Principles of Macroeconomics

Econ 2

Lecture 2:

The Housing Market Today

Supply of Housing

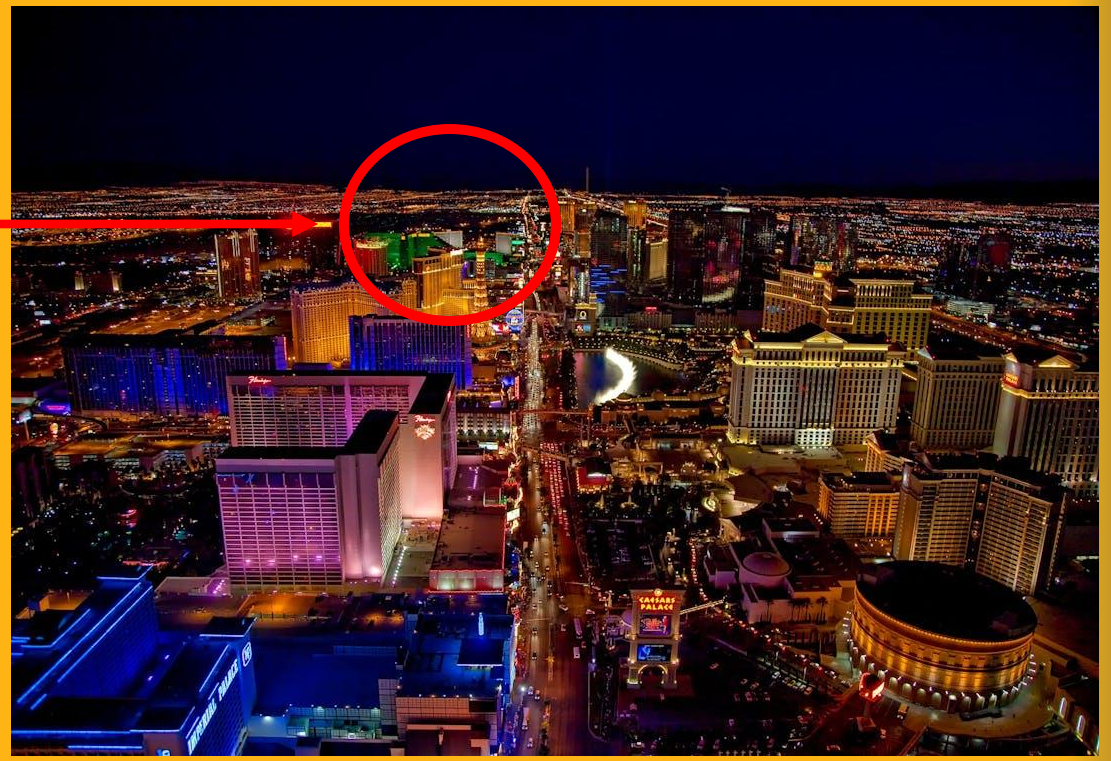
- How is housing supply determined?

Housing Market Equilibrium

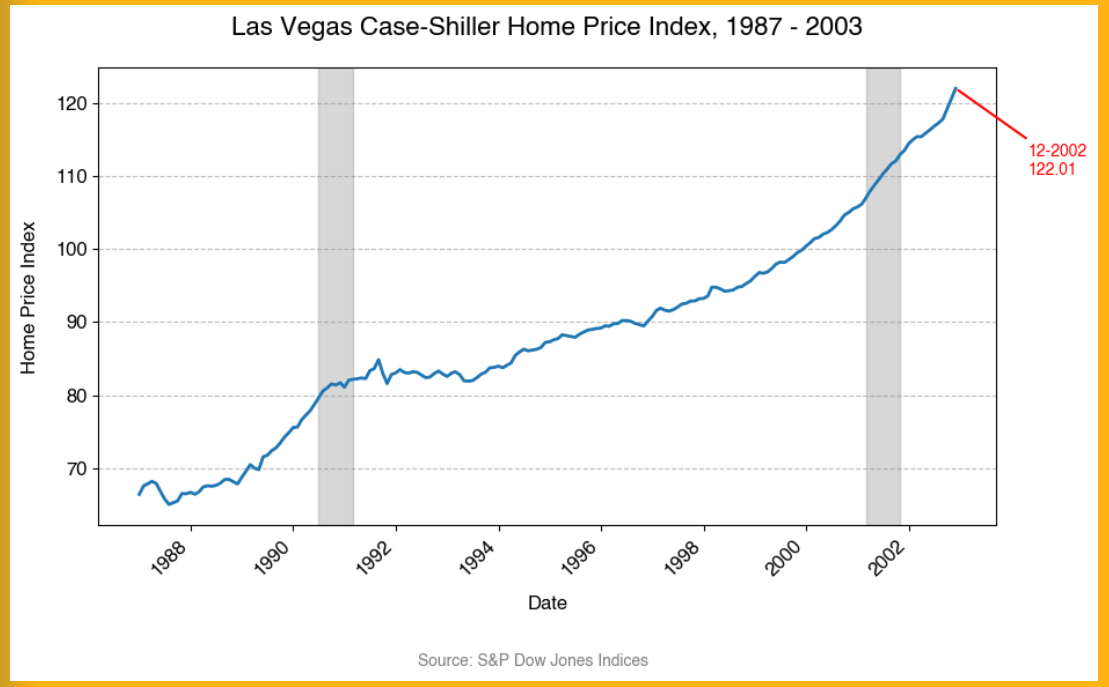
Explaining Changes in the Housing Market

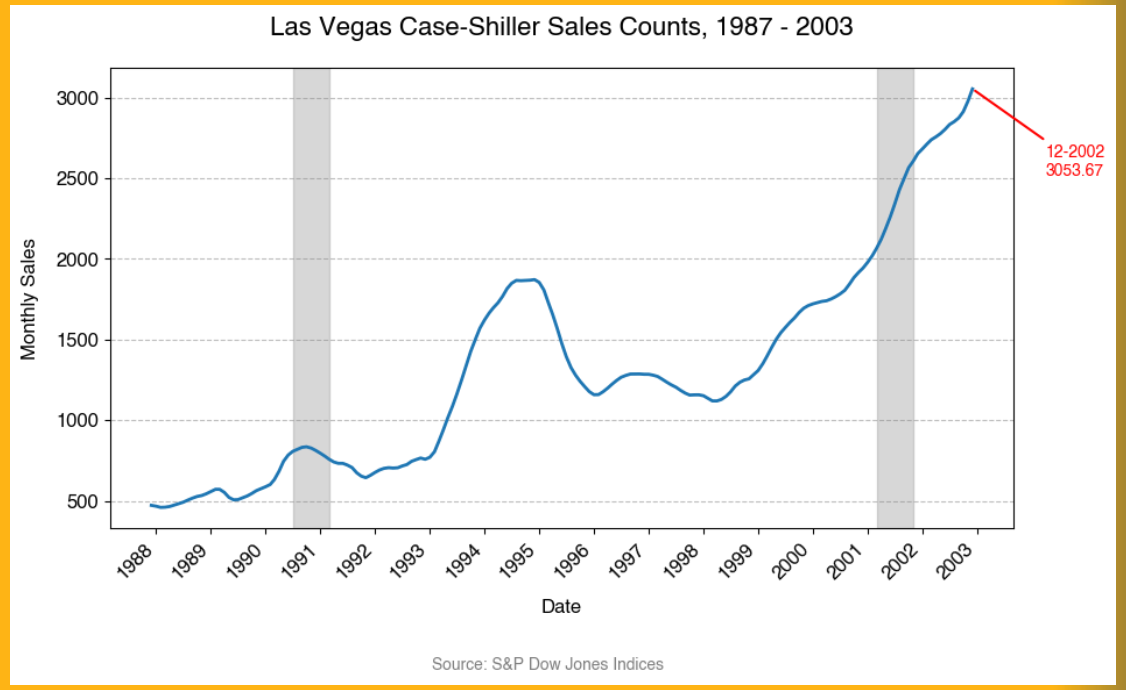
MGM Grand, Las Vegas, 1973

Las Vegas Strip, 2024



Explaining Changes in the Housing Market





Las Vegas housing prices ~ doubled between 1987 and 2003

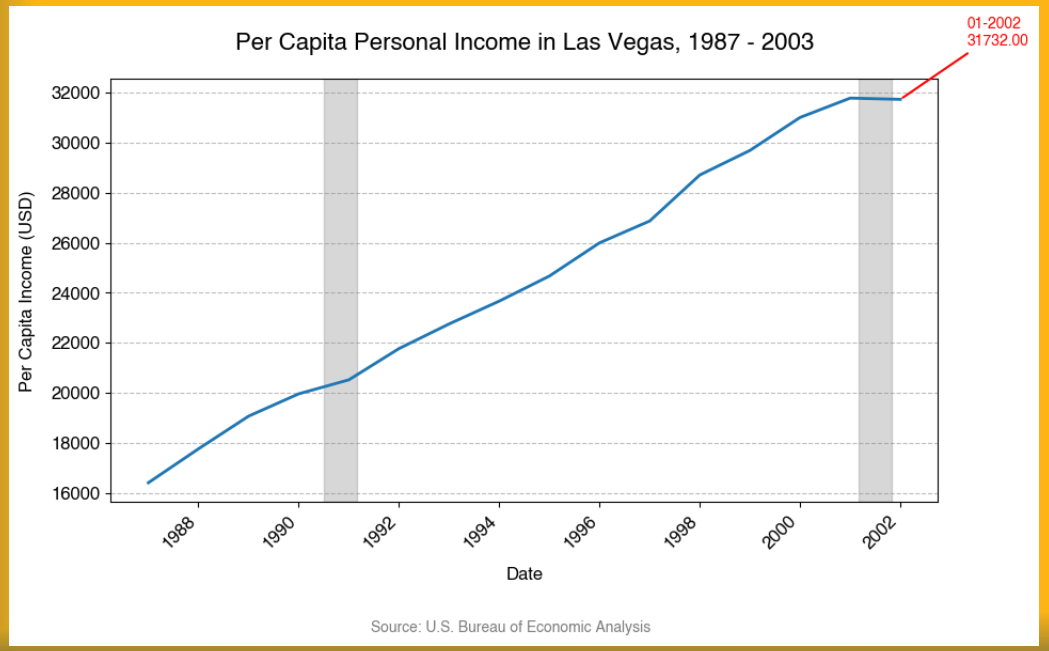
Las Vegas homes bought/sold increased from 500 per month to 3000 per month between 1987 and 2003

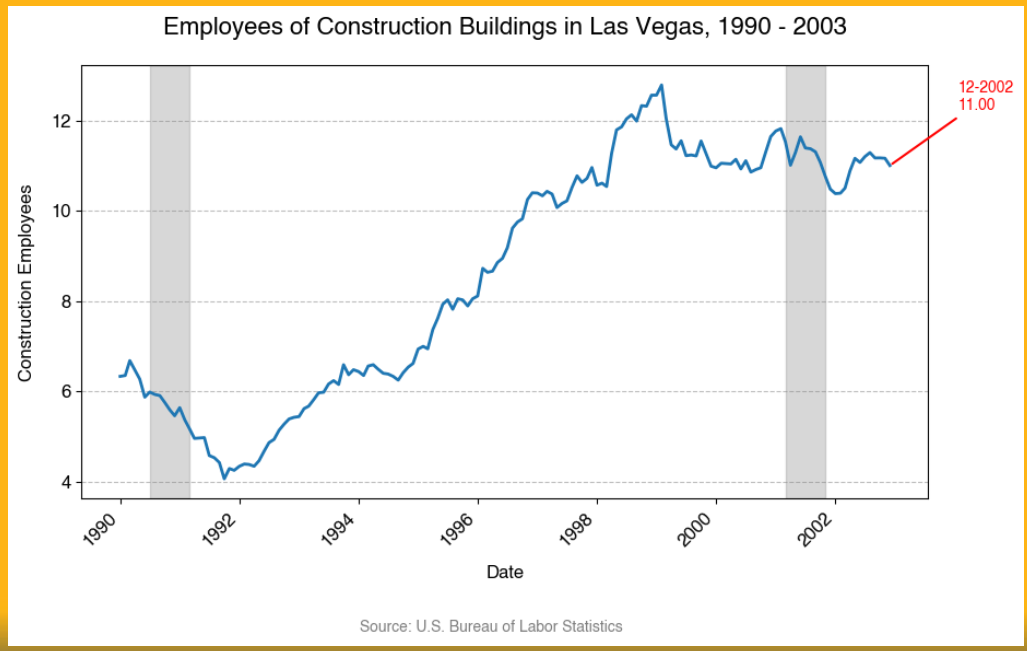
Housing Market Equilibrium

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
Unemployment Rate (%)
Date
12-2002
5.80
Source: U.S. Bureau of Labor Statistics


30-Year Fixed Mortgage Rate, 1987 - 2003
Mortgage Rate (%)
Date
12-2002
5.93
Source: Freddie Mac


Per Capita Personal Income in Las Vegas, 1987 - 2003
Per Capita Income (USD)
Date
01-2002
31732.00
Source: U.S. Bureau of Economic Analysis


Employees of Construction Buildings in Las Vegas, 1990 - 2003
Construction Employees
Date
12-2002
11.00
Source: U.S. Bureau of Labor Statistics

What happened between 2003 and 2007?

