



FIRST MID-TERM EXAMINATION

Professor: David Gray

Student Name: KEY

Winter 2018

Student #:

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You may not consult with any written documents whatsoever (including other students' papers), and no conversation is permitted while the examination is in progress. Please remove all hats. The use of smart-phones and programmable calculators is strictly forbidden. Turn off all cellular telephones. There are a total of 50 points.

1. Respond to all of the following 3 questions (3 points). I mentioned the answers to all of them in class a number of times.

- a) What is the approximate rate of real GDP growth in Canada that would be desirable and realistic? I mentioned this in class a number of times.

3 % - accept any response between 2 and 4 %

- b) What is the approximate current level of nominal, current dollar GDP in Canada?

2.14 trillion \$ - that is \$ 2,140,000,000,000 – accept 1.5 to 2.5 trillion \$ (will not accept billions, as that figure is off by a factor of 1,000)

- c) What is the approximate annual rate of price inflation?

1.9 % - accept any response between 1 and 3 %

2. In the exercise on national accounting, the estimated value of GDP using the expenditure approach is equal, in theory, to the value produced by using the factor incomes approach. Why is this the case? (3 points)

Because every transaction has a dual identity as expenditure and as income. \$ 1 spent by one economic agent represents \$ 1 of income earned by a set of other agents, and vice versa. It must therefore be the case that after we sum up all of the expenditures and all of the incomes, aggregate income = aggregate expenditure. Only the bottom line is the same, however. The two classification schemes are totally different by design.

3. This problem is very similar to the one that appeared on the examination that is posted on the courseweb, but it is not the same. (10 points)

Consider the following fictional transactions that took place in the economy of the land of make believe last year. The figures are denominated in billions of \$.

| | |
|--|-----|
| Wages, salaries, and other labour income | 824 |
| Consumption expenditure | 891 |
| Profits of corporations and government enterprises | 231 |
| gross investment expenditure | 309 |
| government purchases | 375 |
| income from farms and unincorporated businesses | 93 |
| net exports | 25 |
| saving | 550 |
| depreciation | 208 |
| interest and miscellaneous investment income | 81 |
| government transfer payments | 333 |
| indirect taxes | 163 |

a) Calculate the GDP level using the expenditure approach, and explain your work. It is insufficient to write only numbers.

Consumption spending + investment spending + government purchases of goods and services + net exports = C + I + G + NX = 891 + 309 + 375 + 25 = 1,600

(This question was a total gimme)

b) Calculate the GDP level using the factor incomes approach, and explain your work. It is insufficient to write only numbers.

Factor incomes + indirect taxes + depreciation = (824 + 231 + 93 + 81) + 163 + 208 = 1,600

The quantities in parentheses are the components of factor incomes)

c) What is the third approach to national accounting called? There is no-need to describe it.

The value-added approach

4. (16 points) Identify and give the significance of the following four points. You must furnish explanations as to how the topic fits into what we have studied. In other words, why did I bother to bring it up at all? Usually three sentences will suffice.

a) human capital

See page 267 of the textbook. It reflects the skills, knowledge, training, education, ability, and experience embodied in the labour force. The higher the stock of human capital, the higher the overall capital stock of the economy, and the higher the productivity levels.

b) unmeasured quality change in the context of the CPI (consumer price index)

see page 242 in the textbook. An observed increase in the price for a good or a service could reflect an improvement in quality, a pure price increase, or a combination of both. We only want to capture the latter element. In order to measure the rate of pure price increases, one has to keep quality constant. Unless we adjust for that factor, the CPI will tend to overstate the true inflation rate. Some of you might have confused this point with substitution bias in the context of the CPI.

- c) economic models (what is their purpose?)

See page 13 of the textbook. They are designed to show the workings of the economy. They typically consist of equations that link one economic variable to another economic variable or to a set of them. As such, they indicate how variable X is tied to variable Y. They often serve to make predictions: if variable X changes, how does variable Y change, if at all? Many students defined this term by including the word 'model' in their definition. When one defines a term, one cannot use that same word in the definition.

- d) the convergence theory (also known as the catch-up effect)

See page 270 of the textbook. Countries that commence with a low state of economic development can achieve high rates of economic growth as they accumulate capital. Countries like Canada that are already developed tend to grow more slowly. This allows the relatively poor countries to partially catch-up, or converge, with the richer countries as far as GDP per capita is concerned.

5. (4 points) Suppose that the base year for the consumer price index (CPI) is 2002. The value of this price index in 2008 was 114.1. I obtained these figures right out of the textbook.

- a) How does one interpret the value in 2008?

A basket of goods and services that costed \$ 100 to buy in 2002 costed \$ 114.10 to buy in 2008 for a cumulative increase of 14.1 % over that 6-year period.

