

Econ 1, U.C. Berkeley, Fall 2010

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Crowding Out...

- $Y = C + I + G + NX$
- $Y = Y^*$
- $C = c(o) + c(y)Y$
 - $Y^* = c(o) + c(y)Y^* + I + G + NX$
 - $(1-c(y))Y^* = c(o) + I + G + NX$
 - $Y^* = (c(o) + I + G + NX)/(1-c(y))$
 - It's wise to raise taxes when you raise spending as long as you are not in a "depression economics" situation...

The Setting

- Suppose that it is December 2008 and you are Berkeley Professor Christina D. Romer, called to Chicago to audition for a cabinet-level post in Barack Obama's forthcoming administration and to advise him on the proper size of the economic stimulus program.
- Your forecast is that were 2010 to be a normal business-cycle time that the level of GDP in 2010 would be \$15.5 trillion/year. You are conducting your analysis in the income-expenditure framework where: $Y = C + I + G + NX$, $C = c(o) + c(y)Y$. You believe that $c(y) = .5$.
- You project that NX will be on trend during the recession—that imports will fall as U.S. purchasers shrink their spending, but exports will fall by about as much because there is a recession in the rest of the world as well.
- You project that there will be little change from trend in consumer confidence $c(o)$.
- You project that there will be three years—2009, 2010, and 2011—during which the economy will be depressed.
- And you project that even with U.S. Treasury and Federal Reserve support for financial markets to increase the supply of and reduce the demand for safe assets, that the scramble for safety will cause financial and non-financial businesses to shrink their business investment spending by \$375 billion/year...

Problem 1

- Suppose that your goal is to achieve balance—to keep total economy-wide spending on trend during the three years that you forecast investment spending will be depressed—what total boost to government purchases G over the next three years should Obama propose and ask his allies in congress to enact in the form of a three-year fiscal stimulus Reinvestment and Recovery Act?
- $Y = C + I + G + NX$; $C = c(o) + c(y)Y$; $c(y) = 0.5$
- $Y = c(o) + c(y)Y + I + G + NX$
- $Y = (c(o) + I + G + NX)/(1-c(y))$
- $\Delta Y = (\Delta c(o) + \Delta I + \Delta G + \Delta NX)/(1-0.5)$
- $\Delta Y = (-\$375\text{B/year} + \Delta G)/(1-0.5)$
- $\Delta Y = (-\$375\text{B/year} + \Delta G)/(0.5)$
- $\Delta Y = 2 * (-\$375\text{B/year} + \Delta G)$
- $\Delta Y = -\$750\text{B/year} + 2* \Delta G$
- $0 = -\$750\text{B/year} + 2* \Delta G$
- $\$750\text{B/year} = 2* \Delta G$
- $\$375\text{B/year} = \Delta G$
- $\Delta G = +\$375\text{B/year}$
- Policy lasts for three years—so 3 years x $+\$375\text{B/year} = \$1,125\text{B}$

Problem 2

- The President-Elect's assistant for economic policy, Harvard Professor Lawrence Summers, writes that it would be a mistake to propose a stimulus program to fill the entire spending gap—that the Recovery Act proposal should be crafted as “an insurance package against catastrophic failure.” Suppose that the President-Elect endorses Lawrence Summers's argument and asks you to plan a Reinvestme and Recovery Act to fill half the spending gap.. What is the total three-year boost to government purchases G that you propose?
- \$1,125B in extra government purchases over three years filled the entire spending gap...
- LHS wants to fill half of it...
- So the answer is \$562.5B

Problem 3

- Suppose Chief-of-Staff Rahm Emmanuel warns you that congress will take a quarter of the sum you propose and waste it on measures that are actually extremely ineffective at boosting the economy. If you seek to fulfill the charge to close half of the spending gap, how large a program do you advise the President-Elect to propose?
- Call your program X
- You want $\frac{3}{4} \times X = \$562.5B$
- $X = \frac{4}{3} \times \$562.5B$
- $X = \$750B$

Problem 4

- In the end, the Reinvestment and Recovery Act as passed contained \$600 billion of true stimulus—increases in government spending G —spread out over three years. Yet the level of GDP in 2010 is not \$15.5 trillion but \$14.6 trillion. Two things went wrong: first, state and local governments unexpectedly cut their contributions to government purchases G by an extra \$100 billion per year that you had not planned on. Second, the flight to safety and hence the reduction in business investment spending turned out to be significantly larger than you had forecast in December 2008. If you maintain your belief that your analysis of the effects of a fiscal stimulus Reinvestment and Recovery Act were accurate, what is your forecast of what the level of GDP in 2010 would have been had the Reinvestment and Recovery Act been filibustered and died in the Senate in February 2009?