Mortgage-Backed Securities

Mortgage 1: 100K

Mortgage 2: 200K

Mortgage 3: 300K

1 million over 30 years

750K

What happened between 2003 and 2007?

Mortgage-Backed Securities

Mortgage 1: 100K

Mortgage 2: 200K

Mortgage 3: 300K

750K

1 million over 30 years

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

CNN Money

YOUR MONEY > Your Home

SAVE THIS EMAIL THIS PRINT THIS MOST POPULAR

Home buying with no money down

If the only thing standing between you and homeownership is a downpayment, consider your options.

December 23, 2003: 5:28 PM EST

By Sarah Max, CNN/Money Staff Writer

BEND, Ore. (CNN/Money) • Up until a year ago, photographer Melissa Jansson, 30, planned to rent for the foreseeable future. At that point, the few hundred dollars she had in savings wouldn't even cover her closing costs.

In November, Jansson closed on a $150,000 home of her own with a 3 percent downpayment she scored through a grant from the state of Oregon for qualified first-time homebuyers. Even better, she found a seller willing to pay all but $12 of her closing costs.

"Until I heard about the grant program buying a house was a fantasy," said Jansson, who shares her two-bedroom, two-bathroom home with a roommate and ultimately pays only $40 a month more to own than she did to rent.

Very little down

"No-money-down home purchases used to be the kind of thing you only saw on late night TV," said Keith Gumbinger, vice president for HSH Associates.

Now they're in the mainstream.

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.

Latest World Business U.S. Politics Economy Tech Markets & Finance Opinion Arts Lifestyle Real Est

Teaser Rates On Mortgages Approach 0%

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

By Ruth SimonStaff 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

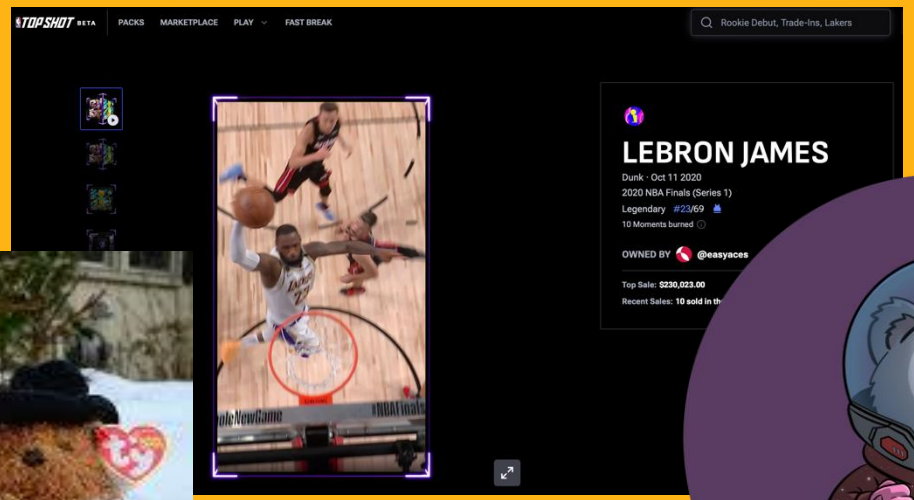
What happened between 2003 and 2007?

- 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)**

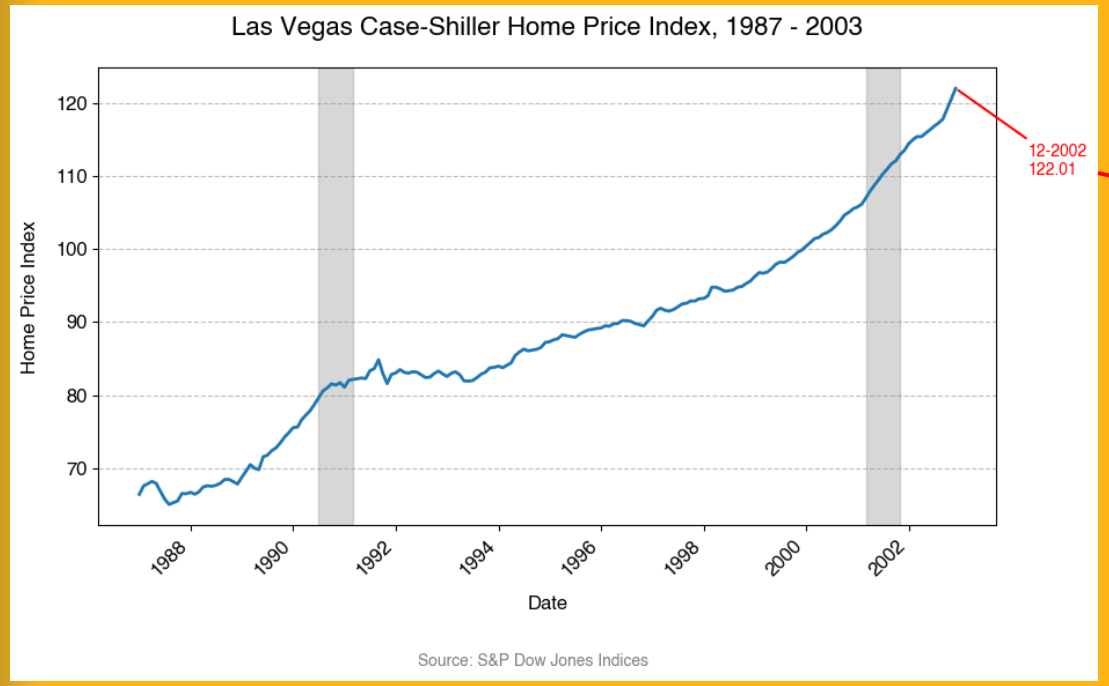
Year	Share of Alt-A loans (in %)
2001	2.8
2002	2.5
2003	2.3
2004	7.7
2005	13.8
2006	15.9

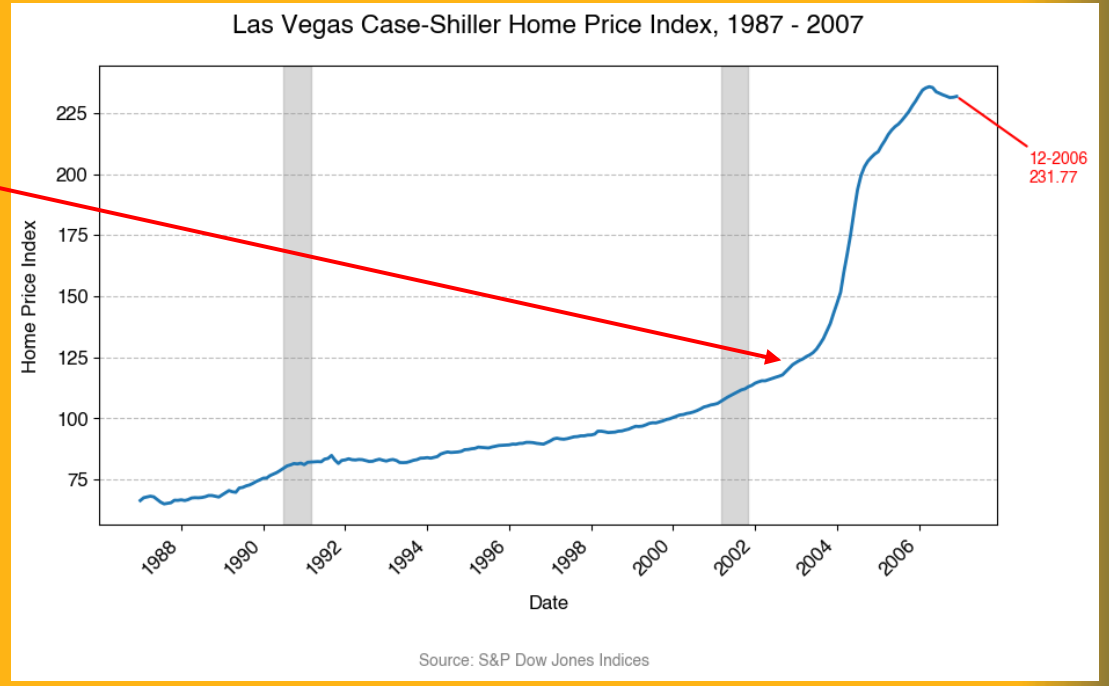
What happened between 2003 and 2007?

