

**Attention:** Not all questionnaires are the same. This is questionnaire **A**. On the answer sheet, you must indicate the letter of your questionnaire with the course's number as follows: **ECO2143A**. You must answer according to **the material seen in this course**. Read all answer choices before choosing your answer. Calculator permitted. GOOD LUCK!

QUESTIONNAIRE A

I. MULTIPLE CHOICE QUESTIONS (2 points each)

NAME AND ID:

II. PROBLEM

Answer within the space provided. Your answers must be accompanied with clear explanations. Graphs and equations without explanations will not get you far.

**1.(20 points) Growth accounting** You are given the following data for Hong Kong and Singapore concerning per capita output, physical capital and human capital in 1960 and 1996. You assume that the output per capita is given by the following relation:

$$y = Ak^\alpha h^{1-\alpha},$$

where  $\alpha = 1/3$  and  $A$  denotes total factor productivity (TFP).

	Year	$y$	$k$	$h$
Hong Kong	1960	2,000	1	1
	1996	16,000	4	4
Singapore	1960	2,000	1	1
	1996	16,000	8	8

a) (7) For each country, calculate the average yearly growth rates of income per worker, physical capital and human capital stocks per worker in the 36 years between 1960 and 1996.

LET  $\hat{y}_H$  AND  $\hat{y}_S$  BE THE AVERAGE ANNUAL GROWTH RATES OF INCOME IN HONG KONG AND SINGAPORE RESPECTIVELY. OVER THE 36 YEARS, WE HAVE:

$$2000(1 + \hat{y}_H)^{36} = 16000 \Rightarrow \hat{y}_H = 5.95\%$$

$\hat{y}_S$  IS THE SAME FOR SINGAPORE. USING THE SAME MATHEMATICAL PROCEDURE FOR THE GROWTH RATES OF PHYSICAL AND HUMAN CAPITAL, WE OBTAIN:  $\hat{k}_H = \hat{h}_H = 3.93\%$  AND  $\hat{k}_S = \hat{h}_S = 5.95\%$ .

b) (7) Using growth accounting, calculate the average yearly TFP growth in each country.

GROWTH ACCOUNTING IS A METHOD THAT ALLOWS US TO CALCULATE THE GROWTH RATE OF TFP AS A *residual* AS FOLLOWS:

$$\hat{A} = \hat{y} - \alpha\hat{k} - (1 - \alpha)\hat{h}$$

HENCE, WE HAVE

$$\hat{A}_H = 5.95 - (1/3)3.93 - (2/3)3.93 = 2.02\%$$

$$\hat{A}_S = 5.95 - (1/3)5.95 - (2/3)5.95 = 0\%$$

c) (7) Compare your results for each country and discuss some implications for the future of each country.

**Comments should roughly be along these lines:**

ALL OF THE GROWTH IN SINGAPORE WAS DUE TO FACTOR ACCUMULATION WITH NO CHANGE IN PRODUCTIVITY. IN CONTRAST, IN HONG KONG, PRODUCTIVITY ACCOUNTS FOR  $2.02/5.95=34\%$  OF ALL THE GROWTH OVER THE SAME PERIOD. SO EVEN THOUGH BOTH HAVE HAD THE SAME INCOME GROWTH OVER THE PERIOD, IT IS EXPLAINED QUITE DIFFERENTLY. THIS GROWTH PATTERN FOR SINGAPORE IS WORRISOME SINCE FACTOR ACCUMULATION IS EXPECTED TO LEAD TO A REDUCTION IN THE RATE OF INCOME GROWTH DUE TO THE DIMINISHING RETURNS OF BOTH HUMAN AND PHYSICAL CAPITAL. INDEED, LONG-RUN GROWTH CAN ONLY BE SUSTAINED BY PRODUCTIVITY GROWTH. THIS IS HOW SOME ECONOMISTS EXPLAIN THE SLOW-DOWN IN GROWTH IN THE SOVIET UNION AFTER THE 1960s.

