

UN1105 Principles of Economics

Recitation 9: Unemployment, and Income & Expenditure

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Outline

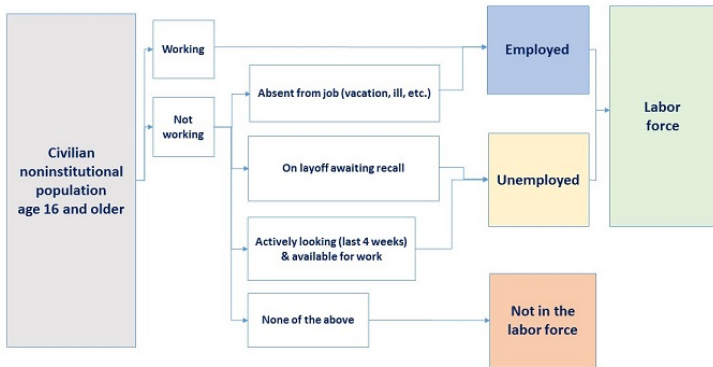
- Review of Concepts
 - Unemployment & Inflation
 - Income & Expenditure
- Analytical Questions
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- Short-answer Questions
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Review of Concepts: Unemployment & Inflation (i)

- Definitions
 - Employment: number of people currently employed, either f/t or p/t.
 - Unemployment: number of people not currently employed, but actively looking for work (searched in last four weeks).
 - Labor force: sum of employment and unemployed.
 - Not in the labor force: everyone else. Includes those that do not want to a job (students, retirees, those unable), those that are marginally attached (want a job but have not searched recently), a subset of which are discouraged workers.
 - Labor force participation rate: % of the (16yo+) population that is in the LF.
 - Unemployment rate: unemployment as a % of the LF.
- Unemployment varies with the business cycle. Observe a strong negative relationship between real GDP growth and unemployment.
- Natural rate of unemployment
 - Frictional unemp: Short-term unemp due to job search, so never 0.
 - Structural unemp: When unemployment exceeds vacancies. Reasons: LF characteristics, high minimum wages, generous unemp. benefits, labor unions, efficiency wages.
 - Actual unemp = natural rate + cyclical unemp, where the latter depends on the business cycle.

Review of Concepts: Unemployment & Inflation (ii)

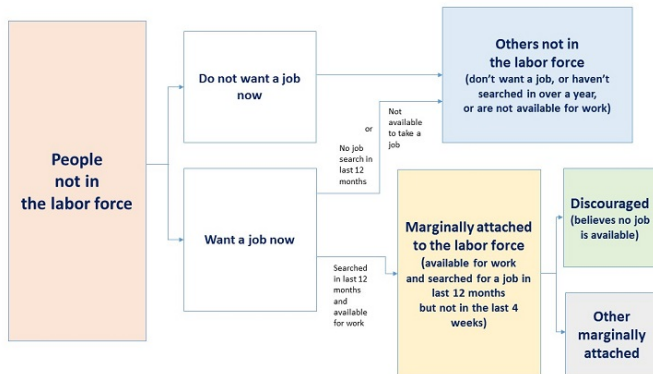
Figure 1: Labor Force, Employment and Unemployment



Source(s): <https://www.bls.gov/cps/definitions.htm>

Review of Concepts: Unemployment & Inflation (iii)

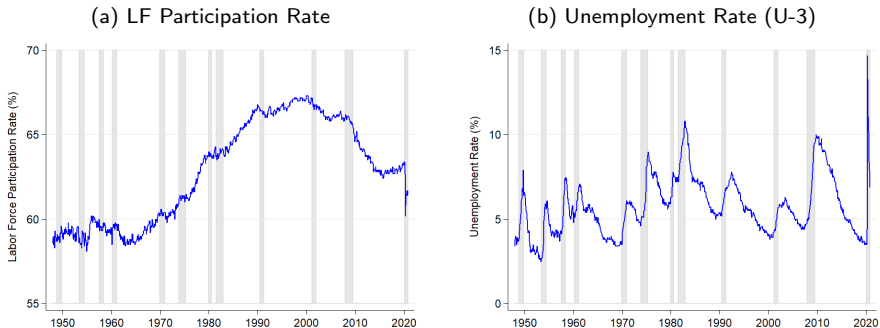
Figure 2: Not in the Labor force



Source(s): <https://www.bls.gov/cps/definitions.htm>

Review of Concepts: Unemployment & Inflation (iv)