- 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

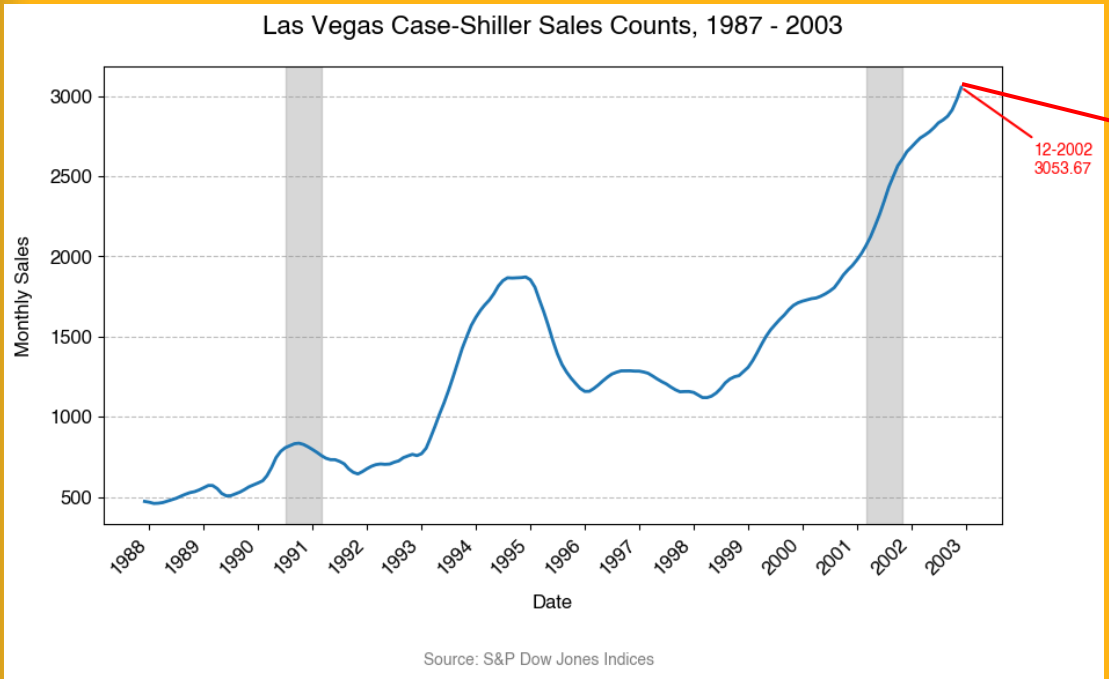


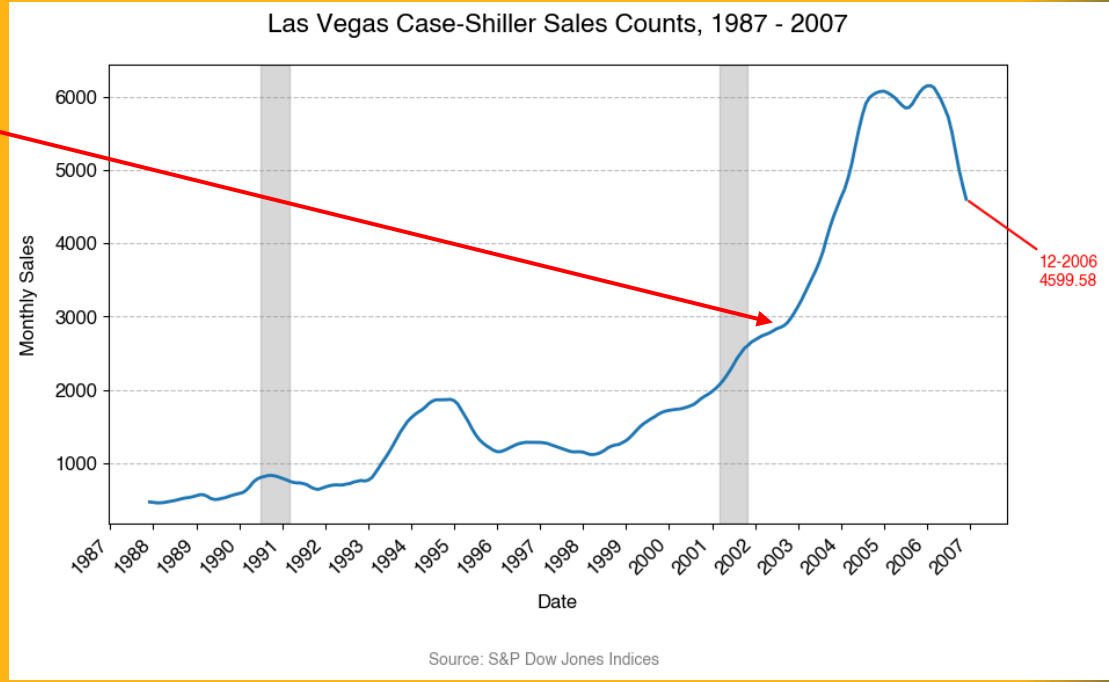


Las Vegas housing prices ~ doubled between 1987 and 2003 (16 years)

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

Explaining Changes in the Housing Market





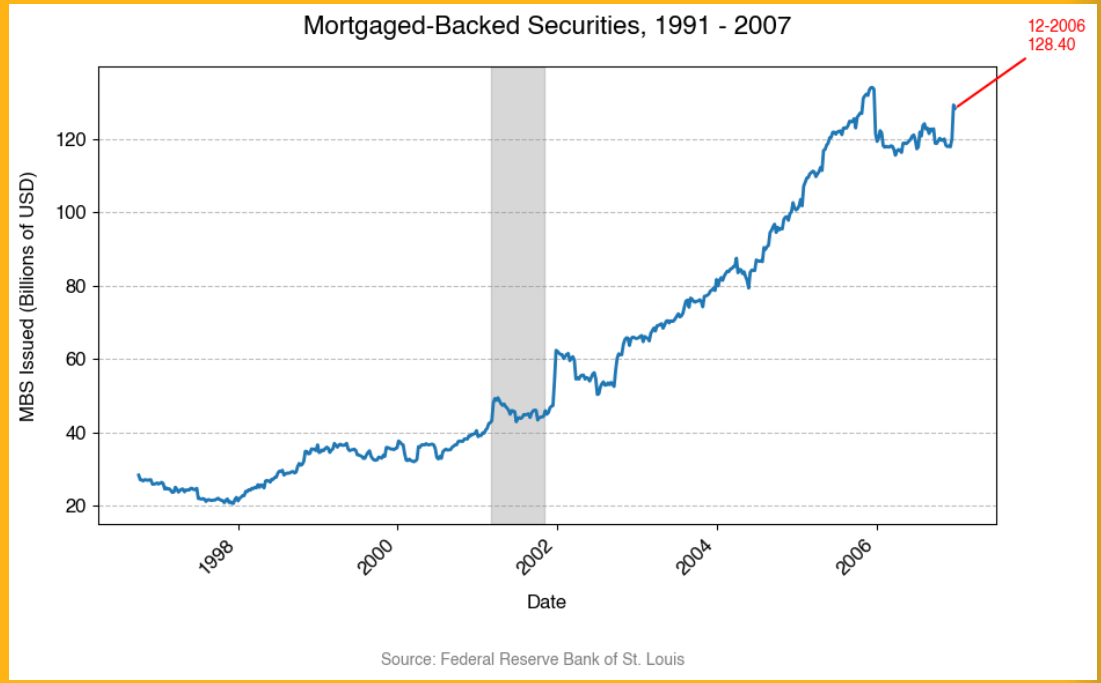
Las Vegas homes bought/sold increased from 500 per month to 3500 per month between 1987 and 2003

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



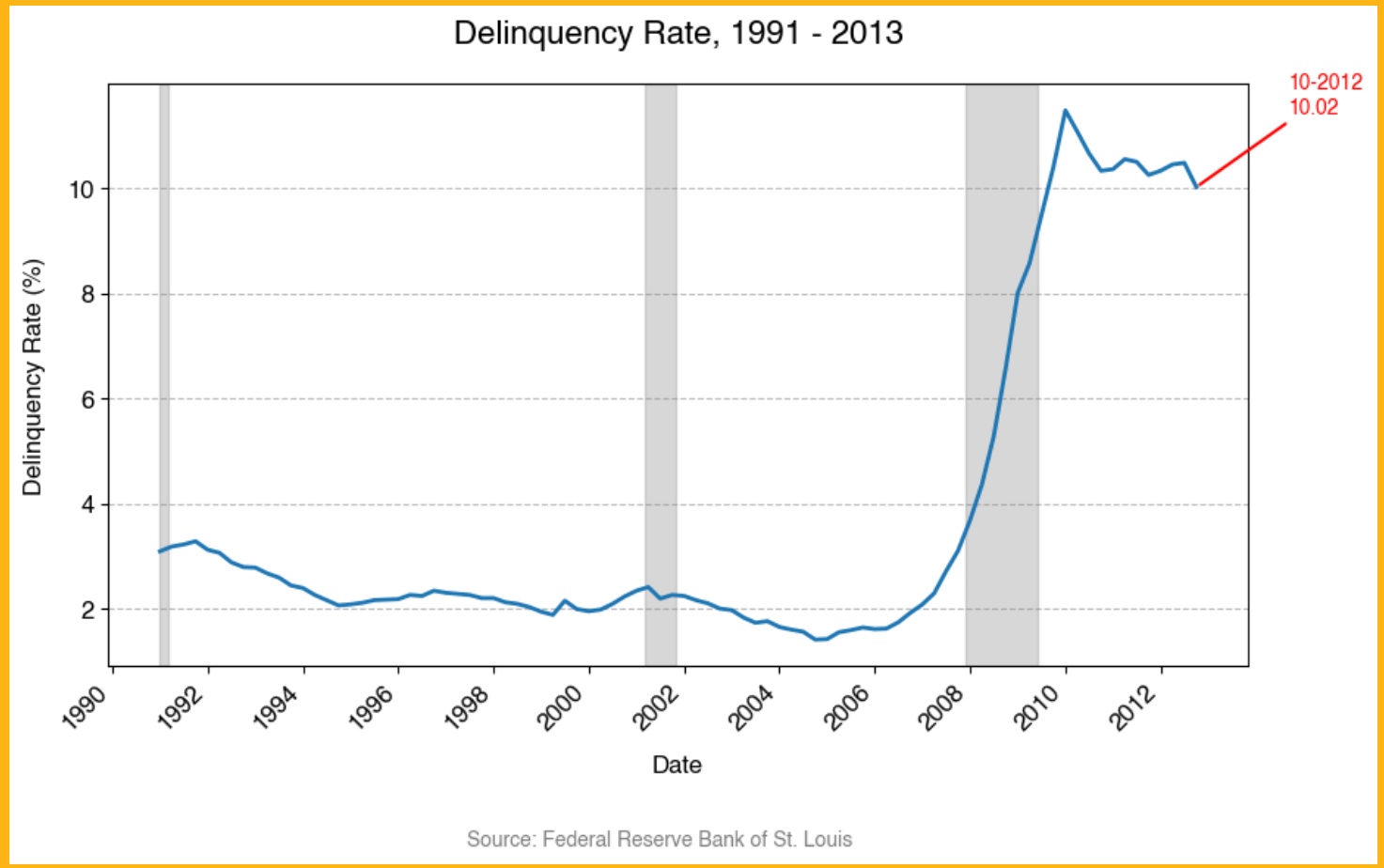
What happened after 2007?

- 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?

