on the material will be posted
- The questions will be not be covered in your discussion section and instead covered every: TBD
- Review sessions for the midterm and final will also take place at these times
- Textbook! Textbook! Textbook!
- Make up your own extensions of questions!
- Administrative questions should be directed to the professor or Head TA
- Content questions should be asked in-person (lots of office hours)
- Course Discord: <https://discord.gg/jtVkr6A6DY> →





# Microeconomic Markets that Represent the Macroeconomy

- Technology
- Alcohol
- Gasoline
- Food
- **Housing**



# How does the Housing Market Work?

- You budget \$2000 per month for housing. What is the most expensive home/condo you can purchase?

Component	6% Interest Rate		
Home Price	\$417,000		
20% Down Payment	\$83,400		
Mortgage (Amount Borrowed/Principal)	\$333,600		
Monthly Payment for 30 years	\$2,000		
Mortgage Payments (360 Months)	\$720,000		
Interest Paid after 360 Months	\$386,400		
Mortgage + Down Payment	\$803,400		

# How does the Housing Market Work?

- You budget \$2000 per month for housing. What is the most expensive home/condo you can purchase?

Component	6% Interest Rate	3% Interest Rate	
Home Price	\$417,000	\$417,000	
20% Down Payment	\$83,400	\$83,400	
Mortgage (Amount Borrowed/Principal)	\$333,600	\$333,600	
Monthly Payment for 30 years	\$2,000	\$1,406	
Mortgage Payments (360 Months)	\$720,000	\$506,160	
Interest Paid after 360 Months	\$386,400	\$172,560	
Mortgage + Down Payment	\$803,400	\$589,560	

# How does the Housing Market Work?

- You budget \$2000 per month for housing. What is the most expensive home/condo you can purchase?

Component	6% Interest Rate	3% Interest Rate	3% Interest Rate
Home Price	\$417,000	\$417,000	\$593,000
20% Down Payment	\$83,400	\$83,400	\$118,600
Mortgage (Amount Borrowed/Principal)	\$333,600	\$333,600	\$474,400
Monthly Payment for 30 years	\$2,000	\$1,406	\$2,000
Mortgage Payments (360 Months)	\$720,000	\$506,160	\$720,000
Interest Paid after 360 Months	\$386,400	\$172,560	\$245,600
Mortgage + Down Payment	\$803,400	\$589,560	\$838,600

# How does the Housing Market Work?

Component	6% Interest Rate	3% Interest Rate	3% Interest Rate
Home Price	\$417,000	\$417,000	\$593,000
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Interest Paid after 360 Months	\$386,400	\$172,560	\$245,600
Mortgage + Down Payment	\$803,400	\$589,560	\$838,600

- Is this ever a good deal? What are we missing?



# How does the Housing Market Work?

30-Year Mortgage vs. Rental Apartment at \$2,000/month

Component	6% Interest Rate	Rental Apartment
Home Price	\$417,000	\$0
20% Down Payment	\$83,400	\$0
Mortgage (Amount Borrowed/Principal)	\$333,600	\$0
Monthly Payment for 5 years	\$2,000	\$2,000
Total Monthly Payments (60 Months)	\$120,000	\$120,000
Monthly Payments + Down Payment	\$203,400	\$120,000
Principle Owed after 5 years	\$310,429	\$0
Sale Price	\$450,000	\$0
Savings after Sale (Renting = 4% US Bond)	\$139,571	\$101,468

# How does the Housing Market Work?

- The home is a place to live AND a place to store your money (investment)
- What are we missing?

Component	6% Interest Rate	Rental Apartment	3% Interest Rate
Wealth after 5 Years	\$139,571	\$101,468	\$153,409
Homeowner Taxes (\$4,500/year)	\$22,500	\$0	\$22,500
Homeowner's Insurance (\$2,500/year)	\$12,500	\$0	\$12,500
Upkeep (\$100/month)	\$6,000	\$0	\$6,000
Realtor Fees (up to 5% of sale price)	\$22,500	\$0	\$22,500
Sale Price of \$440 instead of \$450K	\$10,000	\$0	\$10,000
Extra Costs	<b>\$73,500</b>	<b>\$0</b>	<b>\$73,500</b>
Invest Monthly Savings into 4% bond			\$39,911
Savings Account after Adjustments	\$66,071	\$101,468	\$119,820

# How does the Housing Market Work?

- **A lower interest rate makes buying more affordable!**
  - Decreasing the interest rate can incentivize a homebuyer to purchase a home
- **Home values are important to household wealth**
  - Important later in the term
  - Rising home values increase homeowner wealth
- **Higher home prices make renting more desirable for potential home buyers**
- **Lower home prices make renting less desirable for potential home buyers**



# Demand for Housing



# Supply of Housing

- How is housing supply determined?