- b) If the rate of inflation from between 2007 and 2008 was + 2.33 %, what was the level of the price index in 2007? Show your work.

$$[(CPI \text{ in } 2008 / CPI \text{ in } 2007) - 1] * 100 = 2.33$$

$$[(114.1 / X) - 1] * 100 = 2.33 \text{ solve for } X$$

$$[(114.1 / X) - 1] = 2.33 / 100$$

$$114.1 / X = 1.0233$$

$$X = 111.5$$

A shortcut is to divide 114.1 by 1.0233

6. (8 points) Consider the following historical data on GDP. You must show your work in order to receive any credit. The base year for the deflator is 2002.

| year | Nominal GDP (in billions) | real GDP (in billions) | GDP deflator |
|------|---------------------------|------------------------|--------------|
| 1980 | 314.4 | 625.0 | blank |
| 1985 | 485.7 | 716.4 | 67.8 |

- a) What was the value of the deflator for the year 1980? I have left it blank.

Real GDP = nominal GDP / deflator * 1000

$$(\text{def}) * 625 = 31,440 \text{ so deflator} = 50.3$$

- b) What was the growth rate of the GDP deflator between 1985 and 2002? How do we interpret this figure in economic terms?

$$\% \text{ change in the deflator} = [(\text{deflator in 2002} / \text{deflator in 1985}) - 1] * 100 = (100 / 67.8 - 1) * 100 = \% 47.5$$

- c) What was the growth rate of real GDP between 1980 and 1985? Explain what this means in economic terms.

$$\% \text{ change in real GDP} = [(\text{value in 1985} / \text{value in 1980}) - 1] * 100 = (716.4 / 625 - 1) * 100 = \% 14.6$$

The value of economic activity rose by 14.6 % over this period.

- d) The growth rate of nominal GDP is higher than the growth rate of real GDP. Explain why this is the case. No calculation is necessary for this part.

It was not necessary to calculate the rate of growth in nominal GDP over this period. We can apply the identity that the % change in real GDP = % change in nominal GDP minus the inflation rate. Note that since positive inflation did occur over this period, it must be the case that % change in nominal GDP > % change in real GDP. In this case, % change in nominal GDP = (about) 47.5 % + 14.6 %.

7. (3 points) The production process involves a high level of non-market activity. What repercussions does this have for the use of the official GDP accounts (produced by Statistics Canada) as an indicator of economic welfare? Does it cause an overstatement or an understatement, and why?

I promised you that this question – or one much like it - would be on the examination. See pages 220-221. The omission of non-market activity from the national accounts causes the national accounts to understate the true level of economic welfare. You had to define non-market activity, which is productive activity that is not traded on the market, and thus has no dollar value attached to it. Non-market activity is typically legal production that promotes human well-being, such as volunteer work of household production, but it is not traded in markets.

8. (10 points) Consider the following figures that I obtained from the textbook. These are actual data referring to June 2008 and June 2009.

- The labour force participation rate (LFPR) in June 2008 was 67.4 %
- The total number of unemployed workers in June 2008 was about 1.1 million
- The total number of employed workers in June 2008 was 17 million

- a) Calculate the size of the labour force. Show your work. (Easy)

$$\text{Labour force} = \text{employment} + \text{unemployment} = 1.1 \text{ million} + 17 \text{ million} = 18.1 \text{ million}$$

- b) Calculate the unemployment rate. Show your work. (Pretty Easy)

$$\text{Unemployment rate} = \text{unemployment} / \text{labour force} = 1.1 / 18.1 = 6.0 \% \text{ (which coincidentally is almost exactly equal to the current rate of unemployment).}$$

- c) Calculate the size of the working-age population. Show your work.

$$\text{The labour force participation rate} = \text{labour force} / \text{working-age population}$$

$$0.674 = 18.1 / \text{working-age population, and so working-age population} = 26.9 \text{ million}$$

d) Calculate the employment-to-population ratio. Show your work.

Employment-to-working-age population ratio = $17 / 26.9 = 63.1 \%$

e) Out of the three indicators of labour market performance, Professor Gray expressed a preference for one of them. I might add that the textbook authors agree with him. Which one was it, and why?

The employment to population ratio, as it is an indicator of the overall availability of jobs. I said in class that it is a proxy for labour market demand conditions, but you did not have to mention that.

9. (3 points) Currently, the official unemployment rate in the USA is 4.1 %, while the corresponding figure for Canada is 5.7 %. Nevertheless, I argued in class that basing the relative labour market performances based only on a comparison of those two figures yield a misleading conclusion that the aggregate labour market in Canada is weaker. I argued the contrary. How did I explain my case that the labour market in Canada is actually stronger?

This is related to question # 8, part e). The major discrepancy lies in the way in which jobless people are counted. In Canada, a significant segment of jobless workers are classified as being unemployed (because they are deemed to be actively seeking work, but their counterparts in the USA are classified as being not in the labour force (because they are not deemed to be actively seeking work). As a direct result, the labour force participation rate in the USA is significantly lower than it is in Canada. The same is true for the employment rate.