Econ 2 - Lecture 14 - 5/19/25

WEEK 8! Additional Coffee Hours

Discussion Activity #4: Economic Gamification

Log in with Net ID and Passcode (Canvas)

Prize for Game Winners!

Lecture Quiz #7 Released Wednesday, 5/21

↳ Due following Wednesday, 5/28 (no class 5/26)

Practice Final Exam Posted on TopHat & Canvas Today

Final Exam: June 10th, 12:00 - 2:30 PM

↓

Wait to look at it!

This week: Debt → Monetary Policy!

Last Class: National Debt = 36.9 Trillion

Public Debt ≈ 29.5T Intragovernmental Holdings = 7.4T

US government can have a debt indefinitely if...

they can make interest payments on the debt!

	Year 1	Year 2
Nominal GDP	5000	8000
Debt	1000	2000
Interest Rate	6%	6%
Price Level	120	150

Q1: What is the minimum tax needed in year 1?

$$\text{Minimum Tax Rate} = \frac{\text{Interest Payment}}{\text{Nominal GDP}} \times 100$$

Interest Payment = Debt × Interest Rate
= 1000 × 0.06 = $60

$$\text{Tax Rate} = \frac{\$60}{\$5000} \times 100 = 1.2\%$$

Q2: What is the min. tax rate needed in year 2?

Int. Payment = $2000 × 0.06 = $120

$$\text{Tax Rate} = \frac{\$120}{\$8000} \times 100 = 1.5\%$$

Q3: How much did real GDP increase between year 1 & year 2?

$$\text{Real GDP Growth} = \frac{GDP_2 - GDP_1}{GDP_1} \times 100$$

$$\text{Real GDP?} \quad \text{Price Level} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

Year 1: $120 = \frac{5000}{R.GDP_1} \times 100$, $RGDP_1 = 4166.67$

Year 2: $150 = \frac{8000}{R.GDP_2} \times 100$, $RGDP_2 = 5333.33$

$$\text{Real GDP Growth} = \frac{5333 - 4166}{4166} \times 100 = 28\%$$

Debt Facts

#1: Public Debt #2: Rolling over Debt

#3: Relevant Debt Statistic is $\frac{\text{Debt}}{\text{GDP}}$ ratio (Debt/GDP ratio)

$$\text{Minimum Tax Rate} = \text{Interest Rate} \times \frac{\text{Debt}}{\text{Nom. GDP}} \times 100$$

$\frac{\text{Debt}}{\text{N.GDP}}$: Debt Burden of Country

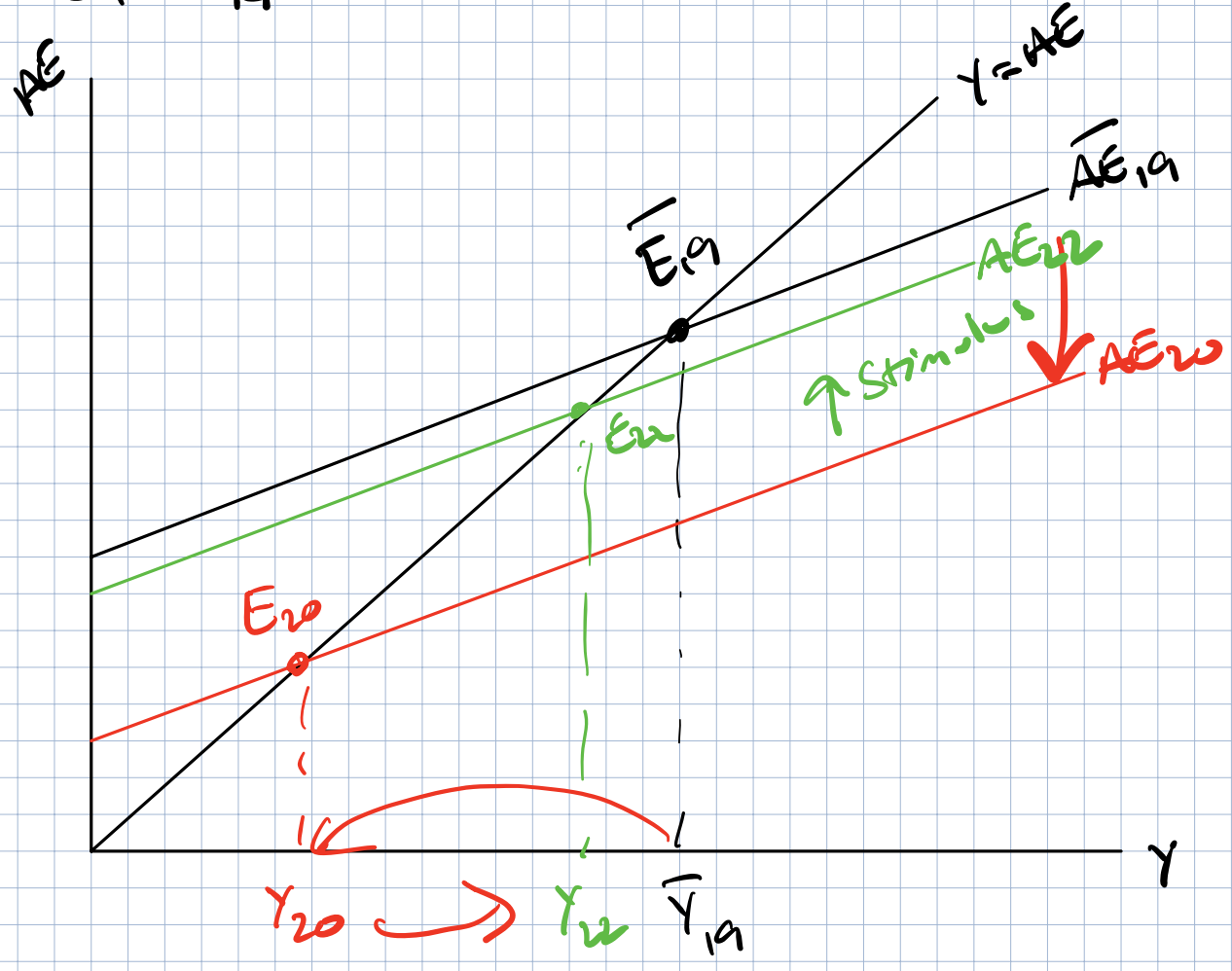
#4: Interest Payments are not considered part of Government Purchases (GDP)