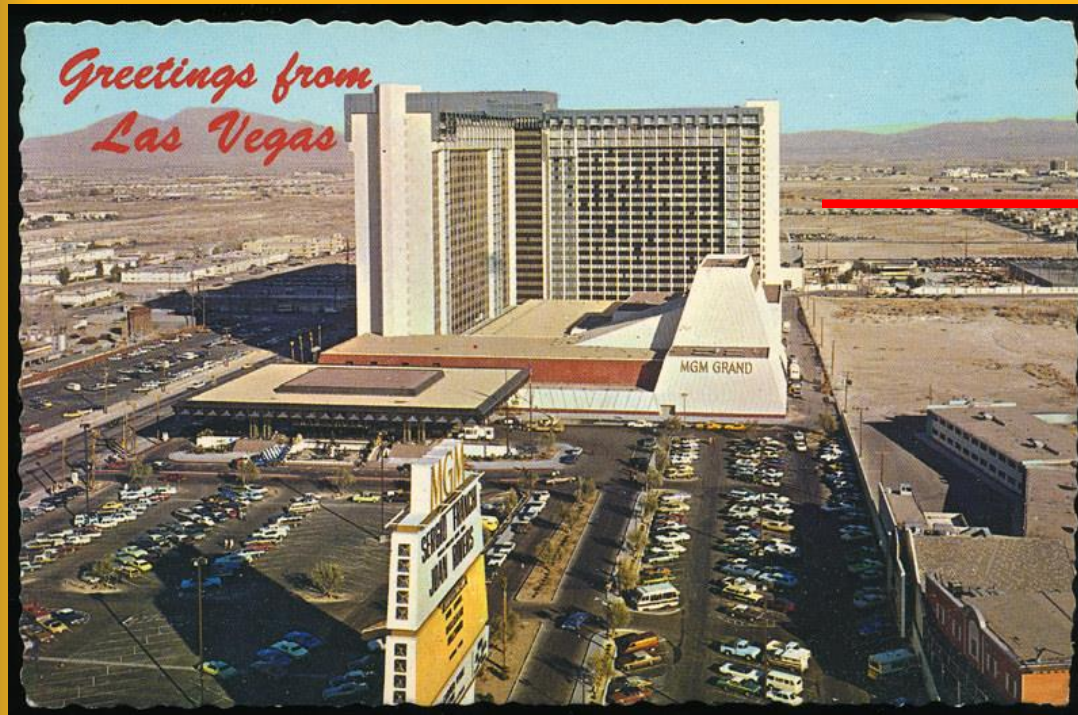
# Housing Market Equilibrium



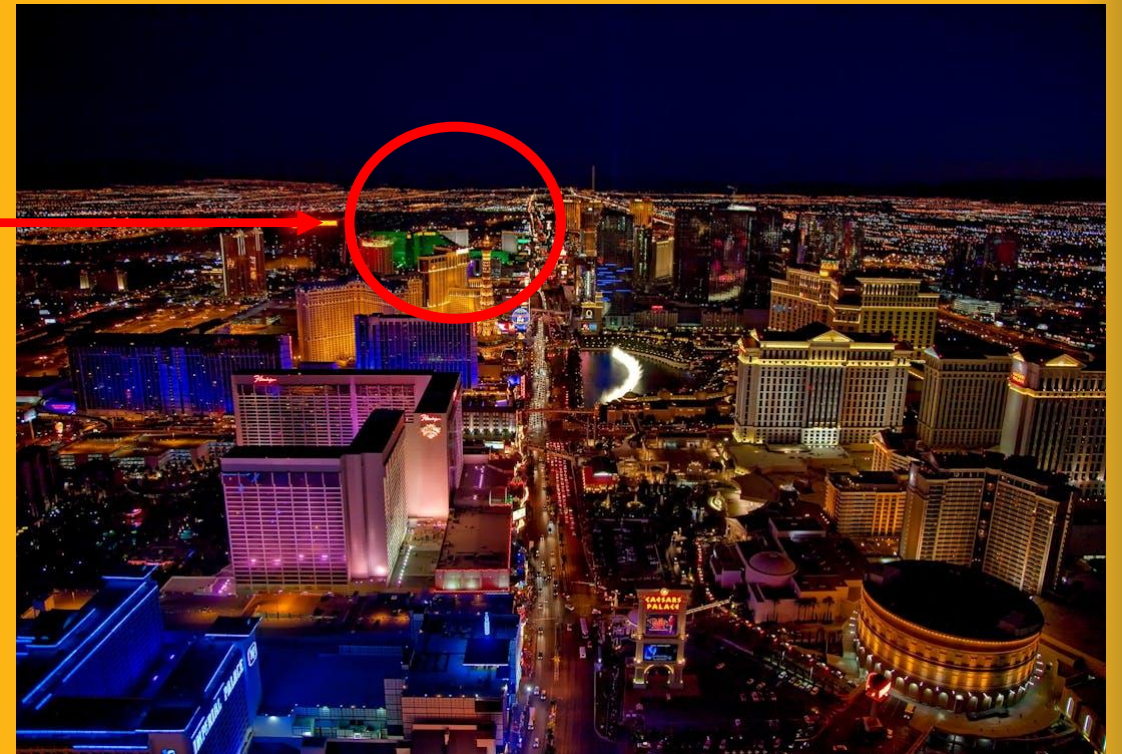


# Explaining Changes in the Housing Market

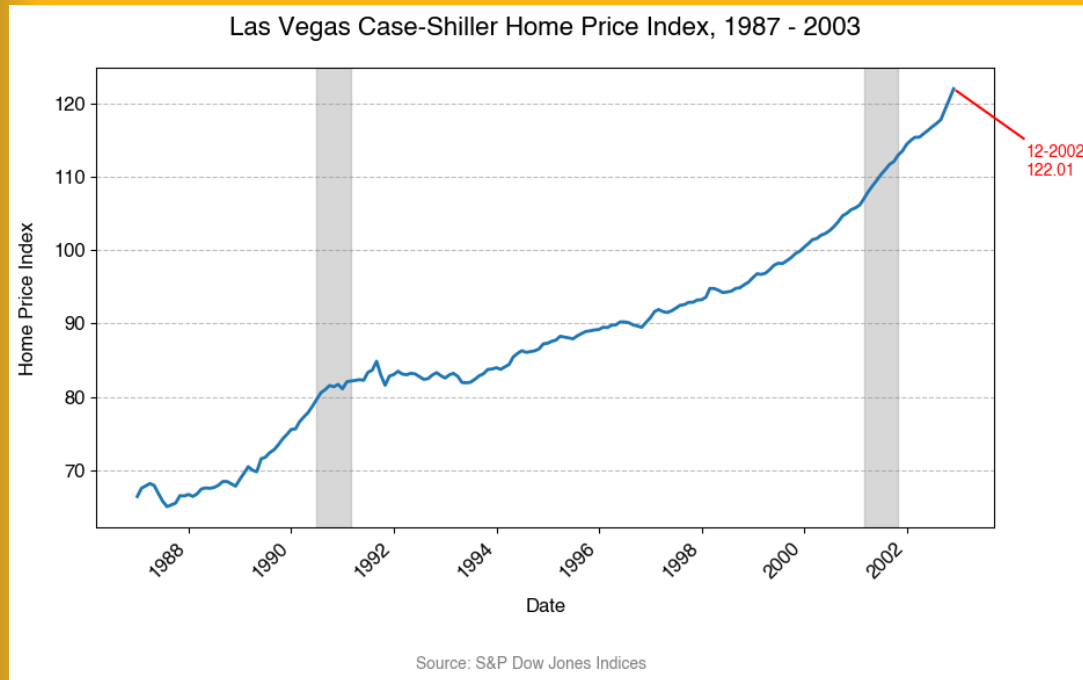
**MGM Grand, Las Vegas, 1973**



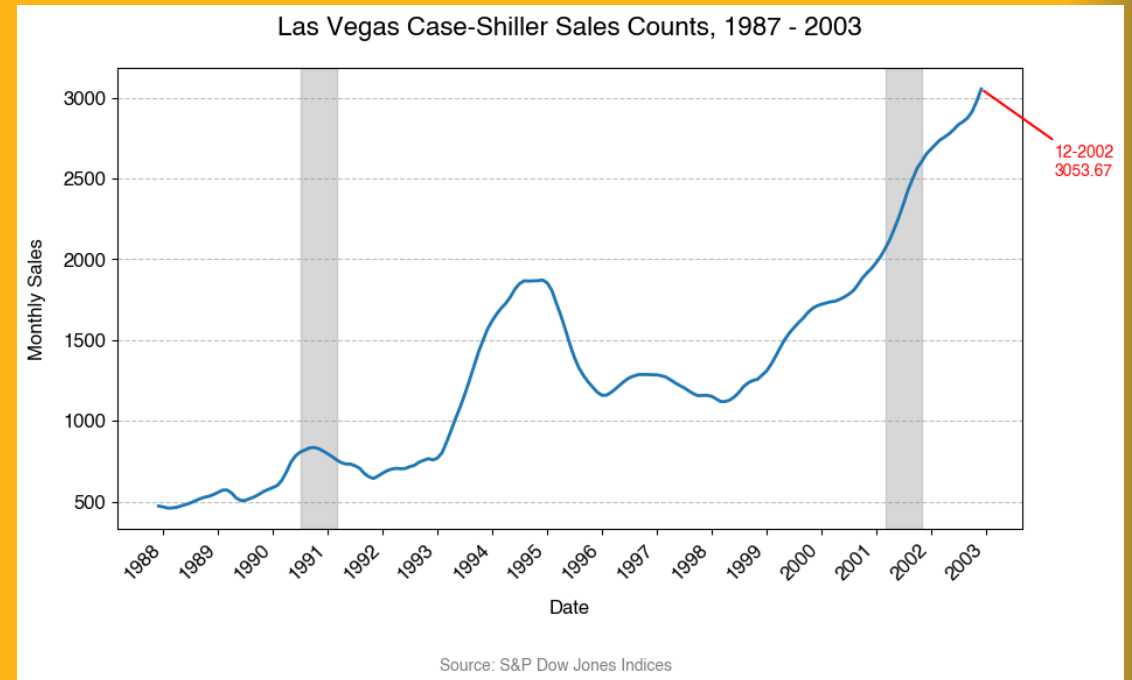
**Las Vegas Strip, 2024**



# Explaining Changes in the Housing