Econ 2 - Lecture 5 - 4/14/25

Lecture Quiz 2 due today

Lecture Quiz 3 released Wednesday, due Monday, 4/21

Discussion Activity #2 this week

→ Experimental ⇒ Feedback Wanted

→ Beyond classroom/exams... "Interesting, but unrelated to exams?"

   ↳ If you want a traditional section → Review Session on

      ↳ Weeks 4, 5, 7, 9   Thursdays, 5 & 6ᴾᴹ

Maybe ∵ a midterm question from activities

Grading: 40 to 50 Lecture Quiz Question

     3 of 5 Discussion Activities

     30 Question Midterm (4/28)

     40 Question Final (6/10)

Textbook Questions DO NOT COUNT

Last Class: Nominal GDP =

     Dollar value of production in a given year

Product	2009 Q	2009 P	2016 Q	2016 P
Food	1000	1	1500	2
Housing	100	100	150	150
Movies	500	5	1000	10

Nom. GDP$_{\text{Current (CY)} \atop \text{Year}}$ = $Q_{CY} \times P_{CY}$ (Multiply and add)

Nom. GDP$_{2009}$ = 1000 × 1 + 100 × 100 + 500 · 5 = 13,500

Nom. GDP$_{2016}$ = 1500 × 2 + 150 × 150 + 1000 × 10 = 35,500

Nom GDP increased by ~200% because Q↑ ✓ and P↑ ✗

                 ↳ 62%

Separate price change from output/production change

P ⌣   Q ⌣

Real GDP: Value of total production using
prices from a base year (fixed)

Step 1: Define a base year, any year can be
a base year, cannot change after defined

Assume 2009 is base year

Step 2: Calculate current year Real GDP
using current year Q, and base year P

What is 2016 Real GDP? BY = 2009
— BY

	2009		2016	
Product	Quantity	Price	Quantity	Price
Food	1000	1	1500	2
Housing	100	100	150	150
Movies	500	5	1000	10

$$\text{Real GDP}_{2016} = Q^F_{16} \times P^F_{BY} + Q^H_{16} \cdot P^H_{BY} + Q^M_{16} \cdot P^M_{BY}$$

$$= 1500 \times 1 + 150 \times 100 + 1000 \times 5$$

$$= 21,500$$

If prices did not change between 2009 & 2016,
the 2016 Nominal GDP would have been 21,500
NOT 35,500!

Generally, BY = Base Year, CY = current year

$$\underbrace{\qquad\qquad}_{\substack{\text{Does not}\\\text{change}}}$$

Real GDP$_{CY}$ = Q$_{CY}$ × P$_{BY}$

Note if CY = BY ⇒ Real GDP$_{CY=BY}$ = Nominal GDP$_{CY}$

Separate price changes → GDP Deflator

GDP Deflator$_{CY}$ = $\dfrac{\text{Nom. GDP}_{CY}}{\text{Real GDP}_{CY}}$ × 100

$\underbrace{\qquad\qquad\qquad}$ = $\dfrac{Q_{CY} \cdot P_{CY}}{Q_{CY} \cdot P_{BY}}$ × 100

Weighted
   Price Ratio

In 2016, Nom. GDP = 35,500, Real GDP = 21,500

GDP Deflator$_{2016}$ = $\dfrac{35,500}{21,500}$ × 100 = $\underline{162}$

What does 162 mean?

GDP Deflator$_{BY=2009}$ = 100 (Base Year GDP = 100)
                                              Def

GDP Def$_{2009}$ = 100, GDP Def$_{2016}$ = 165

Inflation Rate$_{Yr1, Yr2}$ = $\dfrac{\text{GDP Def}_{Yr2} - \text{GDP Def}_{Yr1}}{\text{GDP Def}_{Yr1}}$ × 100