Figure 3: LF Participation and Unemployment



Source(s): <https://fred.stlouisfed.org/series/CIVPART>;
<https://fred.stlouisfed.org/series/UNRATE>

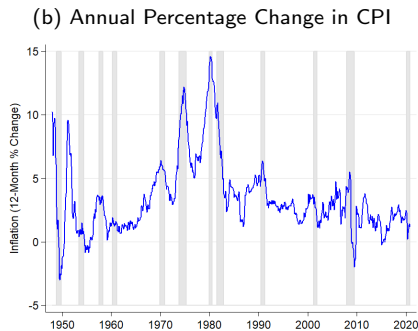
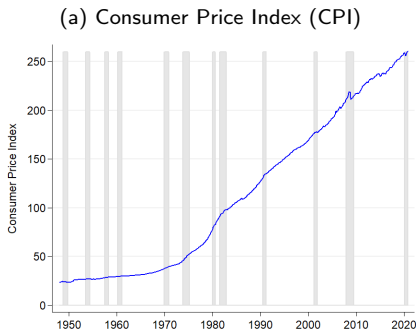
Review of Concepts: Unemployment & Inflation (v)

- Inflation

- A high level of prices is inconsequential if wages and income adjust, such that real wages and incomes are unaffected.
- But a high rate of inflation imposes costs on the economy, such as
 - Shoe-leather costs, menu costs, and unit-of-account costs.
- See Rec. 8 for discussion of price indexes and definition of inflation.
- Loan contracts are often specified in nominal (dollar) terms, but what matters is the real interest rate, which is equal to the nominal interest rate minus the inflation rate.
- Thus higher (lower) than expected levels of inflation tend to benefit borrowers (lenders).
- Deflation is also costly, as is disinflation - reductions in the rate of inflation. As such, policy makers try to promote low but stable inflation.

Review of Concepts: Unemployment & Inflation (vi)

Figure 4: Price Level and Inflation



Review of Concepts: Income & Expenditure (i)

- The multiplier
 - An autonomous change in aggregate spending starts a chain reaction in which the total change in real GDP is a multiple of the initial change.
 - The multiplier is $\frac{1}{1-MPC}$, where MPC - the Marginal Propensity to Consume - is the proportion of each additional dollar that is consumed.
- Components of Aggregate Expenditure
 - The aggregate consumption function
 - Micro: household consumption as a function of household (disposable) income.
 - Macro: assume that a similar relationship holds in aggregate.
 - Equation: $C(YD) = A + MPC \times YD$, where C is aggregate cons, A is autonomous consumption, and YD is disposable income.
 - Investment
 - Variation in investment spending tend to drive the business cycle.
 - Actual investment spending = planned investment spending + unplanned inventory investment.
 - Planned investment spending: the spending that firms intend to undertake in a given period. It depends on real interest rates (negatively), and expected future real GDP (positively).

Review of Concepts: Income & Expenditure (ii)

- Inventory investment is the value of the change in total inventories - the stock of goods held to satisfy future sales - held in the economy during a given period. Unplanned inventory investment occurs when actual sales differ from expectations.

- Income-Expenditure Equilibrium

- Planned Aggregate Expenditure:

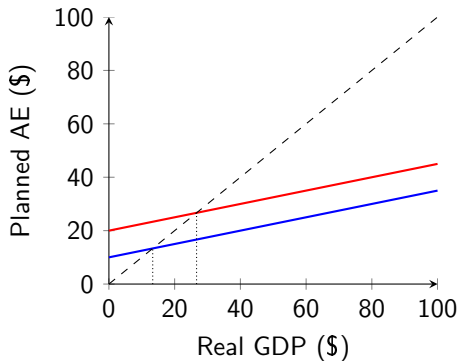
$$AE_{Planned}(YD) = C(YD) + I_{Planned} = (A + I_{Planned}) + MPC \times YD$$

- Under some assumptions, in equilibrium, planned aggregate expenditure is equal to income (real GDP). Thus unplanned inventory investment is zero in eqm.
 - When planned AE exceeds GDP, there is an unanticipated reduction in inventories, so firms increase production such that the economy moves towards the eqm. Similarly when planned AE is below GDP, inventories increase until firms cut production.
 - In eqm., $AE_{Planned}(YD^*) = YD^* \Rightarrow YD^* = \frac{1}{1-MPC}(A + I_{Planned})$
 - Following an autonomous change in planned AS, the economy moves to a new I-E eqm. The change is: $\Delta YD^* = \frac{1}{1-MPC} \Delta AAE_{Planned}$, where $AAE_{Planned}$ is planned autonomous aggregate expenditure.