Market



Las Vegas housing prices ~ doubled between 1987 and 2003



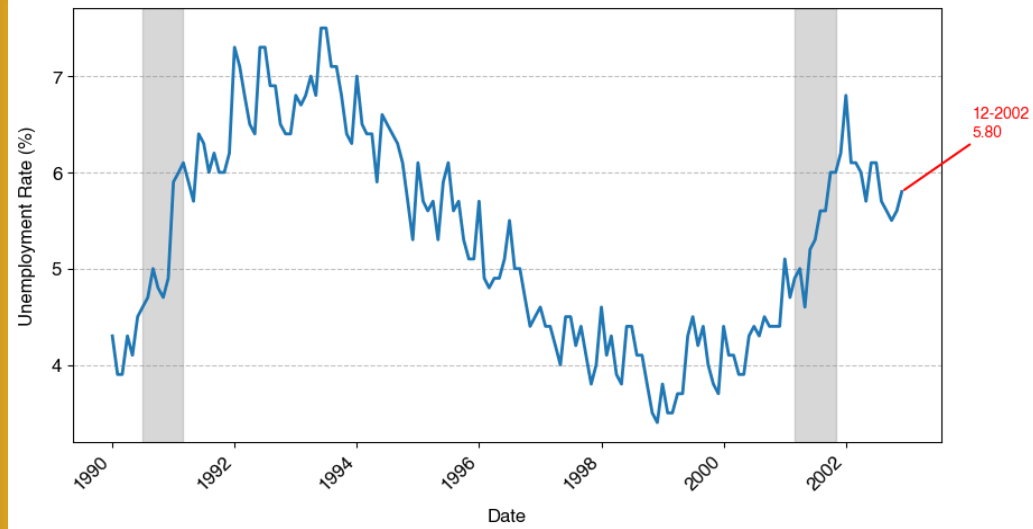
Las Vegas homes bought/sold increased from 500 per month to 3000 per month between 1987 and 2003

# Housing Market Equilibrium

Q: Between 1987 and 2003, prices and quantity of homes increased. What is the most likely reason for this?

