

LECTURE 8 NOTES

Unfortunately, we could not cover output gap, unemployment and inflation in lecture 8. My main worry is that you have some problem set 3 problems on this material.

Included here is the introduction to the original lecture 8 notes. Elaboration will be carried into lecture 9. Instead, I have included a section on problem set 3 hints at the end.

I. Introduction: Macroeconomy in Long & Short run

We are reading chapters 17-21 along with chapter 25 to start our section on Macroeconomics to get an overview of why we are going to be interested in fluctuations in short run macroeconomic performance.

Recall Alfred Marshall's definition of economics as the "study of individual and social action most connected with attainment and use of material requisites of well-being". Key in his definition is the notion of "*well-being*".

Well, macro is concerned with how an economy (considered as a whole, collectively with all its members) can improve the well-being of its members. This involves a study of macroeconomic fundamentals, those aspects of the macroeconomy which prevail over long periods of time, or in the *long run*. That is, macro considers whether and how *standards of living* have changed and are expected to change over time. Standards of living are directly (though not perfectly) related to *growth* in economic output or increases in *real GDP* per capita over time. Real GDP per capita in turn is determined importantly by *Average Labor Productivity (APL)*.

At every point in time an economy, given its resources (land, labor, capital, technology, knowledge etc), has some potential output. *Potential output* is the output that could be produced if all resources were utilized at some natural rate or near full capacity. Over time, the output of each economy goes through fluctuations, that is, over the *short run*. Some of these fluctuations may be induced by external shocks, such as war, energy crises, etc. These fluctuations in output are sometimes called the business cycle. They involve alternating occurrences of periods of growth and periods of very slow growth or even declining output. Periods of rapid growth are called *expansions* and periods of slow growth or declining output are called *recessions*. When output is below potential the economy is in a *recessionary gap* (vice versa for *expansionary gap*).

Recessionary gaps are particularly troubling because they can be associated with high rates of *unemployment* (that is, unemployment rate higher than the natural rate). Unemployment is associated with numerous costs, not the least of which is psychological costs. Expansionary gaps can be troubling if they are associated with periods of high rates of *inflation*. Inflation too is associated with numerous costs, importantly that it brings "noise" into the price system. When prices are changing very rapidly, it is difficult for economic decision makers to use price as an accurate

signal for making decisions. Okun's Law gives an approximate relationship between the size of the output gap and unemployment rate.

So, as we see from above, our study of macroeconomics will require that we measure GDP, the inflation rate and the unemployment rate. We shall point out some drawbacks or imperfections of each measure in this note.

II. Problem Set 3 Hints

GDP components

Question 1 CPI & Bias

CPI is an index that takes a fixed basket of goods and determines cost of that basket at the prevailing market price. Sometimes it is also called a cost of living index, since the goods in the basket are a representative collection of goods that the "average" consumer might purchase. It includes things like leg of Kentucky Fried Chicken! Anyhow, it is a fixed list of goods.

Hence, from year to year the prices are collected only on this fixed basket. If these goods have substitutes and the price of such a substitute falls, then the CPI won't account for rational consumer behavior which would call for buying more of the cheaper good. Recall the rational spending rule!

Therefore, not accounting for this rational behavior the CPI is biased upward, because so long as it considers the fixed list of goods it just ignores substitution toward cheaper goods and away from expensive ones all the time for every type of good.

Eg Say the goods are Odwalla lemonade at \$4 per 16 oz bottle and bagels at \$2 per bagel. Say consumption is 1000 lemonade and 500 bagels for 2003. Base year 2002 prices are \$2 for lemonade and \$1 per bagel. The 2003 CPI = $(1000 \times 4 + 500 \times 2) / (1000 \times 2 + 500 \times 1) = 5000 / 2500 = 2.00$. You can write it as 200 or 2.00. Anyhow prices have doubled.