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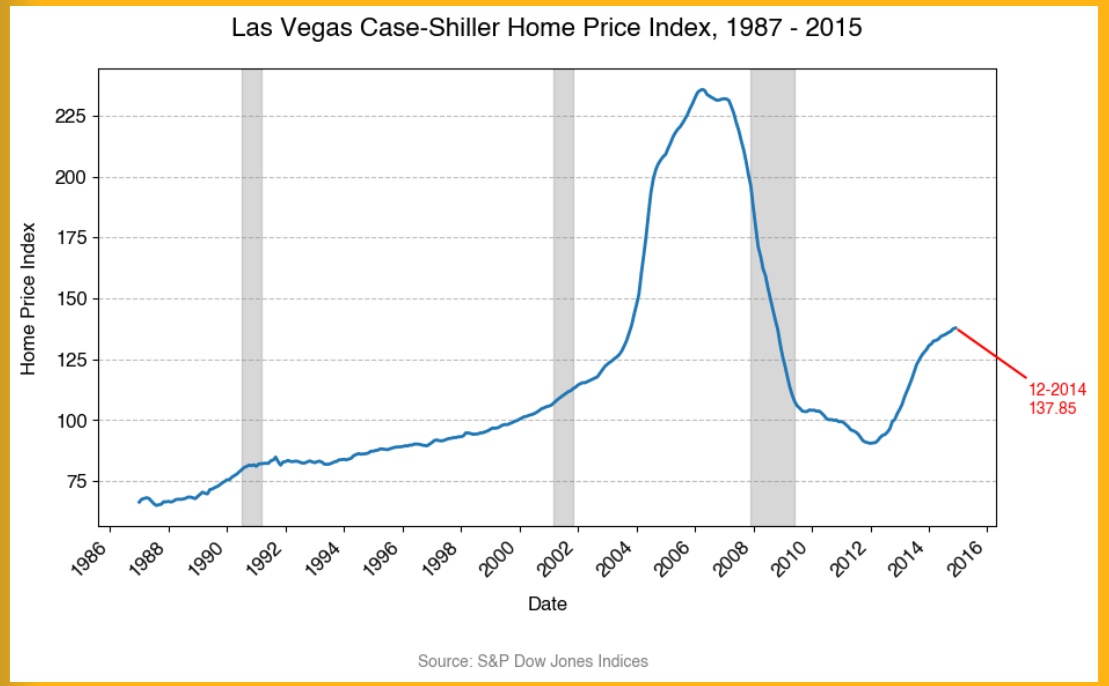
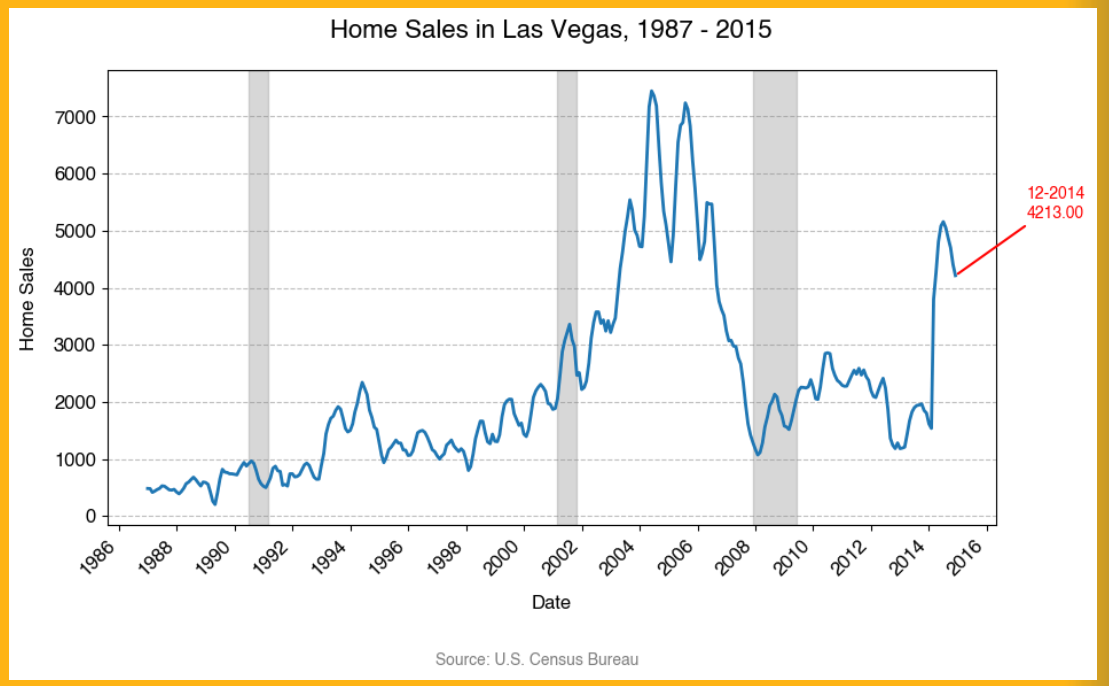
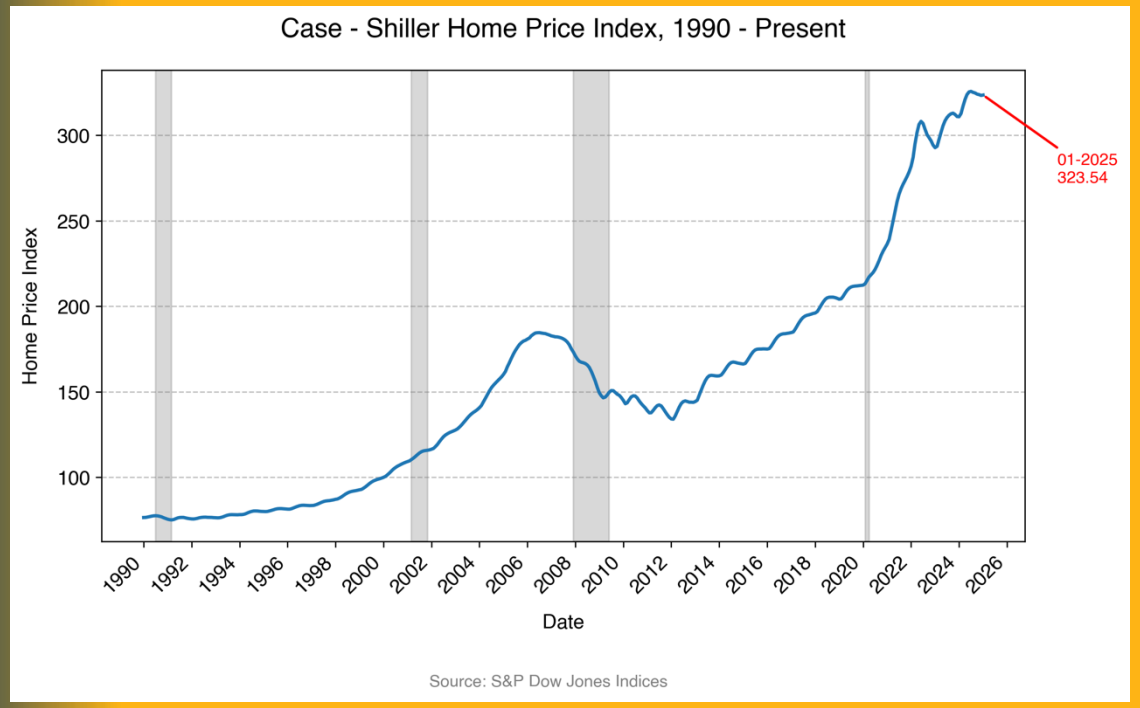
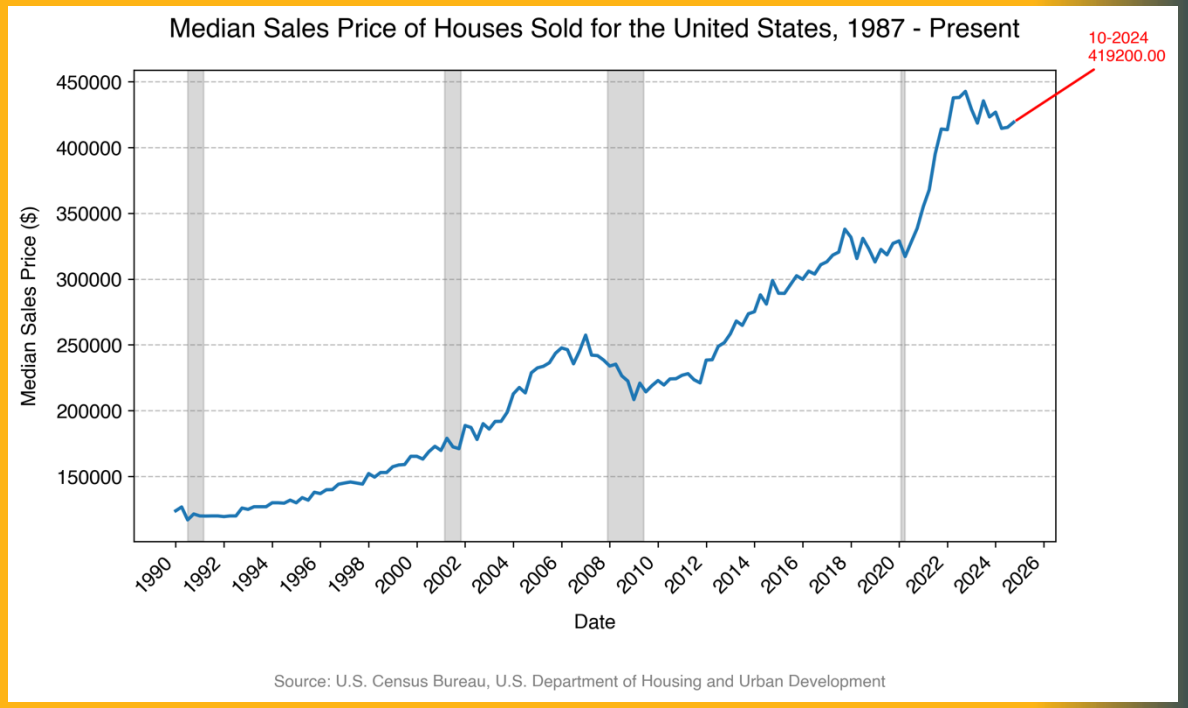
What happened after 2007?





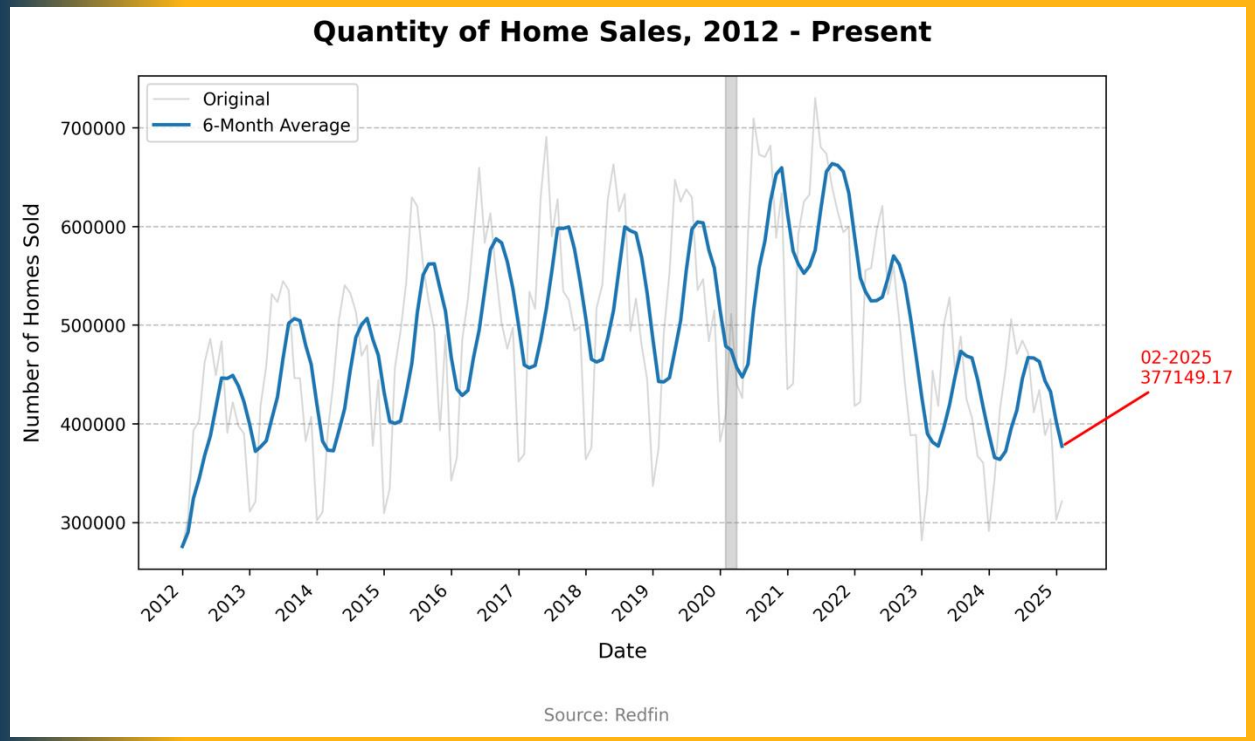
Housing Market Today

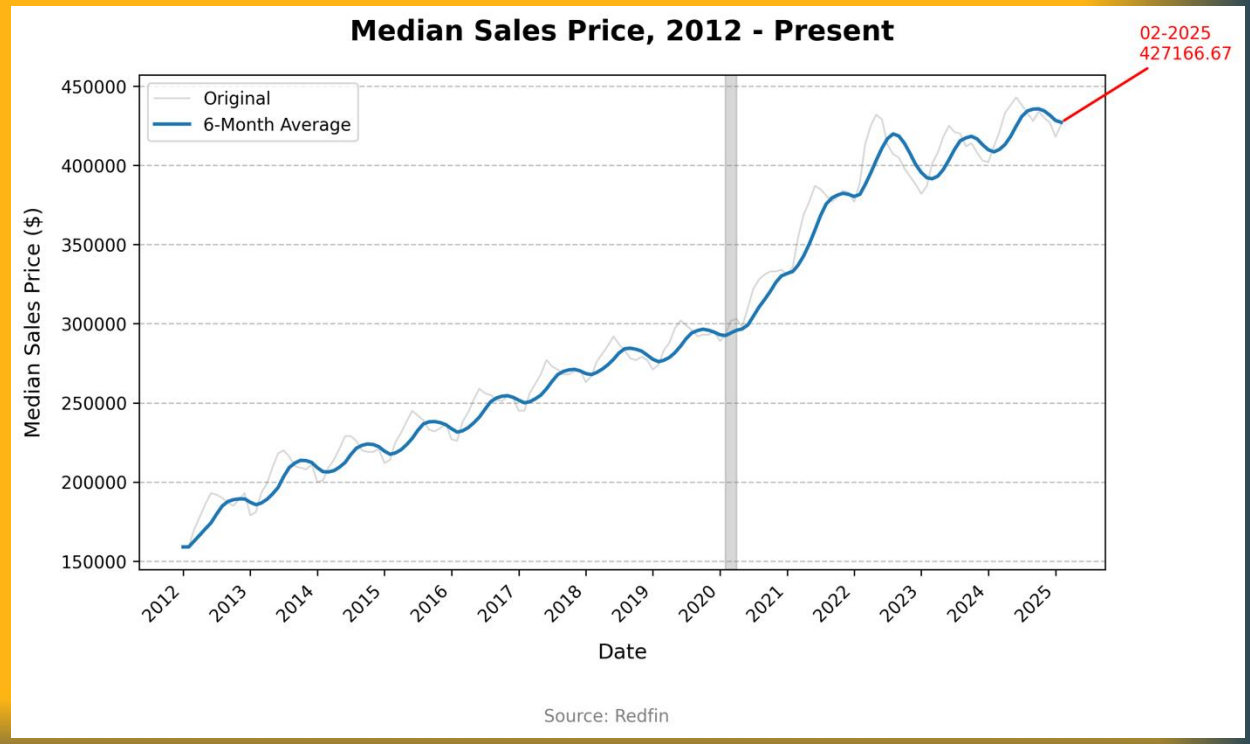




Are we currently in a housing bubble (similar to 2007)?