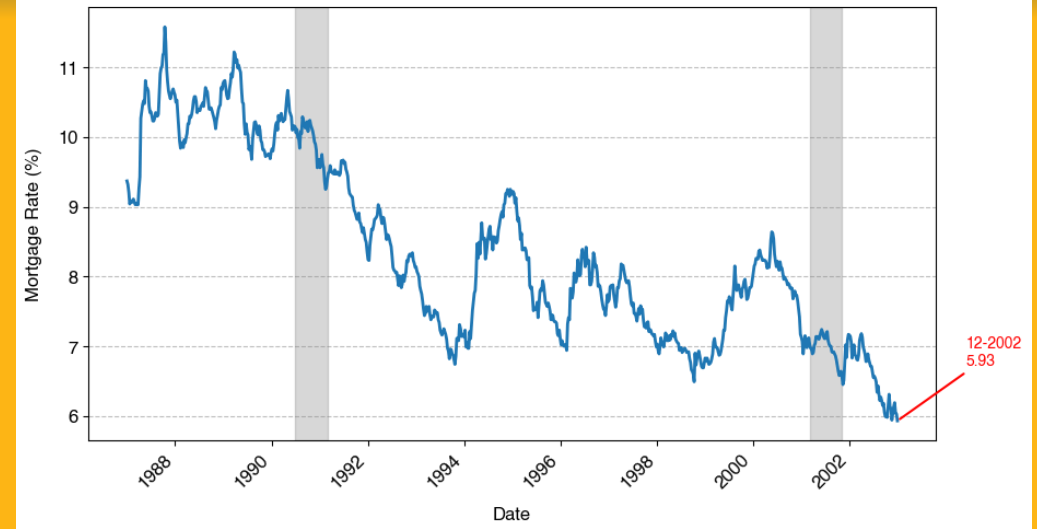


### Unemployment Rate, Las Vegas, 1990 - 2003



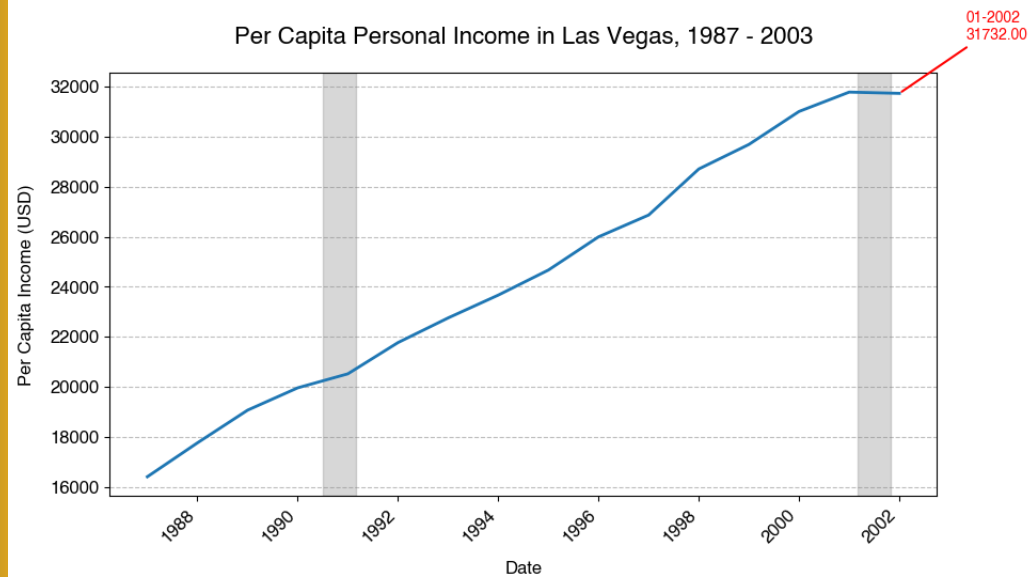
Source: U.S. Bureau of Labor Statistics

### 30-Year Fixed Mortgage Rate, 1987 - 2003



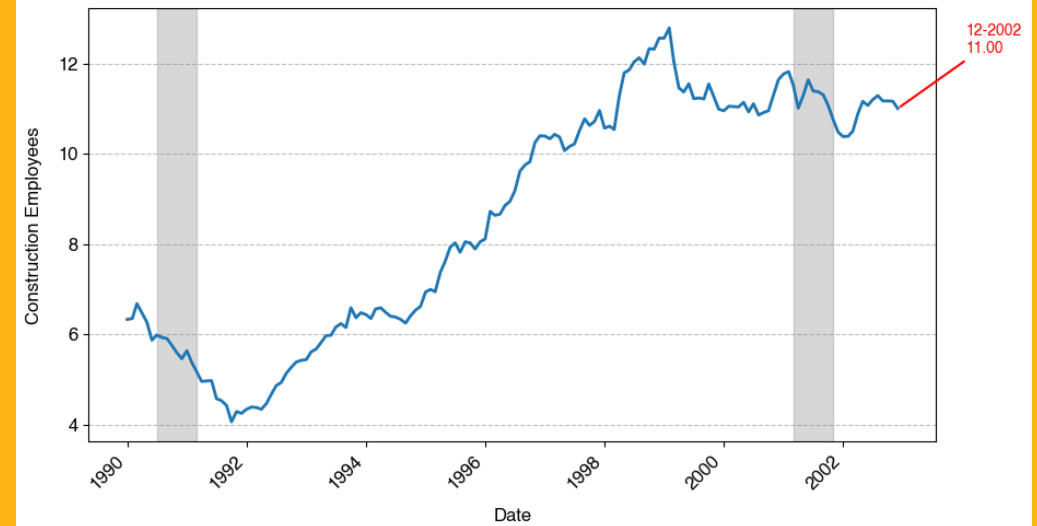
Source: Freddie Mac

### Per Capita Personal Income in Las Vegas, 1987 - 2003



Source: U.S. Bureau of Economic Analysis

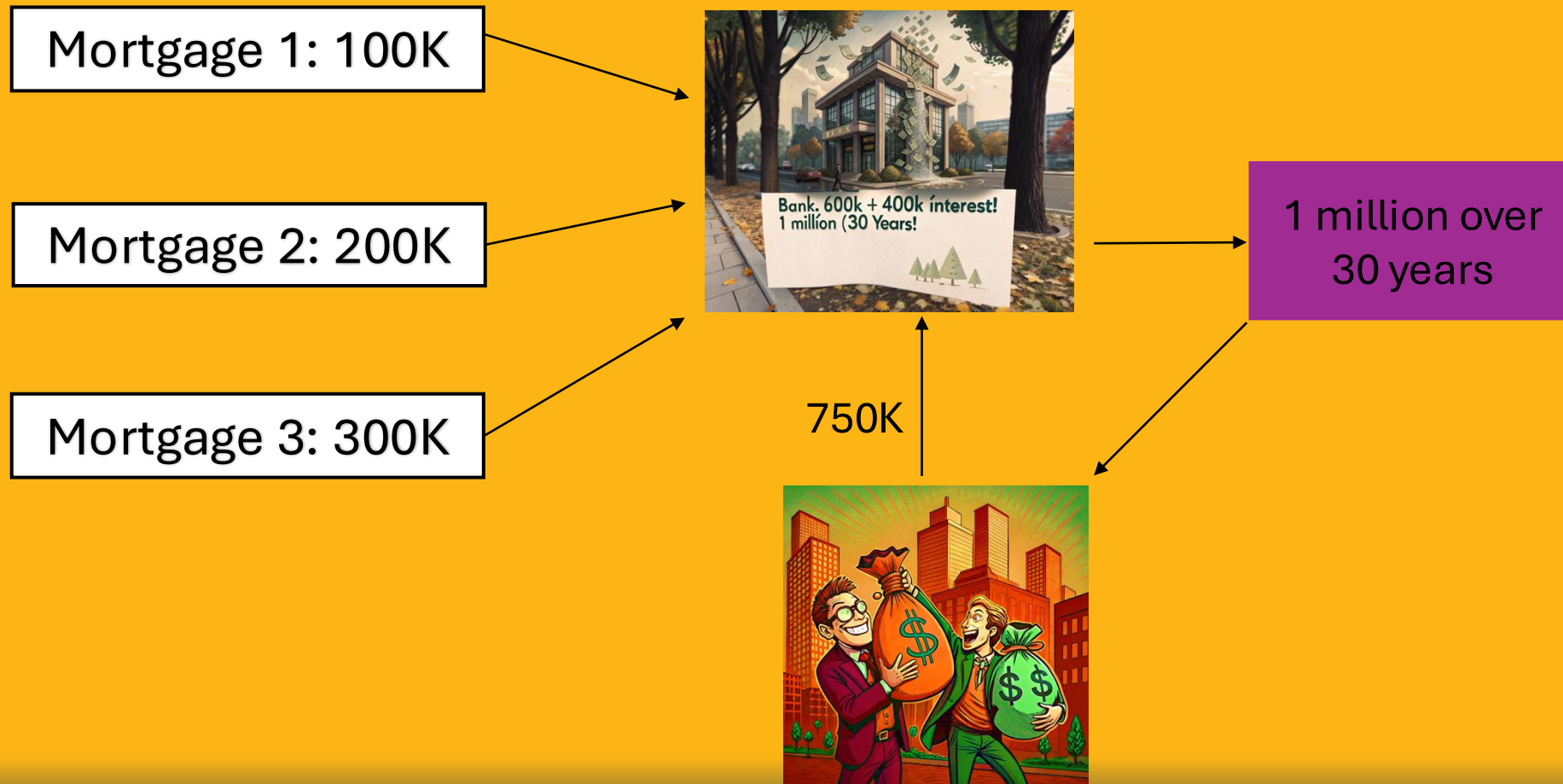
### Employees of Construction Buildings in Las Vegas, 1990 - 2003