Large holders of financial capital → US Bonds

~33% of debt is held by foreign investors
→ most trade in world (~70%) done in US dollars
→ most recipients of interest → low mpc

Summarize: Short-run Equilibrium + fiscal Policy + Debt

Start at $\bar{Y}_{19}$



1) Covid Pandemic ⇒ ↓AC, ↓$\bar{I}^p$ ⇒ ↓AE

2) Stimulus Package ⇒ ↑G, ↓T ⇒ ↑AE

↳ Increased debt by > $5 Trillion

By 2022, recovered to $\bar{Y}$, but debt is higher

3) Higher Min. tax rate!

Goal is to stay near $\bar{Y}$, but reduce $\frac{\text{debt}}{\text{GDP}}$!

$$\text{Minimum Tax Rate} = \frac{\text{Interest Rate} \times \text{Sum}(G - T)}{\text{Price Level} \times \text{Real GDP}} \times 100$$

Reduce Tax Rate

1) Reduce interest rate (monetary policy)

2) Reduce deficit $\Rightarrow \downarrow G \Rightarrow \downarrow AE \Rightarrow \downarrow Y$
$\Rightarrow \uparrow T \Rightarrow \downarrow AE \Rightarrow \downarrow Y$

3) Double Prices $\Rightarrow$ Increase nominal GDP
↳ costly!

4) focus on ways to increase real GDP (output)
↳ Technology can boost Y organically
↳ Solow model growth $\Rightarrow$ Econ 101

Next Part of Course: Monetary Policy

Same Goal as Before: Get Y back to $\bar{Y}$

Connect monetary policy actions to $Y = AE$ (model)

Define, model, enact, consequences

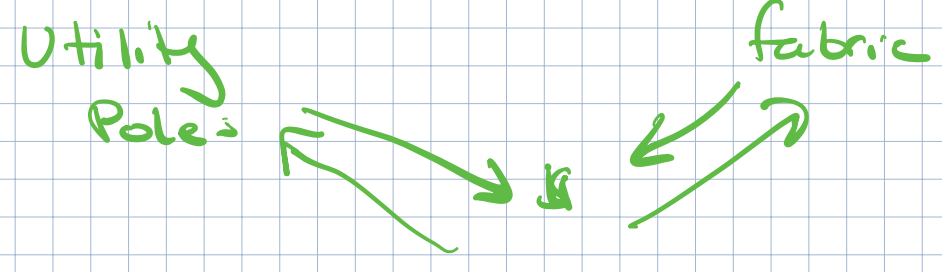
Money?

Economy w/ 5 goods → Bartering with $\frac{5 \times 4}{2}$ = 10 trading pairs

50 goods → $\frac{50 \times 49}{2} = 1{,}225$ trading pairs

Require "double coincidence of wants"

Money: "good" that is always on one side of a trade



Bartering ⇒ inefficient!

What is money?

1. Medium of Exchange: used & accepted
2. Unit of account - Measured in terms of "money units"
3. Store of value: long-lasting

Types of money

Commodity Money: Intrinsic value as a good → used as money

→ Gold, Silver, Precious Metals, Diamonds, Spices, fur, ... Real Stores

Fiat Money: only use of fiat money → buy things
↳ Backed by belief in government granting money
↳ Since 1971 → US Dollars backed by belief

Until 1971, $35 → 1 oz of gold
→ 2025, $3400 per oz

Cryptocurrency / Bitcoin:

e-currency that is not backed by any country → secured by a computer network

Categories of Money: Based on Liquidity

Liquidity: ability to use a form of money for payment

M1 Money: Most Liquid forms of money
→ Cash/coins ⇒ 2.37 Trillion
→ Checking Acct. / Debit Card ⇒ 16.32 Trillion

M1 Money = 2.37T + 16.32T = 18.68T

18.68T 3.24T

M2 Money: M1 Money + time-deposits = 21.93T

→ Savings account
↳ transfer to checking, then spend
→ money market funds

If we do not have any cash/coins
↳ High transaction costs of spending

Monetary Policy influences incentive to save