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Problem 4

- \$600 billion of true stimulus spread out over three years produced a level of GDP in 2010 of \$14.6 trillion... Forecast... the level of GDP in 2010... had the Reinvestment and Recovery Act been filibustered... produced
- $\Delta Y = (\Delta c(o) + \Delta I + \Delta G + \Delta NX)/(1-0.5)$
- $\Delta Y = (\Delta G)/(0.5)$
- $\Delta Y = (-\$200B/year)/(1-0.5)$
- $\Delta Y = (-\$400B/year)$
- $Y = \$14.6T/year - \$400B/year = \$14.2T/year$

Problem 5

- The sale for \$25,000 of an automobile that cost \$20,000 to manufacture that had been produced here at home last year and carried over in inventory.
 - $I(2009) = \$20,000$
 - $C(2010) = \$25,000$
 - $I(2010) = -\$20,000$
- The sale for \$35,000 of an automobile that cost \$25,000 to manufacture newly-made at home this year.
 - $C(2010) = \$35,000$: \$25,000 durable consumer good; \$10,000 retail services
- The sale for \$45,000 of an automobile that cost \$30,000 to manufacture that was newly-made abroad this year and imported.
 - $C(2010) = \$45,000$
 - $NX(2010) = -\$30,000$
- The sale for \$25,000 of an automobile that cost \$20,000 to manufacture that was made abroad and imported last year.
 - $I(2009) = \$20,000$
 - $NX(2009) = -\$20,000$
 - $C(2010) = \$25,000$
 - $I(2010) = -\$20,000$

Problem 6

- In the monetarist framework $Y = (M/P) \cdot V$ —real GDP Y equals the money stock M divided by the price level P times the velocity of money V — and $M = \mu R$ —the money stock equals the money multiplier μ times cash-and-reserves R , solve for the equilibrium price level P :
- $P = \mu R V / Y$
- If $V = 3$, $Y = \$15$ trillion, $R = \$1$ trillion, and $\mu = 5$
 - $P = 5 \times 1 \times 3 / 15 = 1$
- If $V = 5$, $Y = \$20$ trillion, $R = \$1$ trillion, and $\mu = 5$
 - $P = 5 \times 1 \times 5 / 20 = 1.25$
- If $V = 4$, $Y = \$16$ trillion, $R = \$1.5$ trillion, and $\mu = 4$
 - $P = 4 \times 1.5 \times 4 / 16 = 1$
- Explain what decisions and actions are taken in the chain of causation that leads from a central bank decision to increase the money stock to an increase in the overall price level

Problem 6d

- Explain what decisions and actions are taken in the chain of causation that leads from a central bank decision to increase the money stock to an increase in the overall price level
 - Central bank buys bonds for cash
 - Banks have more bank reserves
 - They are more eager to accept checking account deposits
 - The total amount of liquid cash money in the economy goes up
 - Now you have an excess supply of money in the economy
 - Households and businesses increase their spending as they try to get their liquid cash money balances back to where they want them to be
 - Berkeley students stop studying for the Econ 1 midterm and flood into Urban Outfitters to buy stuff
 - Urban Outfitters raises its prices...

Problem 7

- $\pi = E(\pi) + b(u - u^*)$
- If $E(\pi) = 2\%$ per year, $\beta = \frac{1}{2}$, $u^* = 7\%$, $u = 5\%$
 - $\pi = 2\% + 0.5(5\% - 7\%) = 1\%/year$
- If $E(\pi) = 9\%$ per year, $\beta = \frac{1}{2}$, $u^* = 5\%$, $u = 7\%$
 - $\pi = 9\% + 0.5(7\% - 5\%) = 10\%/year$
- If $E(\pi) = 2\%$ per year, $\beta = \frac{1}{2}$, $u^* = 4\%$, $u = 8\%$
 - $\pi = 2\% + 0.5(8\% - 4\%) = 3\%/year$
- Explain what decisions and actions are taken that leads from a central bank decision to raise the unemployment rate to a decline in the inflation rate.

Problem 7b

- Explain what decisions and actions are taken that leads from a central bank decision to raise the unemployment rate to a decline in the inflation rate.
 - Central bank wants to reduce inflation
 - Central bank wants to do so by creating a (small) excess supply of currently produced goods and services
 - Do that by creating a (small) excess demand for money
 - Sell bonds for cash
 - Banks with smaller reserves are less eager to hold checking account deposits, and start charging higher fees
 - Checking account deposits shrink
 - Households and businesses cut back on spending
 - Businesses lower prices below what they had expected to be able to charge
 - Inflation falls
 - Expected inflation falls
 - Inflation falls further

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Problem 8

- What do you remember about the Paul Krugman article “That 1937 Feeling” which began with this passage?
 - Here’s what’s coming in economic news: The next employment report could show the economy adding jobs for the first time in two years. The next G.D.P. report is likely to show solid growth in late 2009. There will be lots of bullish commentary — and the calls we’re already hearing for an end to stimulus, for reversing the steps the government and the Federal Reserve took to prop up the economy, will grow even louder. But if those calls are heeded, we’ll be repeating the great mistake of 1937...