Housing Market Since 2012





Housing Market Equilibrium

Year	Price	Quantity
2012	182000	4824542
2013	204743	5285535
2014	217839	5265920
2015	232792	5800220
2016	248482	6123973
2017	265626	6298066
2018	280467	6200941
2019	291829	6296493
2020	316240	6635493
2021	371196	7194768
2022	406959	5929543
2023	408755	4964040
2024	427861	5070131
Source: Redfin Data Center		

Housing Market Equilibrium

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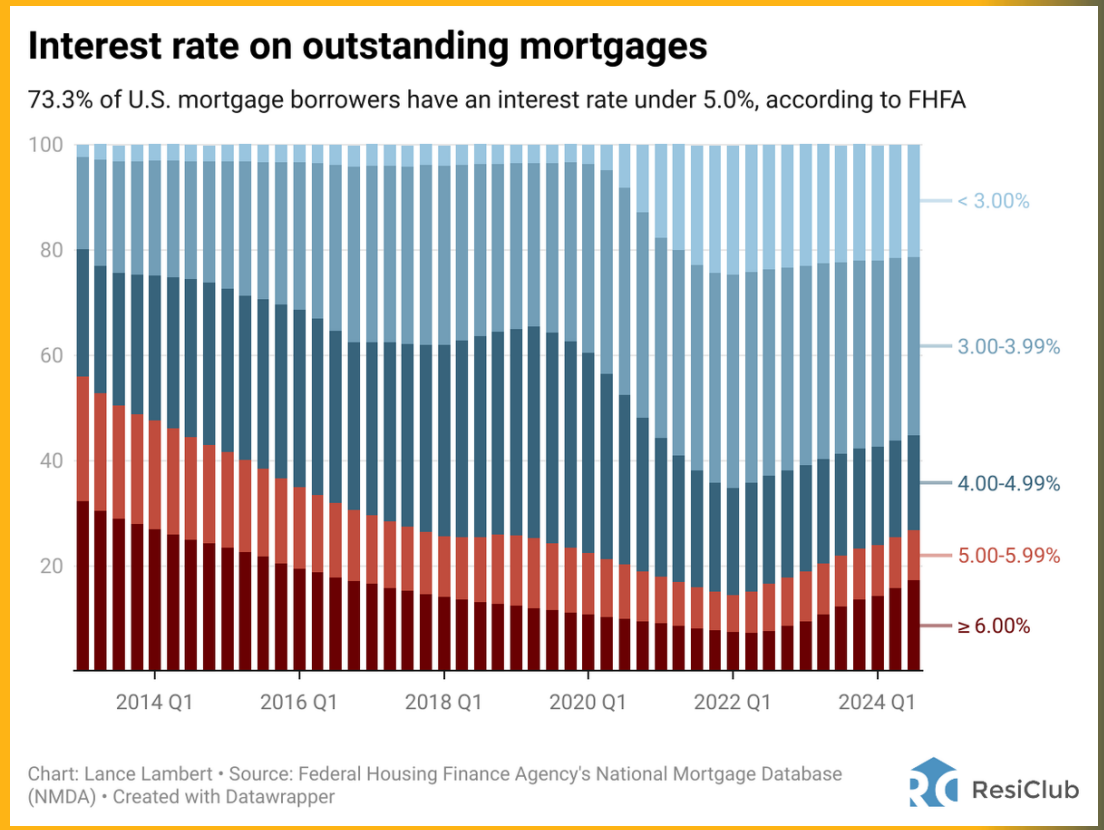
Homeowners “Stuck”



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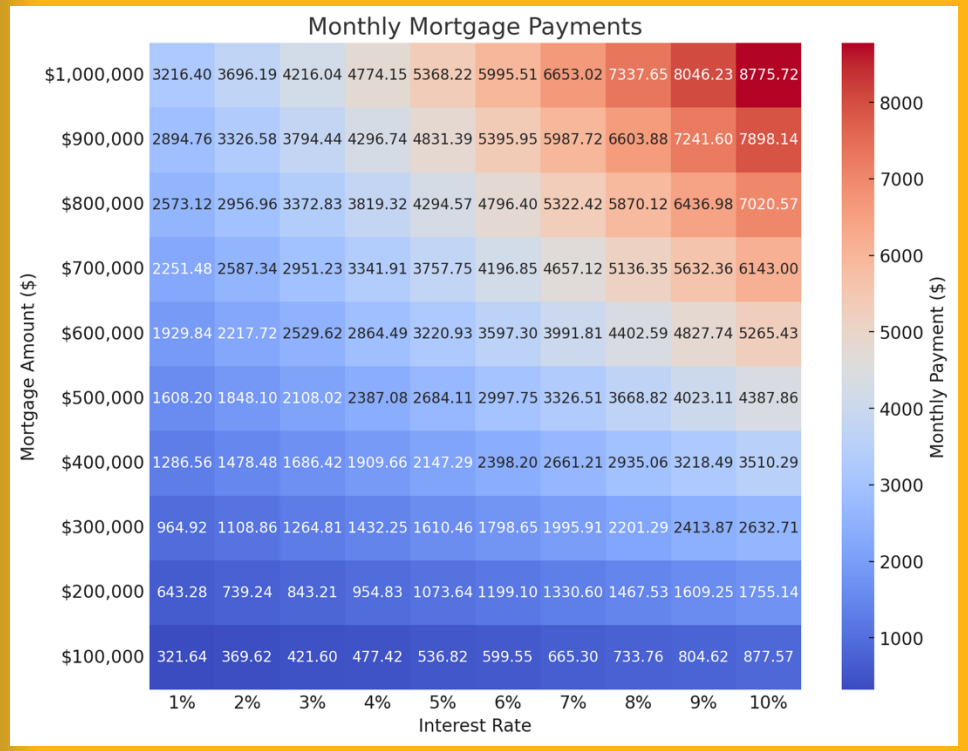

