

Name:

Key

**Instructions:** Answer all parts of all questions. You have 80 minutes to complete the exam. This exam is open note. You are welcome to use any written materials that you might find helpful. Calculators, but no other electronic devices, are allowed. Here are some things to keep in mind.

i. Explain all of your answers. Unsupported answers will receive little or no credit.

ii. On true/false questions, I only care about the quality of your explanation. Simply writing "true" or "false" will yield no credit.

iii. Avoid extensive irrelevance, this will also cost you points. Your goal should be to provide clear and concise explanations.

iv. It is more important to demonstrate that you understand the correct method. Minor math errors will result in only minor deductions.

v. All parts of all questions are worth the same amount.

vi. Many questions ask you about a deviation from something that we did in class. If you simply copy down what we did in class, I will award no credit.

$$U_6 = \frac{20 + 20 + 10}{20 + 20 + 10 + 100 + 150} = \frac{50}{500} = \frac{1}{10}$$

Here, both the # of unemployed and the labor force include both the underemployed & discouraged workers.

a. Calculate the U-6 unemployment rate.

Category	Number
Employed	100
Unemployed (actively seeking work)	20
Discouraged Workers	20
Part Time due being Students	10
Part time but wants to be full time	10
Other Adults	100

Table 1: employment Data

1. Consider the following data on employment:

d. What has happened to U-6 and the labor force participation rate in the U.S. since 2009? U-6 has fallen from a peak near 17% to under 12%. The labor force participation rate has declined and has not recovered yet.

$$LFPR = \frac{UC + Employed}{\text{Adult Population}} = \frac{120}{260}$$

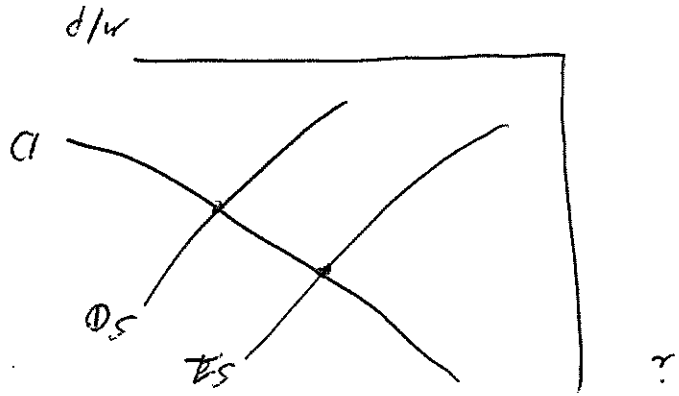
c. What is the labor force participation rate?

b. What would happen to the U-6 rate if the unemployed all became discouraged workers? Nothing. Both groups are treated the same in the U-6 calculation.

2. Assorted Questions

a. Suppose that the Federal Reserve sells \$100 million of government bonds. What will happen to interest rates, and the money supply?

Here, assuming the money multiplier is positive, increasing the monetary base increases the money supply.



$\frac{M}{P} \downarrow$

b. Why are stocks not counted in any definition of money?

Stocks are not liquid and thus make for a poor means of exchange. They do not satisfy this crucial component of the definition of money.

money base.

2008. It has grown by (less), however, than the

If has grown dramatically, more than doubling since

e. What has happened to the U.S. money supply over the past several years?

By law, the Fed is charged with stabilizing ~~the~~ prices and achieving full employment. It has interpreted the former as keeping inflation near 2% and the latter as keeping unemployment near its natural rate.

d. What is meant by the Federal Reserve's "dual mandate"?

False. M2 includes M1 and thus must be at least as large as M1. In practice, M2 is always larger.

c. True or False? The M1 money multiplier is always larger than the M2 money multiplier.

- Better human capital. More of the workforce is highly educated, also increasing its productivity.
- Better technology. This has made inputs such as capital and labor more productive.

g. Provide two major and distinct reasons why U.S. GDP is higher today than in 1900.

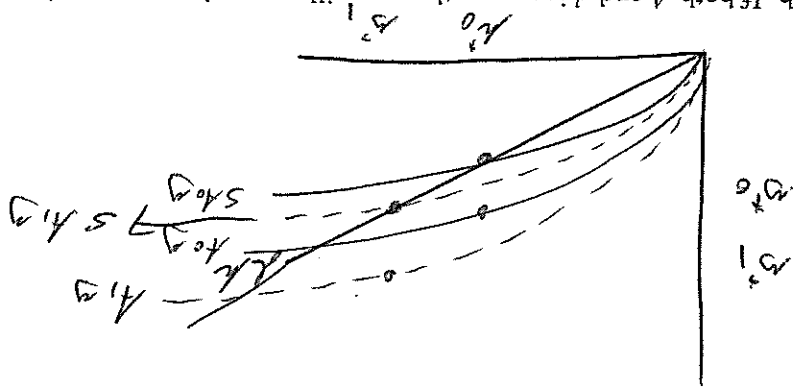
No. Growth disasters refer to cases where countries fall in forms of relative ~~income~~ <sup>income</sup>, even if ~~the~~ their ~~per~~ income grows in absolute forms they are caused by low, but usually not negative, growth rates

f. Does a growth disaster require that a country's per capita GDP decreases over time?