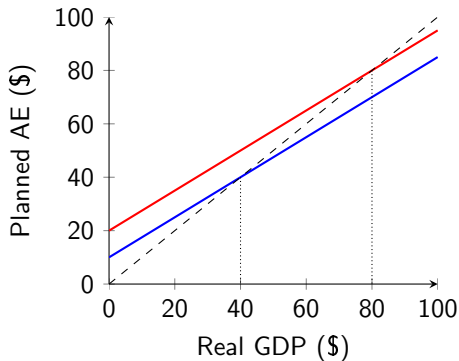
Review of Concepts, Income & Expenditure

Figure 5: Income-Expenditure Equilibrium, by MPC, with Shift in Planned AE

(a) Low MPC



(b) High MPC



Analytical Questions, Q1: K&W Problem 26.02

Assuming that the aggregate price level is constant, the interest rate is fixed, and there are no taxes and no foreign trade, what will be the change in GDP if the following events occur?

- (a) There is an autonomous increase in consumer spending of \$25 billion; the marginal propensity to consume is $2/3$.

$$\Delta GDP = \frac{1}{1 - MPC} \Delta C = \frac{1}{1 - 0.667} \$25b = 2 \times \$25b = \$75b$$

- (b) Firms reduce investment spending by \$40 billion; the marginal propensity to consume is 0.8.

$$\Delta GDP = \frac{1}{1 - MPC} \Delta I = \frac{1}{1 - 0.8} (-\$40b) = -5 \times \$40b = -\$200b$$

- (c) The government increases its purchases of military equipment by \$60 billion; the marginal propensity to consume is 0.6.

$$\Delta GDP = \frac{1}{1 - MPC} \Delta G = \frac{1}{1 - 0.6} (-\$60b) = 2.5 \times \$60b = \$150b$$

Analytical Questions, Q2: K&W Problem 26.04

From 2009 to 2014, Eastlandia experienced large fluctuations in both aggregate consumer spending and disposable income, but wealth, the interest rate, and expected future disposable income did not change. The accompanying table shows the level of aggregate consumer spending and disposable income in millions of dollars for each of these years. Use this information to answer the following questions.

Year	Disposable income (Millions \$)	Consumer spending (Millions \$)
2009	100	180
2010	350	380
2011	300	340
2012	400	420
2013	375	400
2014	500	500

Analytical Questions, Q2: K&W Problem 26.04

Use the previous table to answer the following questions.

- (a) Plot the aggregate consumption function for Eastlandia.

See next.

- (b) What is the marginal propensity to consume? What is the marginal propensity to save?

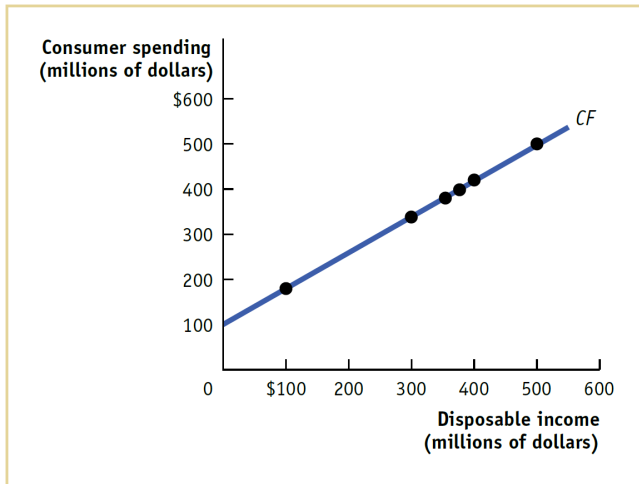
Note, $MPC = \Delta C / \Delta YD$ for any two-year period. For $2009 \rightarrow 2010$, the $MPC = \frac{380-180}{350-100} = \frac{200}{250} = 0.8$. The MPS is equal to the $1 - MPC = 1 - 0.8 = 0.2$. In this exercise, the MPC is the same in all years.