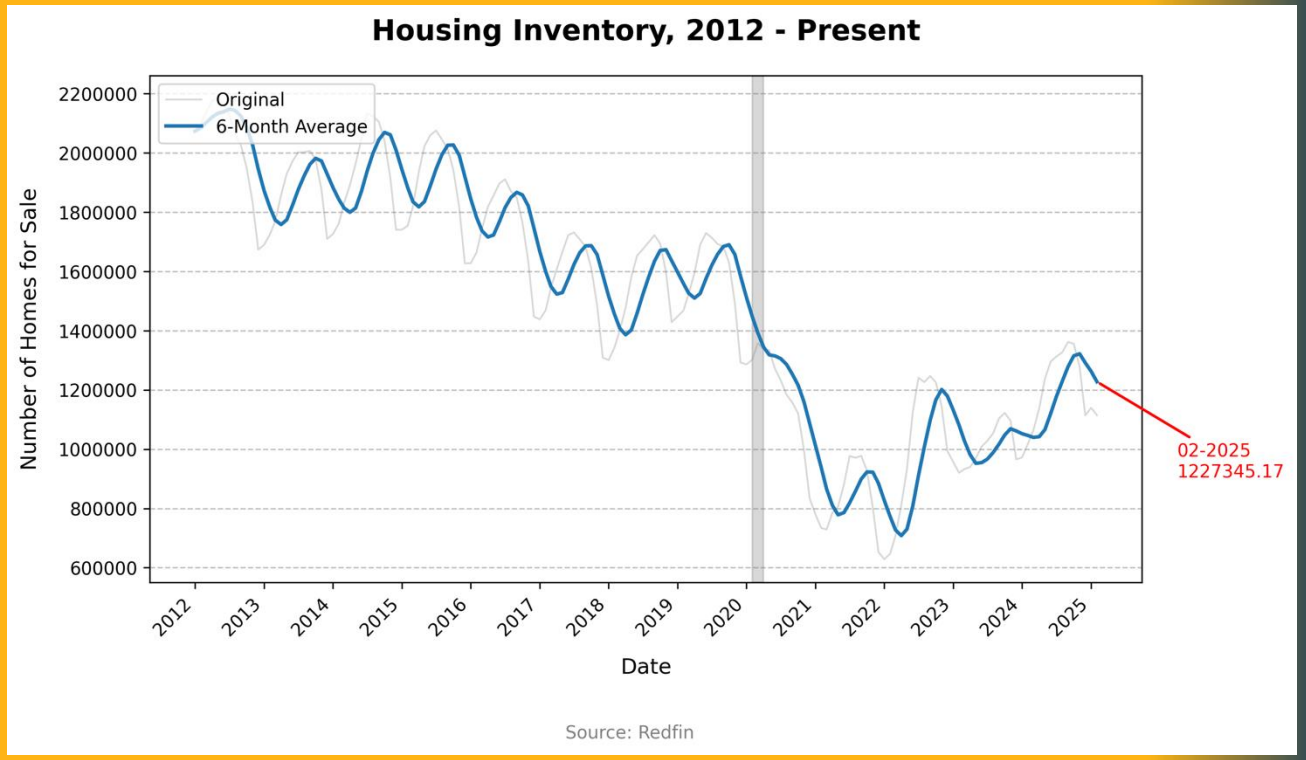

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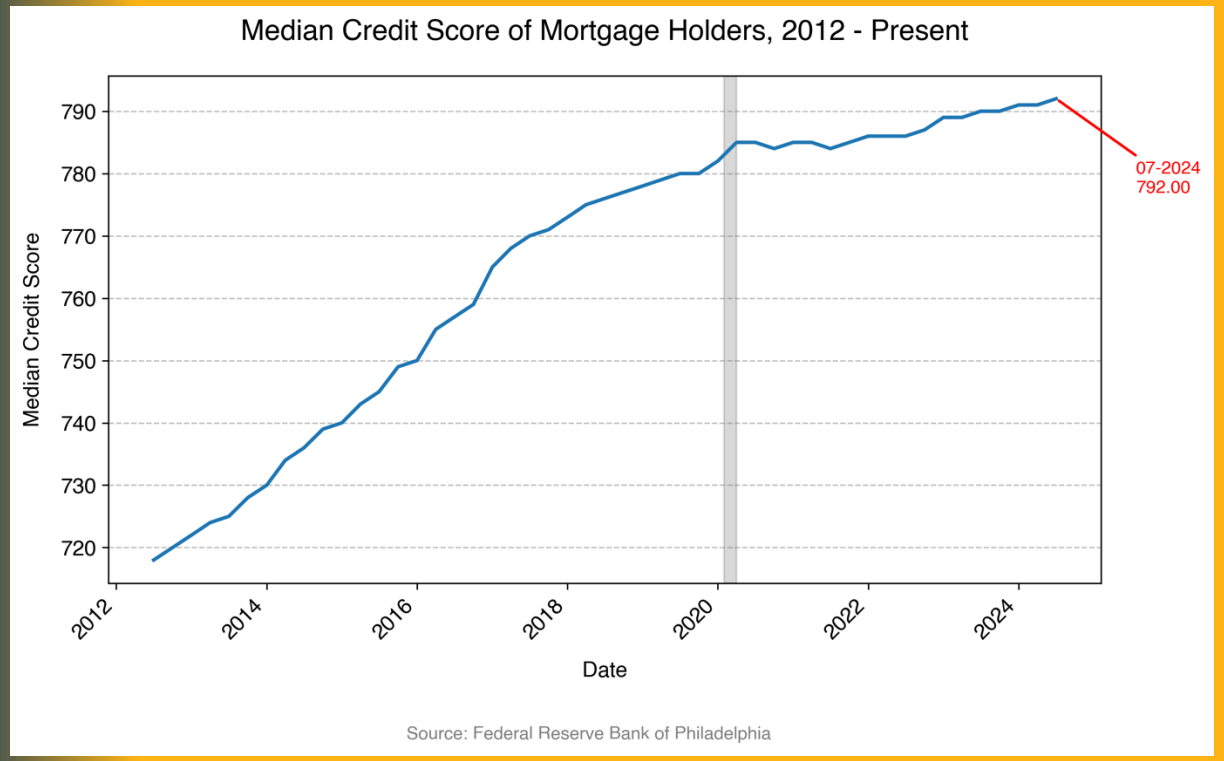
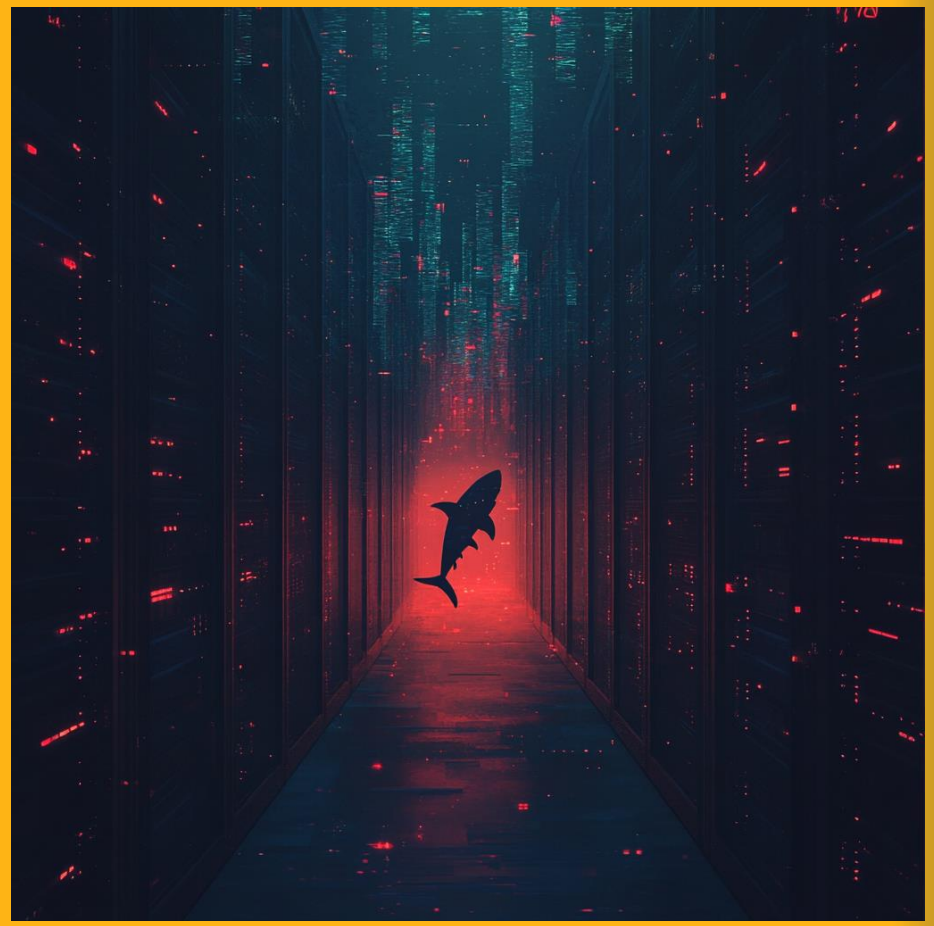


- Regulations after 2010 (Dodd-Frank Act)
  - Minimum standards required for borrowers
  - Bans deceptive lending practices (balloon, interest-only loans)
  - Lenders must retain at 5% of the credit risk for subprime loans (no quick turnover into MBS)
- Existing homeowners have higher credit scores today than in past
- More equity in homes (not underwater)
- Supply of homes?
  - New home permits below early 2000 levels
  - Incentive to foreclose?

A Healthy Housing Market

- Price Growth: 2 - 5%
- Months' Supply: 4 – 6 months
- Days on Market (DOM): 30 – 60 days
- Sale-to-List: 98% to 102%
- Price Drops: 10% to 20%

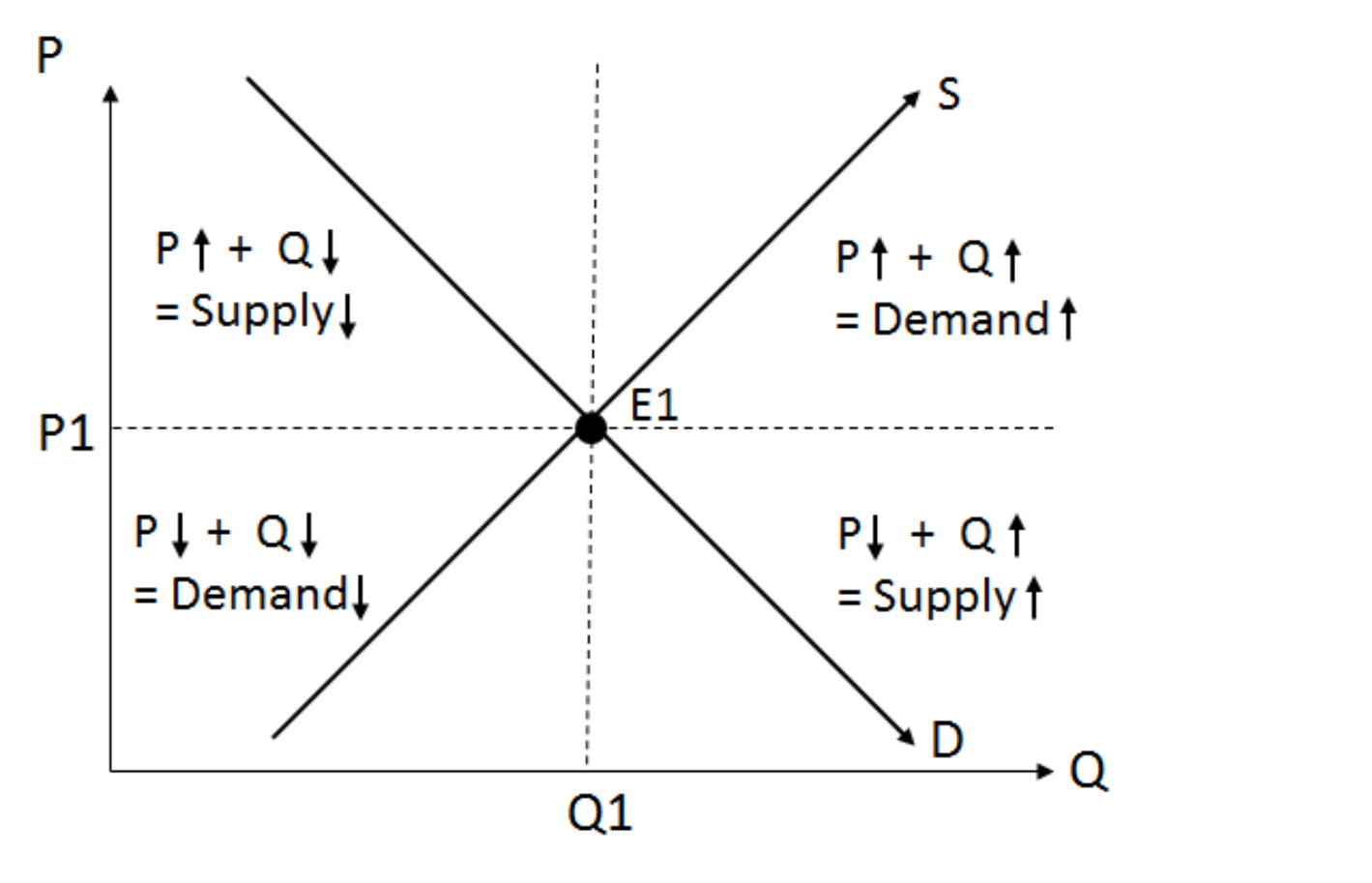
- Discussion Activity 1, Redfin Data Center: https://www.redfin.com/news/data-center/



Housing Market Equilibrium

What if interest rates decrease?

Supply and Demand Summary



Summarize Shifts in Supply and Demand

	No Change in Supply	Increase in Supply	Decrease in Supply
No Change in Demand	Q and P unchanged	Q increases, P decrease	Q decreases, P increases
Increase in Demand	Q and P increase	Q increases, P may or may not change	Q may or may not change, P increases
Decrease in Demand	Q and P decrease	Q may or may not change, P decreases	Q decreases, P may or may not change

Video Links

- Financial Crisis: https://www.youtube.com/watch?v=JVSpPXterd0

- China's Property Bubble: https://www.youtube.com/watch?v=ogaZBVeUG-M

Next Steps

- Introduction to Macroeconomics
- Gross Domestic Product

Goals of Macroeconomics
A Healthy Economy!

- 1. High Standard of Living (Economic Growth)
  - A single statistics to encapsulate quality-of-life?
- 2. Stable Prices
  - Consumers react strongly to prices of individual goods. What about entire economy?
  - Prices faced by consumers tend to rise from year-to-year. Is this OK?
  - What if the inflation rate is too high?
- 3. Full Employment
  - What is considered an acceptable unemployment rate?
  - When there is unemployment, standard of living is reduced for all

Measuring Economic Activity

Most common measure of economic activity and the standard of living in the economy is the Gross Domestic Product, or GDP.

Gross Domestic Product: the market value of all final goods and services produced for a marketplace during a period of time, within a country's borders.

GDP: **the market value** of all final goods and services produced for a marketplace during a period of time, within a country's borders

- "The market value"
- Convert production into a dollar value
- Economy produces:
  - 100 Cars at $25 per car
  - 25 TVs at $1 per TV
  - 50 Homes at $100 per home
- 100 cars x $25 + 25 TVs x $1 + 50 homes x $100
- = $2500 + $25 + $5000 = $7525?

GDP: the market value **of all final goods and services** produced for a marketplace during a period of time, within a country's borders

- "Of All Final Goods and Services"
- Why "Final"?
- You purchase a computer from Best Buy for $400. How is the
- computer made?
  - Step 1: Raw materials mined and sold to parts manufacturer for $50
  - Step 2: Parts are created by manufacturer and sold to Dell for $150
  - Step 3: Dell assembles the computer and sells to Best Buy for $350
  - Step 4: Best Buy sells computer to your for $400
- Should we could the value of all $950 in transactions?
- NO! Only consider the value of the final good or service since the
  - intermediate goods and services are captured by the final price.
- Intermediate good or service is an input into another good or service
  - Parts into the computer
  - What else?