3. Discuss whether each of the following statements are True or False about the Solow Model. Graphs, appropriately used, are encouraged while one word answers (e.g. "False") will always get zero points. All variables referenced are per-capita.

a. Institutions that better protect property rights will increase output.

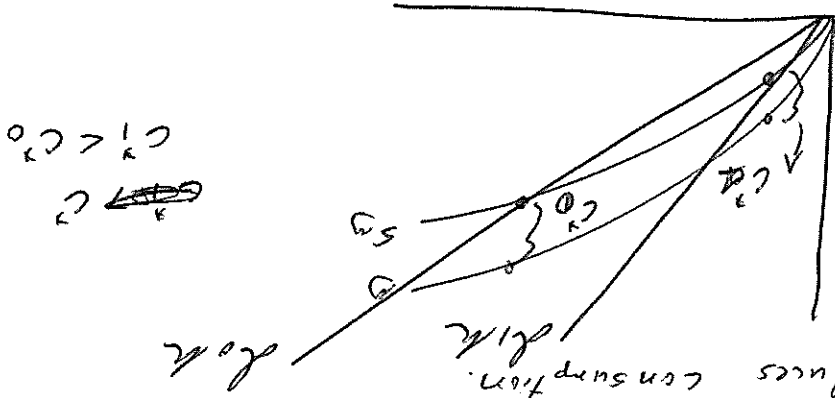
True. In the Solow Model, better institutions reflect a higher value of  $A$ .



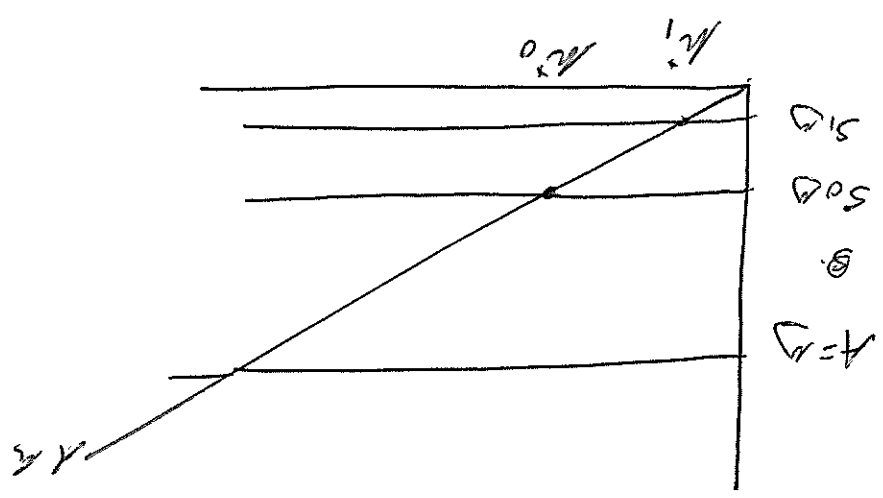
b. If both  $A$  and  $d$  increase, then so will per capita consumption.

Increasing  $A$  increases consumption (as shown in part a.)

Increasing  $d$  reduces consumption.

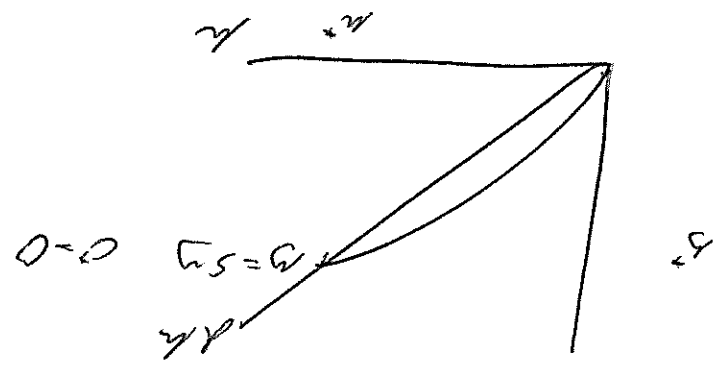


So the joint effect is ambiguous. Note we cannot say  $C$  is unchanged because there is no reason to think the two effects perfectly offset each other.



Here  $r$  is a constant and is unaffected by  $s$ .

d. If  $Y = A$ , then a decrease in the savings rate will also reduce output.



False. Suppose  $s$  increases from something between 0 and 1 to 1. Now  $SY = Y$  and  $C^* = 0$ .  $C^*$  has fallen.

c. Consumption always increases when the savings rate increases.