Source: U.S. Bureau of Labor Statistics

# What happened between 2003 and 2007?

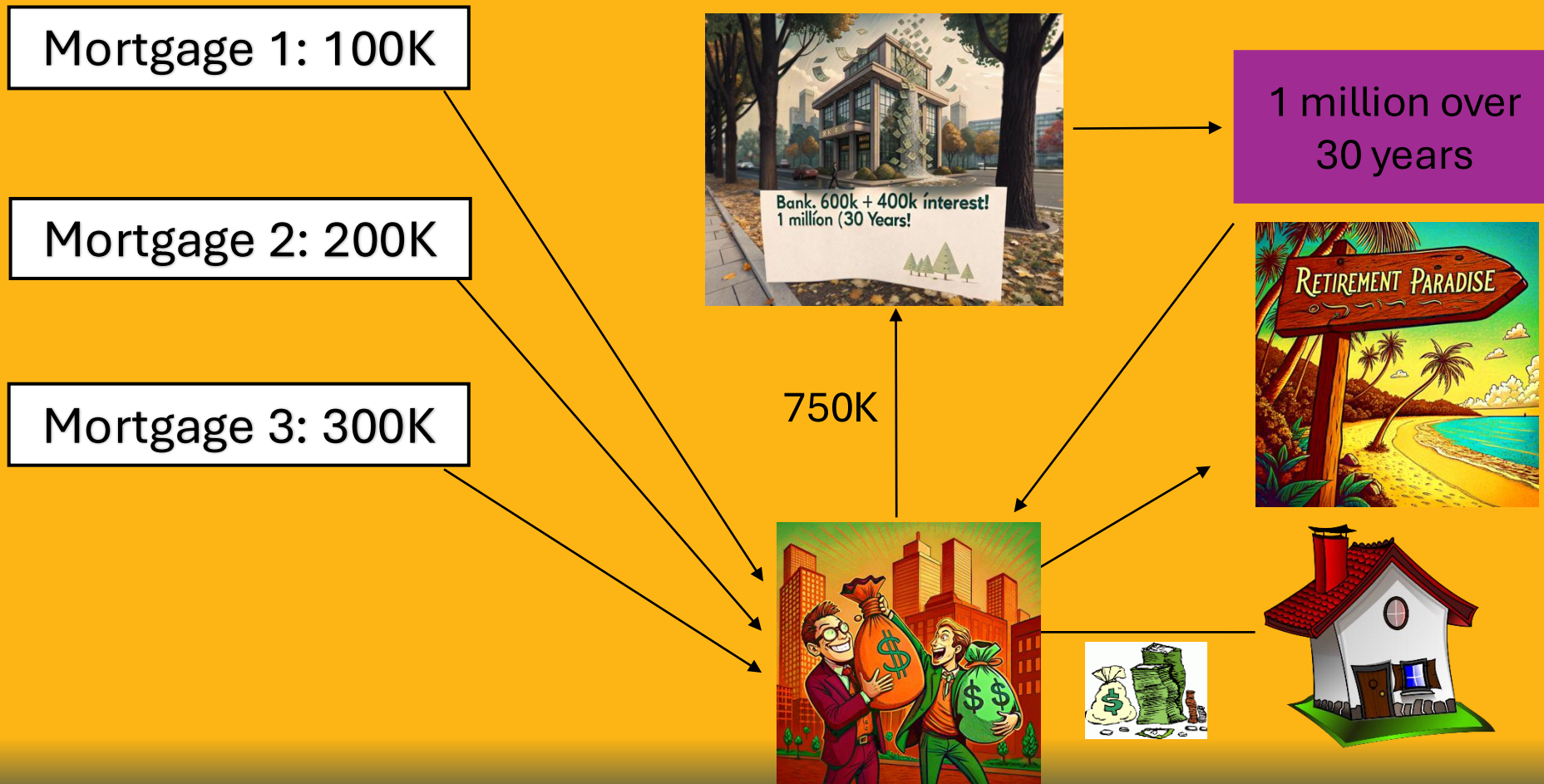
## Mortgage-Backed Securities





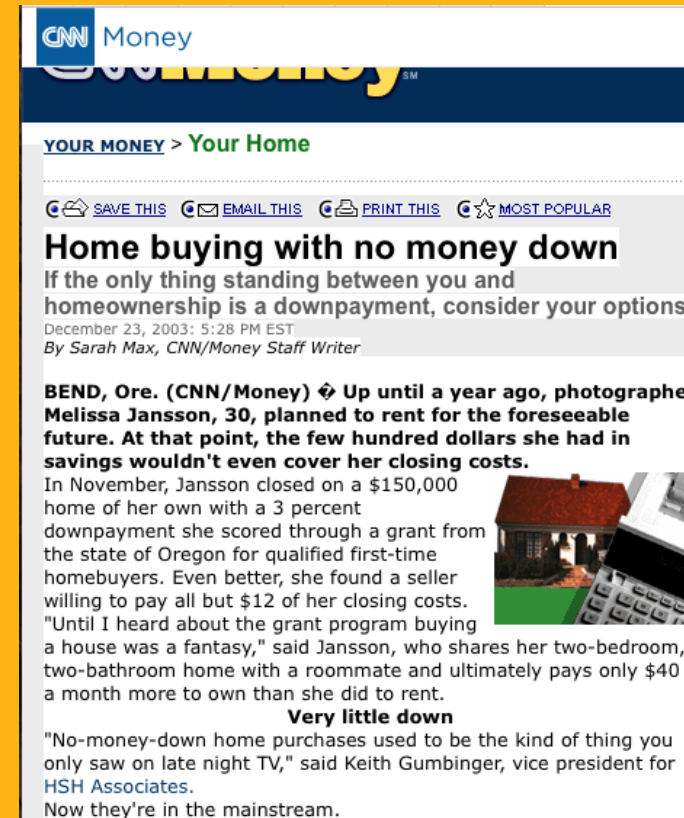
# What happened between 2003 and 2007?

## Mortgage-Backed Securities



# What happened between 2003 and 2007?

- Banks could sell MBS to investors → more funds to lend
- Constraints to buying a home?
  - **Down-payment**
  - Interest rate
  - Income requirements





# What happened between 2003 and 2007?

- Banks could sell MBS to investors → more funds to lend
- Constraints to buying a home?
  - Down-payment
  - **Interest rate**
  - Income requirements

THE WALL STREET JOURNAL

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## Teaser Rates On Mortgages Approach 0%

As Lending Frenzy Slows, Banks Add Twists to Lure Homeowners; Many of the Deals Have Pitfalls

By Ruth Simon Staff Reporter of THE WALL STREET JOURNAL  
Feb. 15, 2005 at 12:01 am ET

 Share  Resize

Taking a page from credit-card companies and car makers, mortgage lenders are touting loans with rock-bottom introductory rates -- in one case, nearly 0%.

Most of these loans are so-called option adjustable-rate mortgages, which carry an initial rate as low as 1%. One key and unusual feature: Borrowers get up to

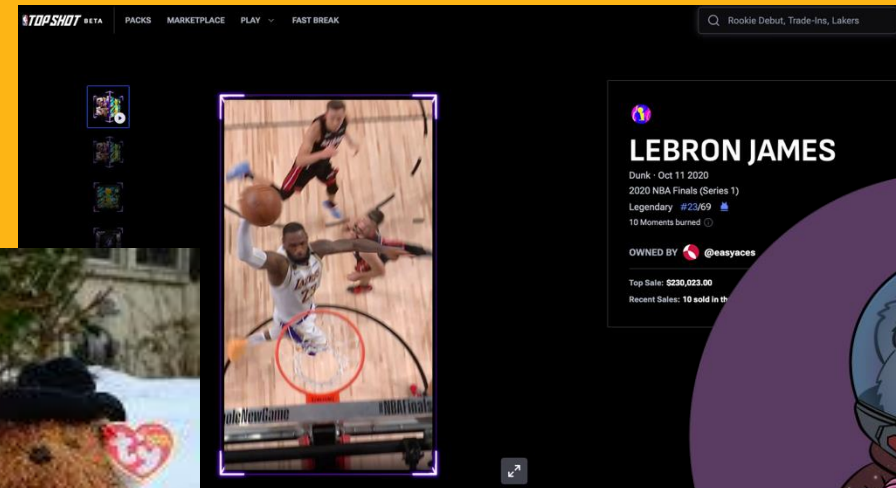
# What happened between 2003 and 2007?

- Banks could sell MBS to investors → more funds to lend
- Constraints to buying a home?
  - Down-payment
  - Interest rate
  - **Income requirements**
  - **Alt-A Loans**
    - No documents
    - NINJA Loans (no income, no job or assets)

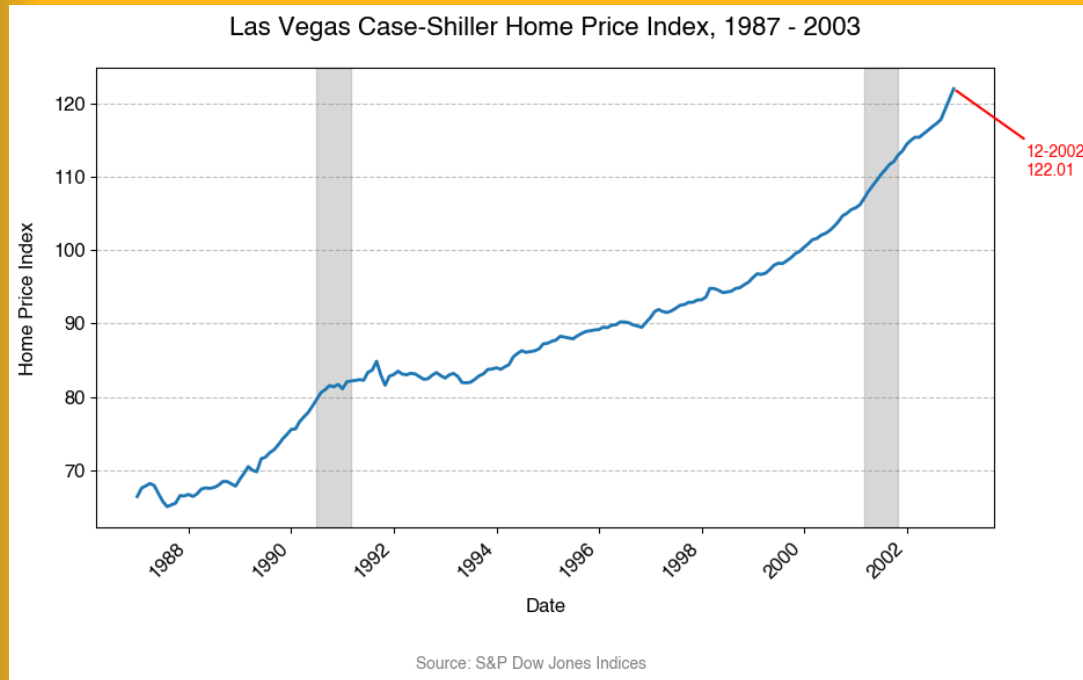
Year	Share of Alt-A loans (in %)
2001	2.8
2002	2.5
2003	2.3
2004	7.7
2005	13.8
2006	15.9