GDP: the market value of all final goods and services **produced** for a marketplace during a period of time, within a country's borders

- "Produced"
- Many things are "bought" by individuals, but they are not "produced"
- Examples: Bonds, Stocks, Land

GDP: the market value of all final goods and services produced **for a marketplace** during a period of time, within a country's borders

- "For a Marketplace"
- Marketplace = defined location (e-location) where goods and services are bought and sold

- What goods and services are not bought or sold in a formal marketplace?
  - Housework
  - Yard Work
  - Child Care
  - Volunteering

- Informal marketplace
  - Illegal activities
  - "Trading services"

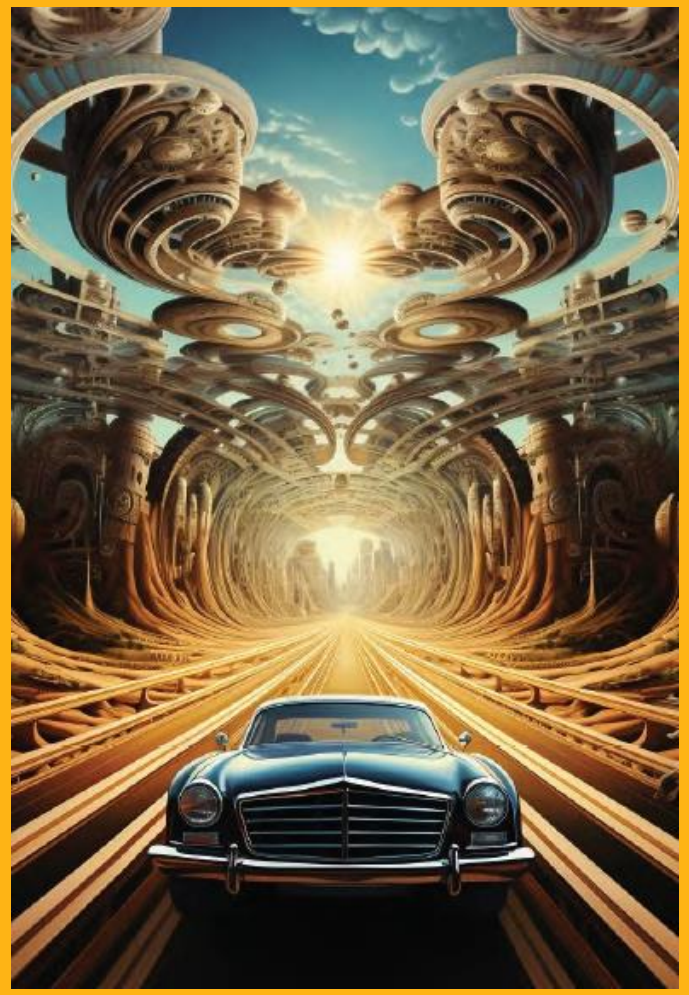
GDP: the market value of all final goods and services produced for a marketplace during a period of time, within a country's borders

- "During a Period of Time"
- Typically define a period of time as one year, 2024

- Everything produced in 2024 counts towards 2024 GDP

- A used 2017 Toyota Camry is sold on Craigslist in April 2024.
- Is the car counted in 2017 or 2024 GDP?

- A used 2017 Toyota Camry is sold at a used car dealership in April 2024
- What is counted in 2017 GDP? 2024 GDP?



GDP: the market value of all final goods and services produced for a marketplace during a period of time, **within a country's borders**

- "Within a Country's Borders"
- GDP: Production within the geographical border of a country.
- Can also be a City, State, Continent or Planet!

- Gross National Product (GNP): Production by citizens of a country, no matter where they are

Measuring GDP

- Most common way to measure GDP is the **Expenditure Approach**
- Bureau of Economic Analysis (www.bea.gov)
  National Income and Product Accounts (NIPA) table

- Four General Categories

1. Consumptions of goods and services (C): purchases by the households
2. Private investment of goods and services (I): purchases by firms/businesses
3. Government goods and services (G): purchase by governments
4. Net Exports (NX) = Exports (X) – Imports (M): net purchases by foreigners
    1. Exports (X): Goods sold by home country, money **comes from** abroad
    2. Imports (M): Goods bought by home country, money **goes** abroad

- GDP defined as **Y = C + I + G + NX**

Y = **C** + I + G + NX

- Consumption (C)
- Consumption (67%): a final good or service purchased by a household
- Goods (21%): a tangible item that consumers gain ownership over when purchasing
  - Durable Goods (9.5%): Motor Vehicles, Furniture, Recreation Goods
  - Non-Durable Goods (14.9%): Food, Clothing, Gasoline
- Services (47%): an intangible good that we purchase but do not gain ownership of: health care, airline tickets, financial services, etc.

Incorporating Housing

- Are homes a durable good?
- **New homes** are considered an *investment*
  Household buying a home ~ Firm purchasing a plant
- Households do not take their home when they move

- **Rental Housing**: counted as a service

- **Imputed Rent**: the cost to you if you rented your home
  - If your home would rent for $1,000/month = $12,000/year, count $12,000 in "imputed rent" as a service

- Housing Services make up 12% of the total GDP!

$Y = C + I + G + NX$

Investment (I)

- Investment (18%): goods and services purchased by firms
- Nonresidential Investment (13.9%): Capital machinery and plants
  - Tractor, Assembly Line Part, Computer, Software, Desk, Building/Plant
- Residential Investment (4.0%): New home construction
- Change in Private Inventories (~0%)

Change in Private Inventories

Campus Bookstore in 2024

$10,000 worth of hoodies made and up for sale!

GDP in 2024 increases by $10,000

Sell $8,000 worth of hoodies

Consumption in 2024 increases by???

$2,000 worth of hoodies unsold at the end of the year

Added to inventory/stock room/etc.

Increase inventory in 2024 = increase investment in 2024

Campus Bookstore in 2025

Remaining $2,000 in hoodies sold!

Consumption in 2025 increases by $2,000

Where did the hoodies come from?

Inventory/stock room/etc. (not produced)

Decrease in inventory of $2,000

Change in Inventory = -$2,000

Investment decreases by $2,000 in 2025

Total Change in 2025 GDP? $0

Consumption = +$2,000, Investment = -$2,000

Y = C + I + **G** + NX

Government Purchases (G)

Government Purchases (17.2%): Goods and services that the government buys

- Federal Spending (6.5%): bought by the Federal Government
  - National Defense (3.7%)
  - What else?

- State and Local Spending (10.7%): bought by local governments

- Does not include transfer payments such as Social Security, Unemployment Benefits, Welfare. Why?

$Y = C + I + G + \mathbf{NX}$

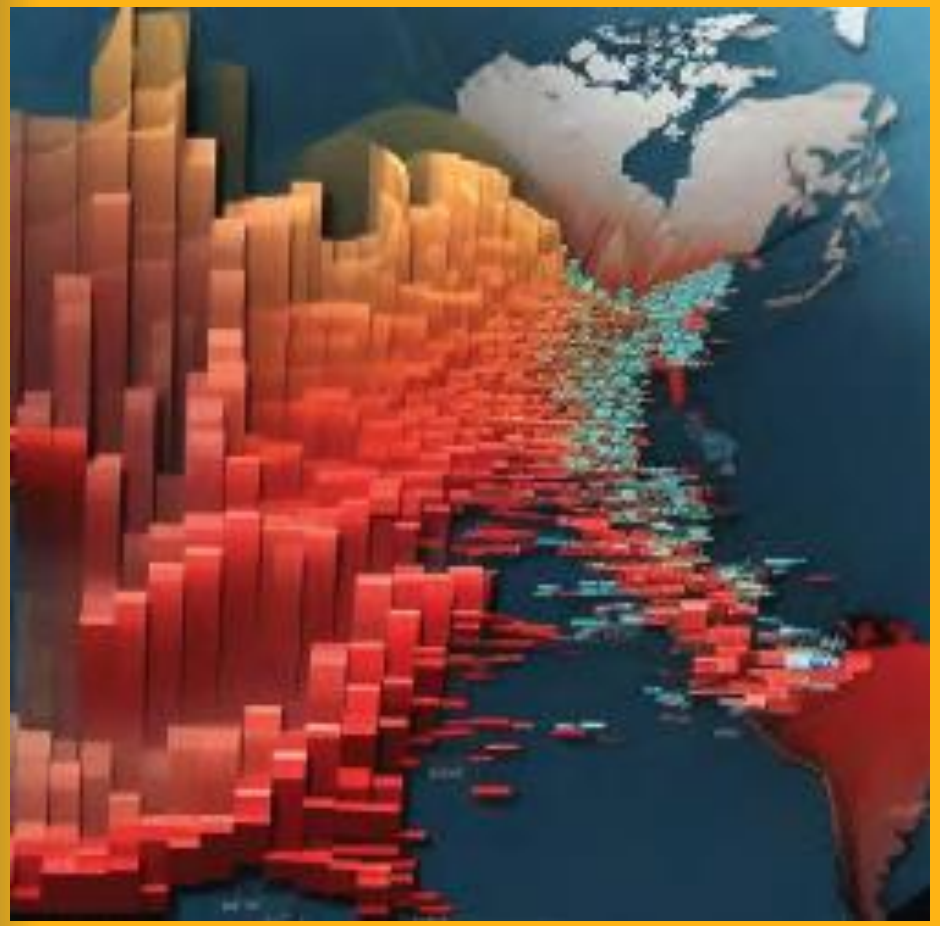
Net Exports (NX)

- Net Exports (NX) = Exports (X) minus Imports (M) = X – M

- Exports (X) : Goods and services purchased BY foreign entities
- Imports (M) : Goods and services bought FROM foreign entities

- Exports are 10.9% of GDP
- Imports are 13.7% of GDP
- Net Exports are 10.9% - 13.7% = -2.8% of GDP

