Econ 110: Introduction to Economic Theory

24th Class **3/30/11**

now so far we've ignored supply-side considerations and assumed that any change in aggregate demand translates directly into a change in output

this would be the case if the AS curve were perfectly elastic
in other words, if P = a constant
so we can say that we've been assuming that case up until now

another way to think about that case is to say that the economy is operating below capacity and until it hits capacity, all of AD can be met without any problem

but what if that is not the case? What if we hit capacity, or if we get near capacity there starts to be upward pressure on prices?

let's do three things today: discuss why exactly the AD curve slopes downward in the P-Y diagram, put prices into our model, and then do the full solution of AD and AS
(in other words solve for the equilibrium values of P, Y, and r)

consider a model where there is actual Y, potential (or full-capacity, or full-employment output) $\overline{Y}$, actual prices P, and expected prices P^e

then could have $Y = \overline{Y} + a(P - P^e)$, $a \geq 0$

note that if either $a = 0$ or $P = P^e$, then $Y = \overline{Y}$ and the economy would be at its full capacity

we need to go back to our distinction between real and nominal values to get us farther

If we think of our multi-equation model, we see that it can be boiled down into two equations, the goods market equilibrium, as shown algebraically by $Y = C + I + G$ and graphically by the 45-degree diagram, and the money market equilibrium, as shown algebraically by $M_D = M_S$ and graphically by the money market diagram.
For both of these to be in equilibrium at the same time, we can solve them for the equilibrium values of r and Y

again there isn't any P in any of this

What if we use nominal GDP instead of real GDP?

nominal GDP = PY, real GDP = Y

if P = 1 then they are the same

but if $P \neq 1$ then they are different

the way we will introduce P into our two-equation model is through the money market and the transactions demand for money

assume you need a certain amount of money to carry out transactions that is proportional to nominal income

so the transactions part of $M_D = kPY$ where k is some proportion of the value of nominal GDP

so far in our model we just assumed transactions $M_D = kY$ because P = 1 so far

now introduce it explicitly

Note that money supply can now be thought of as real money supply, so $M_S = \frac{\overline{M}}{P}$

again we didn't notice it there before because P = 1 so far

in other words, having a general inflation (e.g. prices double from 1 to 2) is the same as halving the effective money supply

so now we can bring that into the money market equilibrium as $M_D = \frac{\overline{M}}{P}$

now we will need a third equation to close the system and solve for the equilibrium values of Y, P, and r

that equation will be Aggregate Supply

three versions of AS:

$P = \overline{P}$, what we have had up until now (horizontal AS)

$Y = \overline{Y}$, known as the classical model, where the output is determined by AS, not AD (vertical AS)

and an intermediate case,

$Y = \overline{Y} + a(P - P^e)$, $a \geq 0$

now you can solve the three equations for the three unknowns

And you can write AD in the form that we have been graphing it at the beginning of this section of the course $Y = f(P)$
(solve for r as a function of P and Y in the money market equation and substitute it into the goods market equation)

now we can finally actually explain why AD is downward-sloping
If P rises, the demand for money rises and thus r rises, and thus Y falls
after all, why else would the price level matter for how much real output you want to have?

now we can solve graphically for the levels of P and Y that give us equilibrium

next class: differentiate between SR (what we just solved for) and LR equilibrium and discuss how to move from SR to LR equilibrium

Professor Joyce Jacobsen

Economics 110-01
Spring Semester 2010-11

Answers to Practice Problems from 3/28/11

I. 1) r = 2; I = 40

2) Y = 960

3) 4

II. 1) Y = 800; r = 10; I = 0

2) 3.33

III. 1) Y = 1200; r = 14; I = 100

2) 5

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Practice Problems 3/30/11

I. An economy can be characterized by the following three equations:

Goods market equilibrium: $Y = 100 + .75Y + 50 - 5r + .1Y + 100$

Money market equilibrium: $100 - 10r + .1Y = 80/P$

Aggregate supply: $P = \overline{P}$

1) If $\overline{P} = 1$, what are the equilibrium values of Y, r, and P?

2) If $\overline{P} = 2$, what are the equilibrium values of Y, r, and P?

II. Now suppose the aggregate supply equation becomes instead:

$$Y = \overline{Y}$$

1) If $\overline{Y} = 1200$, what are the equilibrium values of Y, r, and P?

2) If $\overline{Y} = 1100$, what are the equilibrium values of Y, r, and P?

III. Now suppose the aggregate supply equation becomes instead:

$$Y = \overline{Y} + 100(P - P^e)$$

1) If $\overline{Y} = 1200$ and $P^e = 1$, what are the equilibrium values of Y, r, and P?

2) If $\overline{Y} = 1200$ and $P^e = 3$, what are the equilibrium values of Y, r, and P?