Suppose people could drink a substitute apple juice in place of lemonade. Suppose apple juice prices are \$2 in 2003 and 2004. If the consumer could have substituted the cheaper apple juice and that was accounted for the true change in cost of living would be given by the CPI with modified basket of goods in 2004. 1000 apples and 500 bagels in 2004. $(1000 \times 2 + 500 \times 2) / (1000 \times 2 + 500 \times 1) = 3000 / 2500 = 1.2$

Question 2 APL

See text examples of calculation of APL

Question 3 Wages & Unemployment

Chapter 21

#2 straightforward review of labor as derived demand

#5 straightforward labor S&D

#8

Structural unemployment is due to unmatched skills for available jobs. This sort of unemployment takes time to come out of. May require re-training etc. Frictional unemployment is normal unemployment that happens when someone is searching for work, the search may be due to person voluntarily looking for best match to skills and requirements (like type of work, location etc) . Structural and frictional unemployment are “normal” and the rate of such unemployment constitutes the so called natural rate. Unemployment above the natural rate is associated with recessionary gaps. This extra unemployment is called cyclical unemployment.

Question 4 Recession, Output Gap, Okun’s Law

Chapter 25

#3 should be ok

#5 actual unemployment rate = u ; natural rate= u^* ; cyclical unemployment $u-u^*$

From lecture notes, output gap = potential - actual = $Y^* - Y$. $Y^* - Y > 0$ means recessionary gap & output is below potential. Okun’s law says if cyclical rises 1%, output gap rises 2%

Text example

	U	U*	Y*
1982	9.7	6.1	3433
1998	4.5	5.2	8563

1982: $u-u^* = 3.6$ cyclical $> 0 \Rightarrow$ recessionary gap (extra unemployment)

By Okun’s Law, output gap = $2 \times 3.6\% \times$ potential = 7.2% of potential. $Y^*-Y=0.072 \times Y^* = 247$. So, $Y=Y^*-247$

1998: $u - u^* = 4.5 - 5.2 = -0.7$. Cyclical unemployment negative. Expansionary gap. By Okun's Law output gap = $-1.4\% \times \text{potential}$. So, $Y^* - Y = -0.014 \times Y^* = -120$. So, $Y = Y^* + 120$.

Question 5: Unemployed and Labor Force

The working age population counted by BLS consists of individuals equal to age 16 and above. Among the working age population some are in the labor force and some are not in the labor force. There are only two possibilities.

Those in the labor force either are employed or unemployed. There are only 2 possibilities. To be counted as employed the person had to have worked either full/part-time in the past week. To be counted as unemployed, the person had to have been not employed AND have looked for a job in the past 4 weeks. That is, if person had no work in past week and was not an active seeker during the past 4 weeks, he is not considered unemployed.

Eg A 40 year old person who had no work past week and been out of a job for 6 months. Last time he looked for work was 2 months ago. He is not employed. He is not unemployed. He is not in the labor force. He is in the working age population.

In lecture 9, we will discuss imperfections in measuring unemployment rate. The above person is considered a discouraged worker in the official statistics and is accounted for separately.

Question 6: Components of GDP

For this question, you have to go back to definitions of C, I, G, NX and see how the transactions described match the components of GDP. Then, after you have determined all components that are relevant say which of C,I,G,NX is affected and how and then whether GDP rises, falls or does not change.

Eg. If I go to a lawyer to get legal counsel, this is a transaction that is counted as a consumer service expenditure. C rises & GDP increases.

Question 7: Definition (T/F/Definition/Explain)

Indexing in a contract wage or in government transfer payments, for example, requires that the change in the wage or transfer payment exactly follow the changes in some index. So, for example, if the SS payment policy says SS payments will rise each year by the CPI. Then, if the change in CPI is 5%, SS payments rise 5%. The policy might be based on a percentage change in index (that is, a formula based on the index) like increase SS payments by $\frac{1}{2}$ time change in CPI etc. One waits for index value to be known before making adjustments in payments.

Fisher Effect is the empirical observation that inflation and nominal interest rates are positively related. This holds because lenders are trying to avoid incurring costs of unexpected inflation. If the interest rate did not account for inflation, the lender could land up being paid back principal plus interest that was worth less in the event of unexpected inflation. The real interest rate accounts for inflation. Real interest rate $r = \text{nominal rate} - \text{inflation rate}$. So the real return on loaned funds is whatever the actual interest rate is (the nominal rate) less inflation. If a lender expects inflation to increase, he will adjust the nominal rate upward so as to be guaranteed a satisfactory real rate.