Assignment 7

# An ISMP Model

Consider the following economy

## Basic Equilibrium

1. Identify the meaning of each variable.

*C is consumption, and is composed of autonomous consumption (220), and the marginal propensity to consume (0.4) and YD is disposable income (Y – T). T is taxes (80). I is investment, and is composed of autonomous investment 160, the marginal propensity to invest (0.1) and the interest sensitive portion of investment (). G is government spending. i is the risk free interest rate set by the Federal Reserve, is the expected inflation rate, and is the risk premium.*

1. Derive the IS curve.

*Deriving the IS curve involves deriving the conditions for equilibrium output while leaving the market rate of interest unspecified.*

*Lets define:*

*Where r is the real interest rate facing borrowers (the market rate of interest).*

*We begin as usual with the core condition for equilibrium:*

*Then we plug in the behavioral equations:*

*This is what we will call the IS curve. It shows us how equilibrium Y changes with r.*

1. Derive the MP curve

*The MP curve is simply the equation for the market rate of interest:*

1. Solve for equilibrium

## Comparative statics

Suppose there is a collapse in autonomous consumption, such that it falls from to .

1. Sketch an IS-MP model (don’t worry about labeling intercepts or getting the slope right - just do a rough sketch) and show this change.

r

MP

7%

IS

IS’

Y2

Y1

Y

1. Calculate the new equilibrium level and the output gap, assuming that the equilibrium in 4 was potential output.

*New equilibrium:*

*Output gap:*

1. How should the Federal Reserve respond to close the output gap? (calculate)

*The goal here is to increase GDP (Y) by 240 using interest rate policy. Every change in interest rates translates into a change of Y of: .*

*So:*

*So the Fed needs to lower its main policy rate by 6.66% (from 7% to 0.44%).*

1. Sketch the Federal Reserve’s response in a graph.

MP

7%

0.44%

MP’

IS

IS’

Y2

Y1

Y