**2. (10 points) Creative Destruction** Describe the process of “creative destruction” and discuss its implications for economic growth.

**Comments should roughly be along these lines:**

*Creative destruction* DESCRIBES A SITUATION WHERE A NEWLY *created* IDEA RENDERS AN EXISTING ONE OBSOLETE, THAT IS, IT *destroys* ITS PURPOSE. IN PRACTICE, THIS MEANS THAT NEW PRODUCTS, OR CHEAPER PRODUCTION PROCESSES, ALLOWS SOME FIRMS TO DISPLACE EXISTING ONES.

WITH COMPETITION, THERE IS AN ENDLESS CYCLE OF NEW IDEAS BEING GENERATED SINCE IT ALLOWS NEW FIRMS TO REPLACE EXISTING ONES AND REAP THEIR PROFITS BY OFFERING BETTER OR CHEAPER PRODUCTS TO CONSUMERS. SOME ECONOMISTS BELIEVE THAT LONG-RUN GROWTH, BEING DRIVEN BY TECHNOLOGICAL PROGRESS, IS ESSENTIALLY EXPLAINED IN THOSE TERMS.

A POTENTIAL PROBLEM IS THAT EXISTING FIRMS AND THEIR WORKERS MAY TRY TO BLOCK THE INTRODUCTION OF NEW TECHNOLOGY IF THEY EXPECT TO LOSE FROM IT. IF GOVERNMENTS YIELD TO SUCH PRESSURE, ECONOMIC GROWTH MAY GRIND TO A HALT. THE POTENTIAL LOSS FOR CONSUMERS MAY BE ENORMOUS. AN IMPORTANT ROLE FOR THE COMPETITION BUREAU OF CANADA IS TO KEEP A WATCH ON FIRMS TRYING TO REDUCE COMPETITION THIS WAY.

**3. (15 points) Expectations and government “dogmas”**

(a) (8) Gaudi B. Eggertsson published an article in 2008 in the *American Economic Review* entitled “Great Expectations and the End of the Depression”. The author explains that presidents Hoover and Roosevelt had very different “dogmas” regarding the economic policies required to end the depression of the 1930s. Compare briefly their different dogmas.

**Comments should be quite close to the following points:**

ACCORDING TO EGGERTSSON, PRESIDENT HOOVER’S DOGMAS CAN BE SUMMARIZED BY THE FOLLOWING THREE POINTS: (I) KEEP THE GOLD STANDARD (KEEP INFLATION LOW); (II) BALANCE THE GOVERNMENT’S BUDGET (NO GOVERNMENT DEBT); (III) KEEP THE GOVERNMENT SMALL (NO PUBLIC PROJECTS). HOOVER WAS DETERMINED TO BALANCE THE BUDGET. HE INCREASED TAX RATES IN THE MIDST OF THE 1930S DEPRESSION IN ORDER TO MAKE UP FOR LOST REVENUES FROM LOWER AGGREGATE OUTPUT.

PRESIDENT ROOSEVELT’S DOGMAS WERE ESSENTIALLY THE OPPOSITE: (I) HE ABOLISHED THE GOLD STANDARD IN ORDER TO CREATE EXPECTATIONS OF INFLATION; (II) HE PURPOSEFULLY INCREASED THE GOVERNMENT DEFICIT IN ORDER TO INCREASE GOVERNMENT CONSUMPTION AND INVESTMENT; (III) HE CONSEQUENTLY MADE THE GOVERNMENT BIGGER.

(b) (8) Both presidents ran important deficits during their terms in office. According to Eggertsson, explain how differences in the presidents’ dogmas made it such that the deficit under Hoover did not help stimulate the economy while that of Roosevelt did.