# What happened between 2003 and 2007?

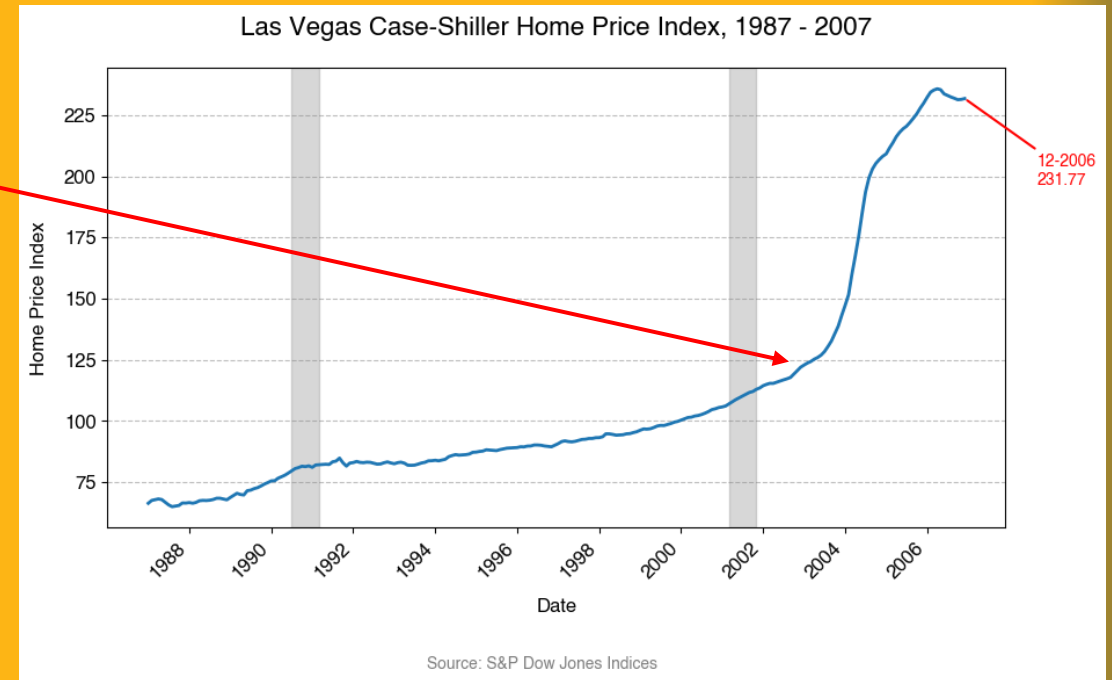
- No down-payment, low interest rate, limited income requirement?
- Buy a home, wait for the price to increase, sell the home, profit, repeat
- Buying an asset with the purpose of reselling (not using) = speculation



# Explaining Changes in the Housing Market

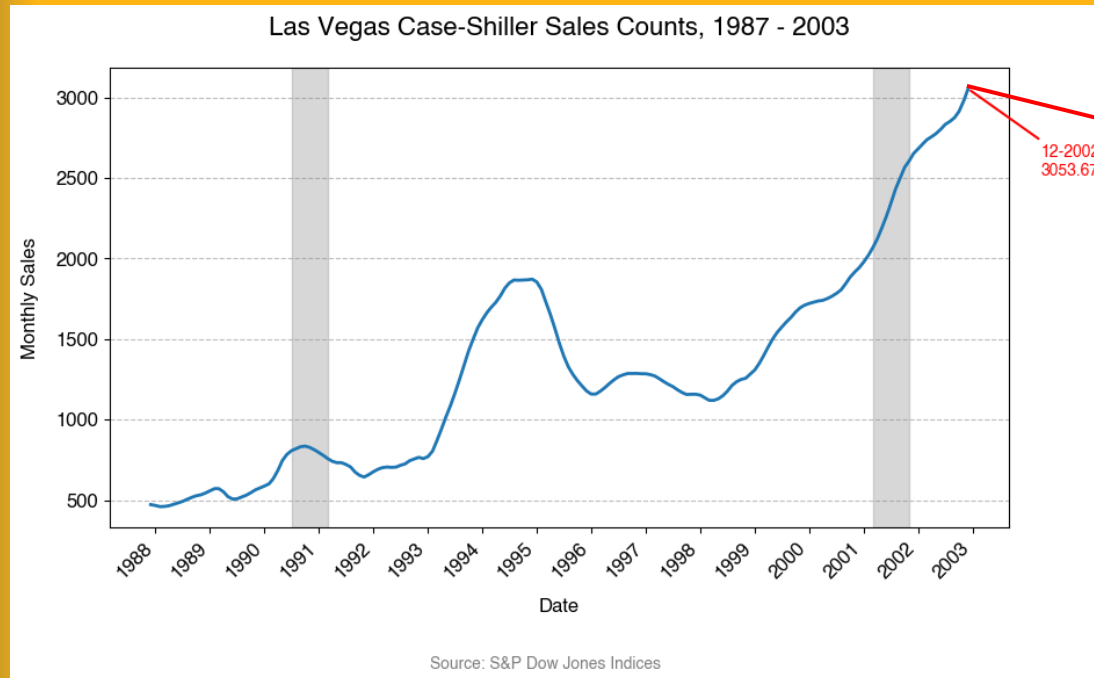


Las Vegas housing prices ~ doubled between 1987 and 2003 (16 years)