Y = C + I + G + NX



US Nominal GDP in 2024 Q3

C = 19.94 Trillion

I = 5.33 Trillion

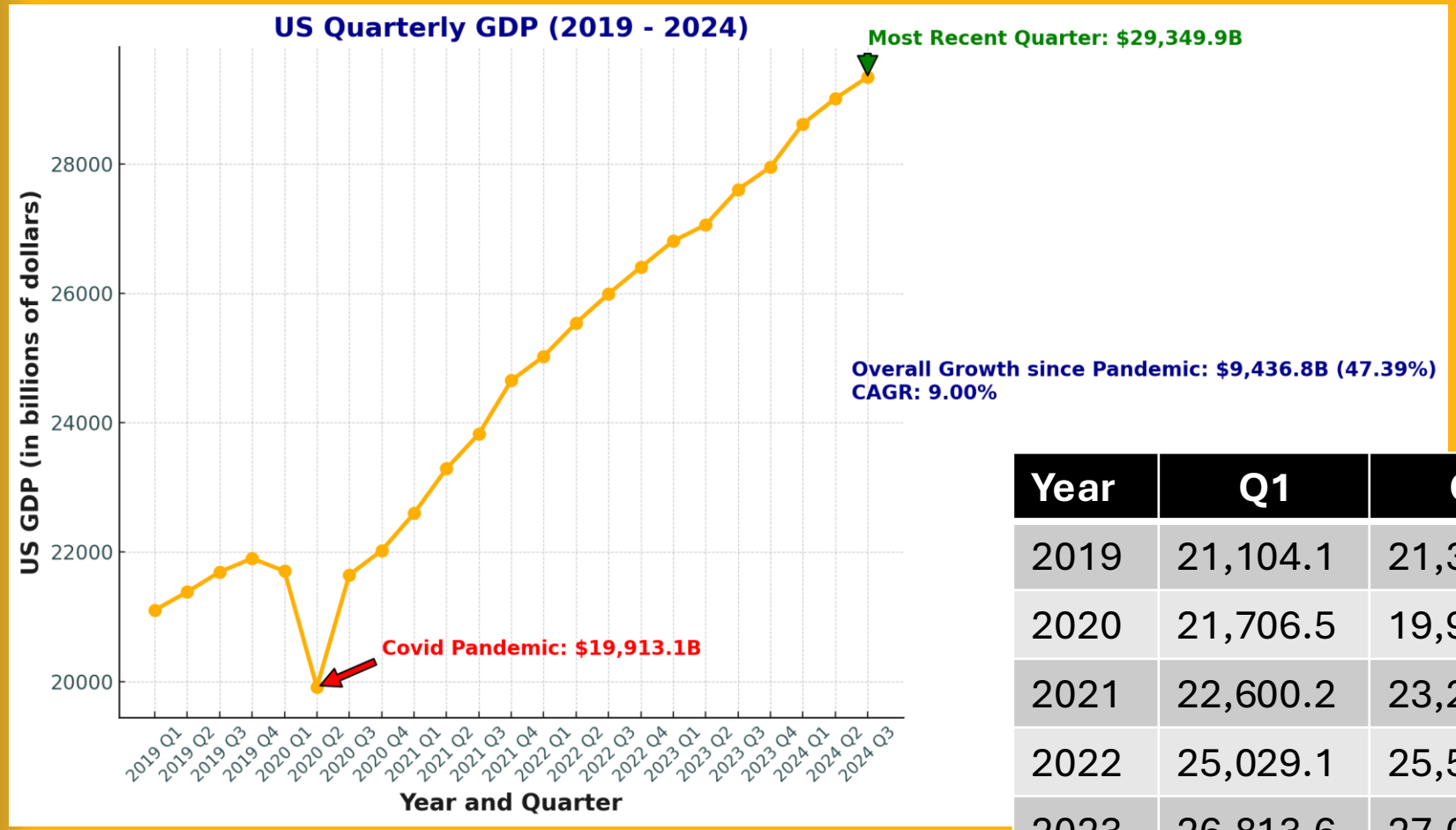
G = 5.04 Trillion

X = 3.21 Trillion

M = 4.16 Trillion

Y = 19.94 + 5.33 + 5.04 + (3.21 – 4.16) = 29.35 Trillion

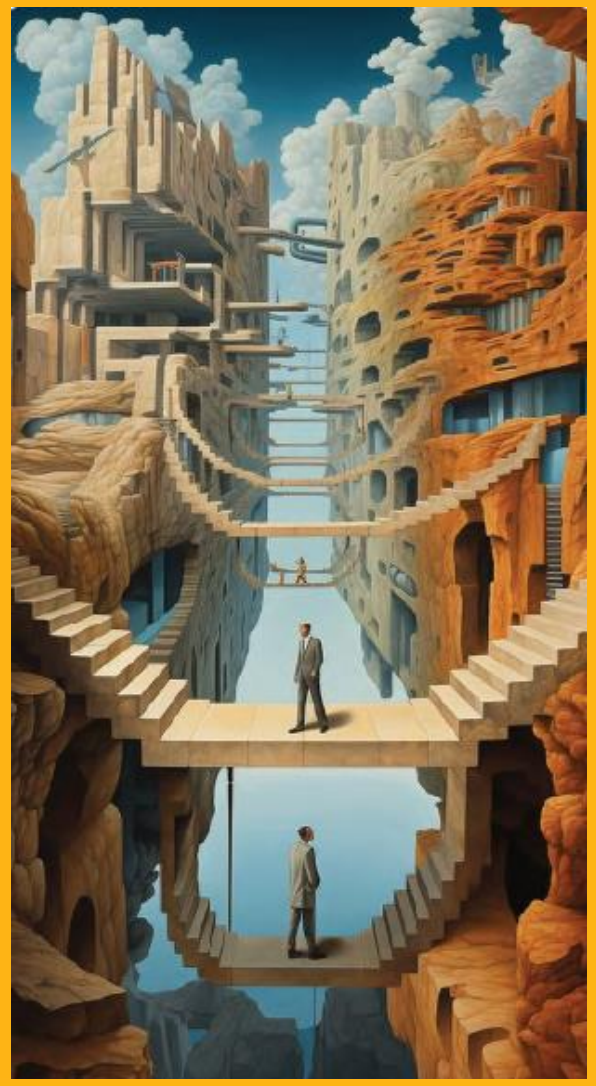
Total US GDP



Year	Q1	Q2	Q3	Q4
2019	21,104.1	21,384.8	21,694.3	21,902.4
2020	21,706.5	19,913.1	21,647.6	22,024.5
2021	22,600.2	23,292.4	23,829.0	24,654.6
2022	25,029.1	25,544.3	25,994.6	26,408.4
2023	26,813.6	27,063.0	27,610.1	27,957.0
2024	28,624.1	29,016.7	29,349.9	

State GDP by Country

Alternative Measures of GDP

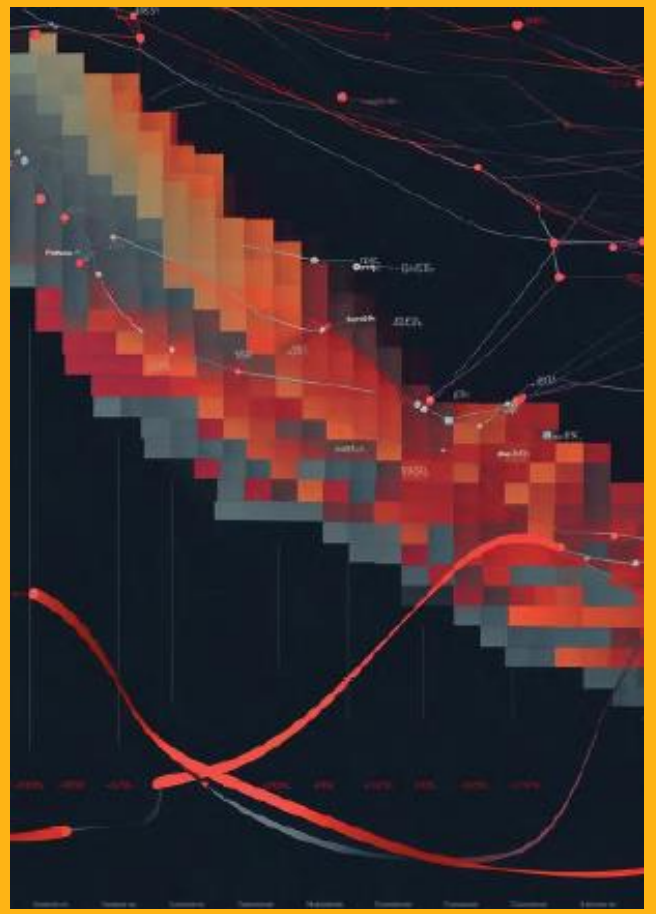


- Remember Best Buy:
  - Step 1: Raw materials are gathered, sold to parts manufacturer for $50
    Step 2: Parts are created by manufacturer and sold to Dell for $150
    Step 3: Dell assembles the computer and sells to Best Buy for $350
    Step 4: Best Buy sells computer to you for $400
- We only add the final $400 sale to GDP (do not double count!)
- Each stage of the production process adds value to the final product
  - Step 1: $50 in raw materials sold to parts manufacturer ($50 in value)
    Step 2: $50 in raw materials sold becomes $150 worth of parts ($100 in value-added)
    Step 3: $200 in parts assembled and sold for $350 ($200 in value-added)
    Step 4: $350 computer sold for $400 at central location ($50 in added-value)
- Each step adds value to the product = “Profit” of the firm
- Value-Added GDP = 50 + 100 + 200 + 50 = **$400**
- Value-Added GDP = Firm Profit

Alternative Measures of GDP

- Best Buy made $50. Who gets that $50?
  - Labor = Income
  - Rent = Landlord Income
  - Interest Payment = Bank/Lender = Income
  - Owner = Income

- Factor Payments GDP = Household Income!
- GDP = Y =
  - Total Production (Expenditure Approach)
  - Firm Profit (Value-Added Approach)
  - Household Income (Factor Payments Approach)

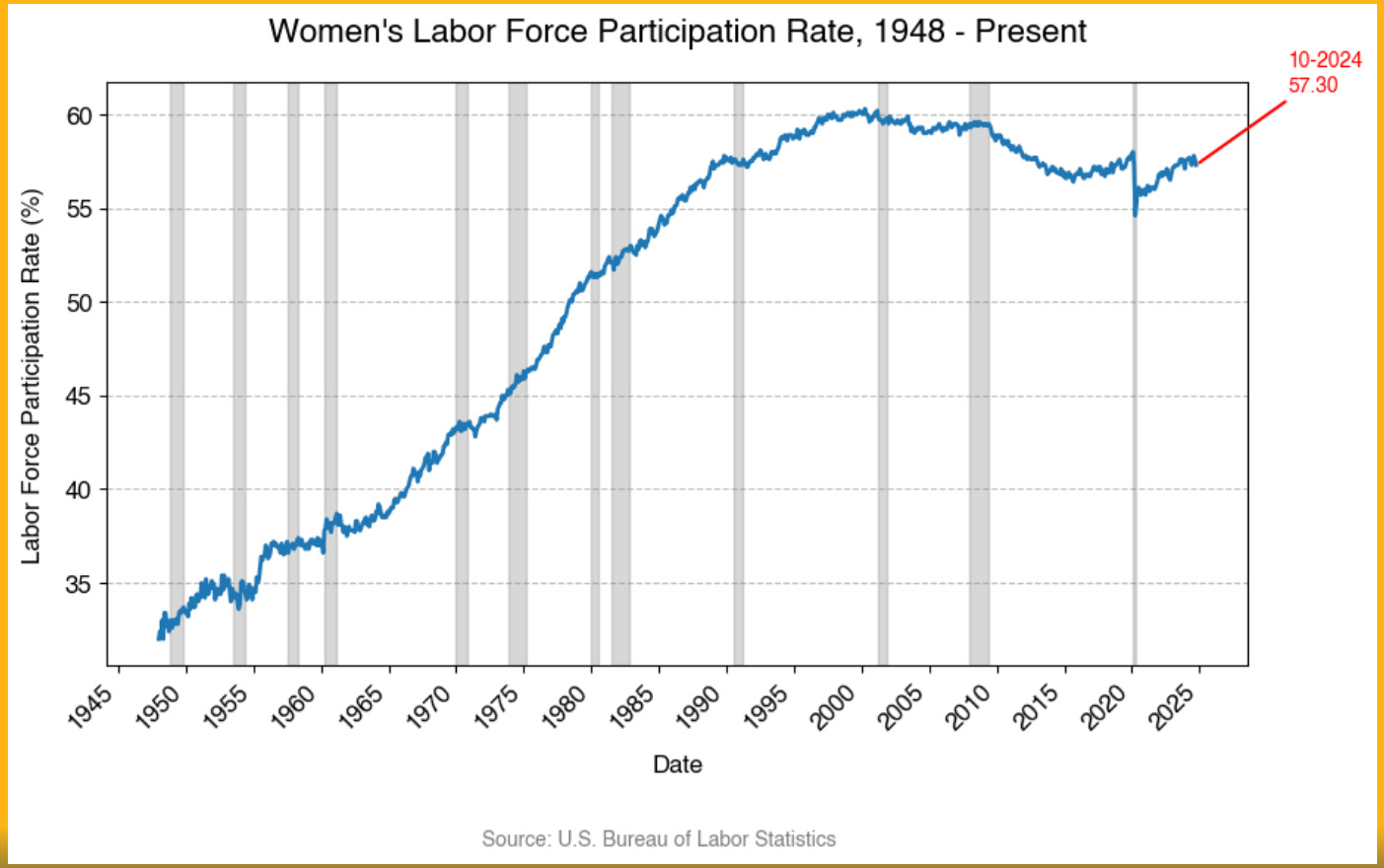


Shortcomings of GDP

Household Activities: GDP ignores vital household activities like childcare and home maintenance

Illegal Sales and Work: GDP does not capture illegal sales and work in the black market or underground economy.

Changing Labor Force Dynamics: GDP overlooks gig economy and changes in the characteristics of workers and jobs



GDP and Well Being?

GDP/Capita, Inequality, Health, Gross National Happiness (GNH)