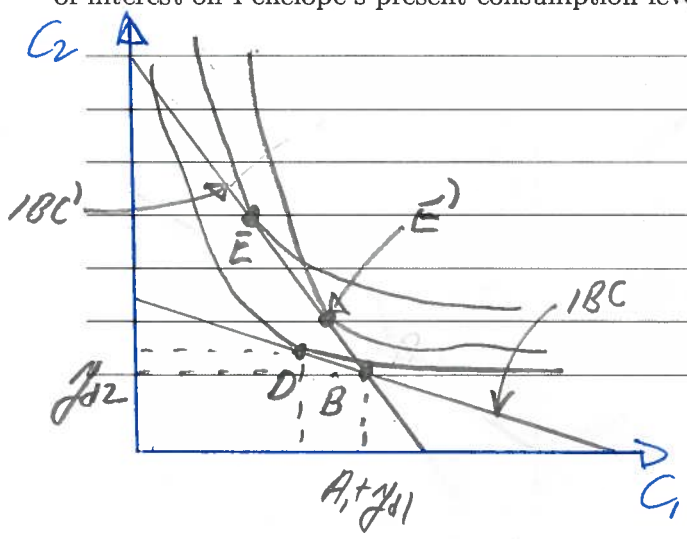
**Comments should be quite close to the following points:**

ACCORDING TO EGGERTSSON, PRESIDENT HOOVER’S GOVERNMENT DEFICITS WERE NOT VOLUNTARY. HE RAN DEFICITS BECAUSE AGGREGATE INCOMES WERE DECREASING DURING THE RECESSION, NOT BECAUSE OF INCREASED GOVERNMENT EXPENDITURES. THIS MEANS THAT UNDER HOOVER, PEOPLE DID NOT EXPECT GOVERNMENT EXPENDITURES TO INCREASE. PRESIDENT ROOSEVELT DID THE OPPOSITE BY ANNOUNCING THAT HE WOULD INCREASE THE GOVERNMENT’S DEFICIT THROUGH INCREASED GOVERNMENT EXPENDITURES. THIS SUGGESTS THAT PEOPLE WERE EXPECTING LARGER FUTURE GOVERNMENT EXPENDITURES AND AS A CONSEQUENCE, MAY HAVE CONTRIBUTED TO INCREASED INVESTMENTS TODAY IN ANTICIPATION OF BETTER PROFIT OPPORTUNITIES.

4. (15 points) Interest rates and current consumption

Suppose that Penelope lives for two periods only,  $t \in \{1, 2\}$ .  $y_{dt}$  is her disposable income at period  $t$  and  $A_1$  is her initial (non-human) wealth at period 1. She can save or borrow at interest rate  $r$  and cannot leave a bequest or unpaid debt after period 2.  $c_t$  is her consumption level at period  $t$  and  $s_1$  represents her savings level in period 1. Penelope's preferences are such that she exhibits convex indifference curves between consumption levels in the two periods.

(a) (8) With the help of a graphical analysis, describe the possible effects an increase in the rate of interest on Penelope's present consumption level.



*TWO OF*  
 Present and future consumption levels are given by  
 $C_1 = A_1 + y_{d1} - s_1$   
 $C_2 = (1+r)s_1 + y_{d2}$   
 This yields the inter-temporal budget constraint (IBC),  
 $C_2 = (1+r)(A_1 + y_{d1} - C_1) + y_{d2}$

Hence, the IBC has a slope of  $-(1+r)$  and so becomes steeper with the rate of interest, say from IBC to IBC'. Point B denotes a zero savings rate. The increase in the rate of interest can lead to either a lower  $C_1$  (from point D to point E) or a higher  $C_1$  (from point D to E'). If the substitution effect is stronger,  $C_1$  will decrease. If the revenue effect is stronger,  $C_1$  will increase.

(8) Based on your previous answer, discuss how an expansionary monetary policy (i.e., increased money supply through lower interest rates) by the central bank is believed to affect present consumption levels. Why are some economists wary of the use of an expansionary monetary policy to stimulate the economy?

In practice, it is believed that the substitution effect is stronger. Hence, a lower interest rate will increase present consumption. A central bank can therefore increase the money supply in order to stimulate the economy.

Some economists are cautious about such a policy because an increased money supply may lead to higher inflation that may be difficult to control in the future.