- (c) What is the aggregate consumption function?

The aggregate consumption function is of the form $C = A + MPC \times YD$. We know C , YD and $MPC = 0.8$, so we must now solve for A . Rearranging, we have $A = C - MPC \times YD$. Plugging in the data from the first row of the table, we have $A = \$180m - 0.8 \times \$100m = \$100m$. Hence, the aggregate consumption function is $C = \$100m + 0.8 \times YD$.

Analytical Questions: Q2: K&W Problem 26.04 (i)

Figure 7: Eastlandia Consumer Spending v Disposable Income, by Year



Analytical Questions, Q2: K&W Problem 26.04

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Analytical Questions, Q3: K&W Problem 26.12

The U.S. economy slowed significantly in early 2008, and policy makers were extremely concerned about growth. To boost the economy, Congress passed several relief packages that combined would deliver about \$700 billion in government spending. Assume, for the sake of argument, that this spending was in the form of payments made directly to consumers. The objective was to boost the economy by increasing the disposable income of American consumers.

- (a) Calculate the initial change in aggregate consumer spending as a consequence of this policy measure if the marginal propensity to consume (MPC) in the United States is 0.5. Then calculate the resulting change in real GDP arising from the \$700 billion in payments.

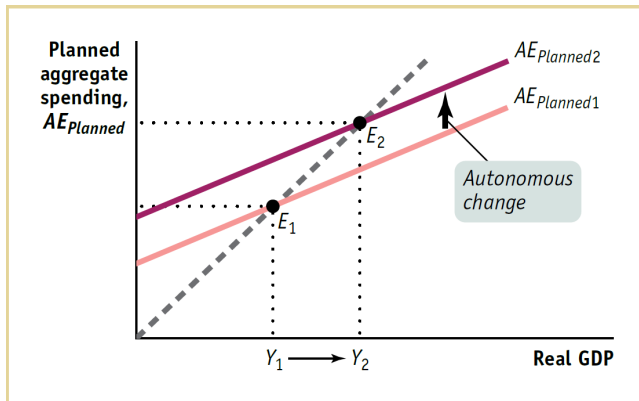
The effect of government spending on consumer spending is $\Delta C = MPC \times \Delta YD = 0.5 \times \$700b = \$350b$. We can then use the change in consumer spending along with the multiplier to calculate the resulting change in real GDP. $\Delta Y = \frac{1}{1-MPC} \times \Delta C = \frac{1}{1-0.5} \times \$350b = \$700b$.

- (b) Illustrate the effect on real GDP with the use of a graph depicting the income–expenditure equilibrium.

See next.

Analytical Questions: Q3: K&W Problem 26.12 (i)

Figure 8: Income-Expenditure Equilibrium with Autonomous Shift



Short-answer Questions, Q4: K&W Problem 26.08

Explain how each of the following actions will affect the level of planned investment spending and unplanned inventory investment. Assume the economy is initially in income–expenditure equilibrium.

- (a) The Federal Reserve raises the interest rate.

A rise in the interest rate will reduce planned investment spending. Planned aggregate spending will now be less than GDP, and inventories will accumulate. So unplanned inventory investment will be positive. The firm will cut production and the economy will transition to lower GDP.

- (b) There is a rise in the expected growth rate of real GDP.

A rise in the expected growth rate of real GDP will lead firms to increase their planned investment spending. Planned aggregate spending will now exceed GDP. Sales will exceed firms' expectations, firms will draw down inventories unexpectedly, and unplanned inventory investment will be negative. The firm will increase production and the economy will transition to higher GDP.

- (c) A sizable inflow of foreign funds into the country lowers the interest rate.

A fall in the interest rate will lead to an increase in planned investment spending. Planned aggregate spending will now exceed GDP. Sales will exceed firms' expectations, firms will draw down inventories unexpectedly, and unplanned inventory investment will be negative. The firm will increase production and the economy will transition to higher GDP.