                        = $\dfrac{165 - 100}{100}$ × 100 = 65 %

Assume $\text{GDP Def}_{2017} = 172$, $\text{GDP Def}_{2016} = 165$

$$\text{Inf. Rate}_{2016,2017} = \frac{\text{GDP Def}_{2017} - \text{GDP Def}_{2016}}{\text{GDP Def}_{2016}} \times 100$$

$$= \frac{172 - 165}{165} \times 100 = \frac{7}{165} \times 100 = 4.24\%$$

Q2 2020: Nom. GDP = 19.935 T, R GDP = 19.056 T

Q4 2024: Nom. GDP = 29.723 T, R GDP = 23.542 T

$$\text{GDP Def}_{2020} = \frac{\text{Nom. GDP}_{20}}{\text{R. GDP}_{20}} \times 100 = \frac{19.935}{19.056} \times 100 = 104.6$$

$$\text{GDP Def}_{2024} = \frac{\text{Nom. GDP}_{24}}{\text{R. GDP}_{24}} \times 100 = \frac{29.723}{23.542} \times 100 = 126.2$$

$$\text{Inf. Rate}_{20,24} = \frac{\text{GDP Def}_{24} - \text{GDP Def}_{20}}{\text{GDP Def}_{20}} \times 100 =$$

$$\frac{126.2 - 104.6}{104.6} \times 100 = 20.65\%$$

Goal #2: Stable Prices

GDP Deflator measures price changes using components of GDP

Inflation: Prices are rising
Deflation: Prices are falling
Disinflation: Inflation is decreasing, but still positive

Stable Prices → Federal Reserve target 2%
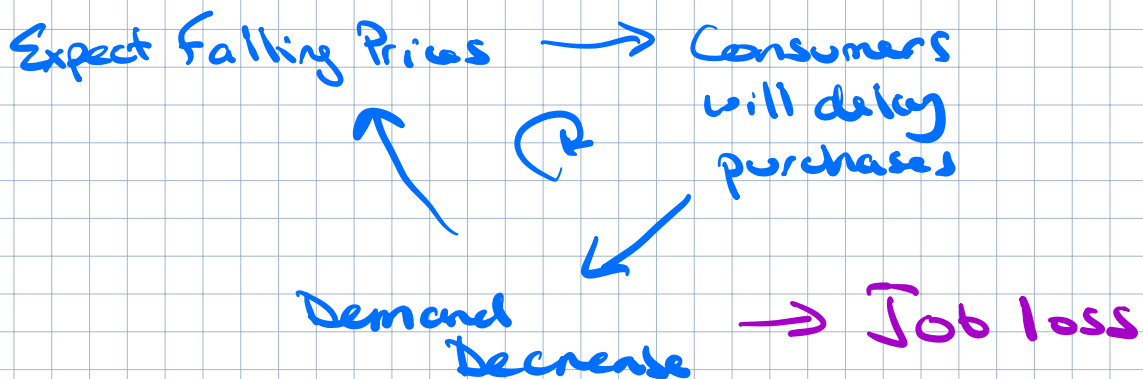 New Zealand Central Bank in late 80s
         "2% by 92"

Why not target higher inflation rate?
High inflation → high volatility (spread)

Why not target 0%?
Policymakers want to avoid a deflationary spiral

Expect Falling Prices ⟶ Consumers
                              will delay
                              purchases

Demand
Decrease   → Job loss

Benefits of inflation: Allow debt holders to
                       experience decreasing real
                       values

GDP Deflator is capturing all goods/services in GDP

Do households care about all GDP prices?

Create Consumer-Centric Price Measure

Consumer Price Index (CPI)

Only consider price of products
that households buy

Step 1: Create a basket of goods/services
that households care about

=> Food, water, cars, phones, coffee, education,
etc.

Consumption (C) portion of GDP

=> Used cars? Consumers care about used good
↓   prices
Not counted in GDP   ↘
                                add to basket

=> Imported goods (M): Wine from France sold in CA
   ↳ Price matters in CA

=> Exported Goods (X): Wine from CA sold in
   ↳ Price is not relevant to CA consumers   France?
   ↳ Do not include

Gov't Purchases / Investment => Do not include
   (G)   (I)

Step 2: Assign a weight to each good
    ↳ Represent its importance to average household budget

Lasik, in 2000, prices = $10,000/eye
    ↓   in 2019, prices = $2,000/eye ↓80%

weight? 0.33%

Food = 13.5%, Shelter = 36.7%
Education = 1.2%