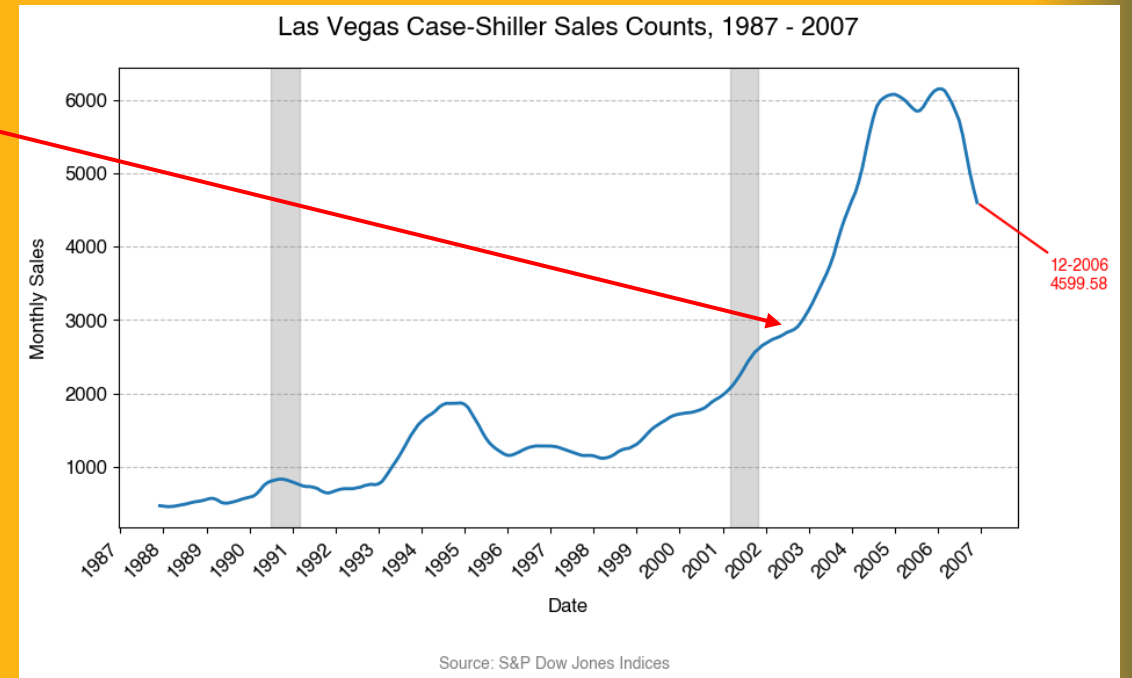


Las Vegas housing prices ~ doubled between 2003 and 2007 (4 years)

# Explaining Changes in the Housing Market



Las Vegas homes bought/sold increased from 500 per month to 3500 per month between 1987 and 2003

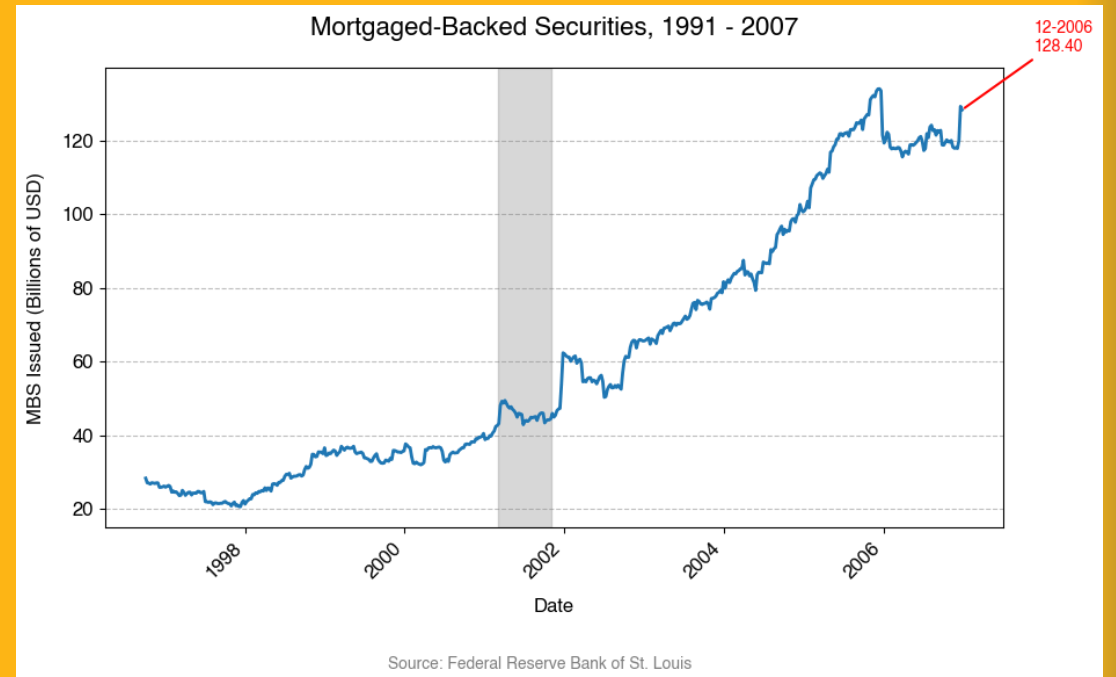


Las Vegas homes bought/sold increased from 3500 per month to 7000 per month between 2003 and 2005/2006

Decreased back to 4600 per month by 2007

# What happened between 2003 and 2007?

- Investors piled into MBS
- MBS split into different levels of risk (Collateralized Debt Obligations, CDO)
- Financial firms insured MBS with Credit Default Swaps (CDS = insurance if MBS fails)
  - Possible for pension funds and “safe” investors to join
  - Did not need to own MBS to purchase CDS
- By 2006, price growth muted, sales falling
- Adjustable-Rate Mortgage (ARM) teaser rate ends





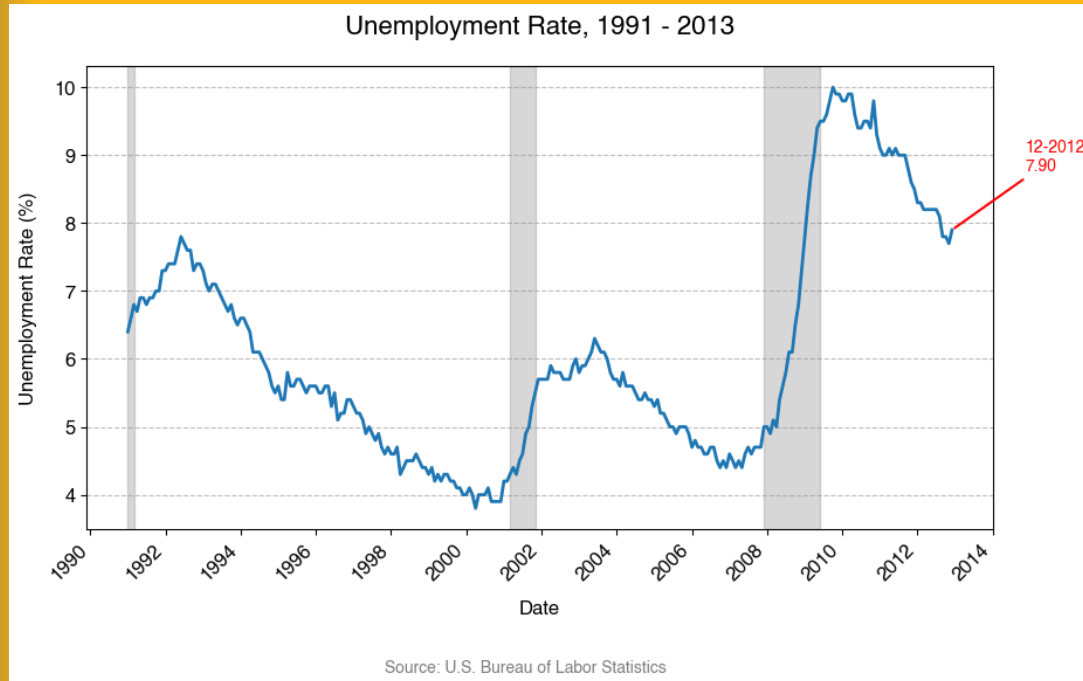
# What happened between 2003 and 2007?

- Speculators?
- Those with multiple homes?
- Those thinking about buying?



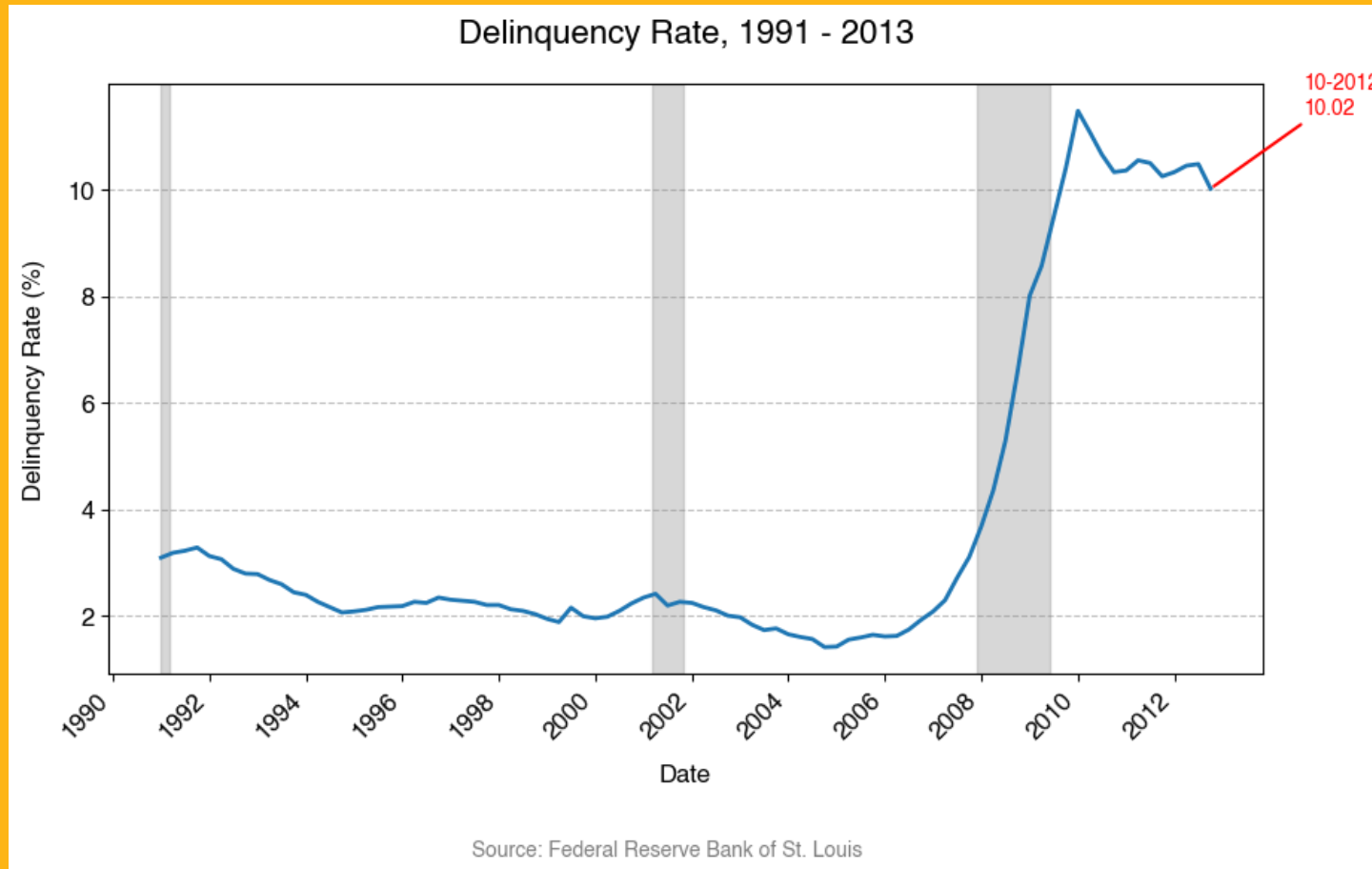


# What happened after 2007?



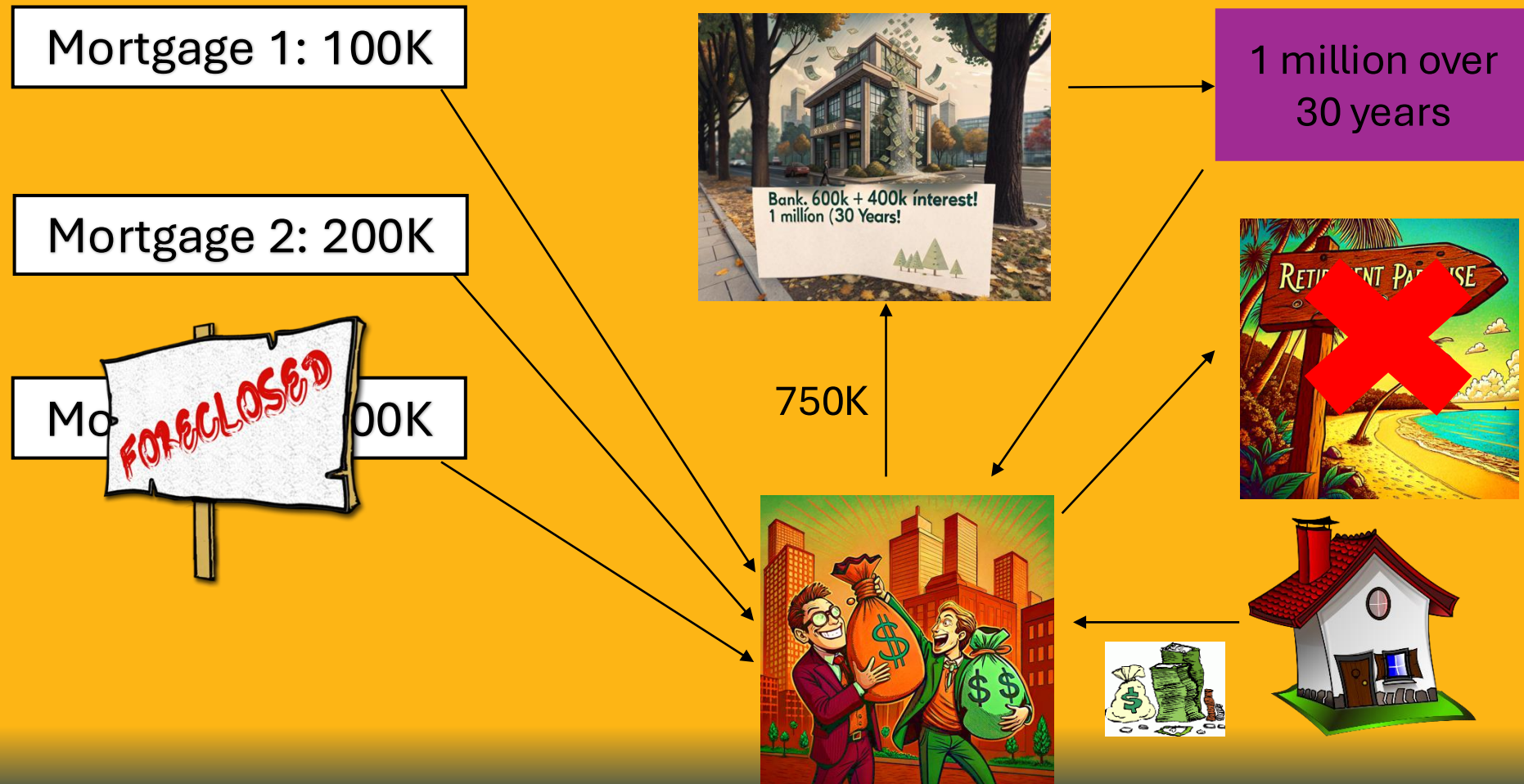
- Stagnant home prices + rising ARM
- Many homes owned by those with:
  - Low down-payment/no equity in home
  - Current home price below principal of the loan
  - Cost of holding home increasing
- Unemployment rising

# What happened after 2007?



# What happened after 2007?

- Mortgage-Backed Securities



# What happened after 2007?

