

**UNIVERSITY OF OTTAWA
DEPARTMENT OF ECONOMICS
ECO 1102 C
INTRODUCTION TO MACROECONOMICS**

MID-TERM EXAMINATION

Professor: David Gray
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Student Name: _____

Student # _____

You may not consult with any written documents whatsoever, and no conversation is permitted while the examination is in progress. Please remove all hats. The use of palm pilots and programmable calculators is strictly forbidden. Turn off all cellular telephones.

As promised, this test is drawn very heavily from my lecture slides. Most of the material that you will see has been discussed at length in class. There are no tricks involved anywhere. You should move at a fairly fast pace. Do not get bogged down on any particular question. There are a total of 80 points that are supposed to be allocated at a rate of one per minute. Budget your time accordingly.

1. (6 points) Respond to any three of the following four questions. Your answers do not have to be exactly right in order to receive credit. I will accept a range.

I CONSIDER THIS QUESTION TO BE A GIVEAWAY, AS YOU HAD AHEAD WARNING THAT THEY WOULD APPEAR ON THE EXAM.

a) What is the approximate current rate of unemployment in Canada?

8.3 %

b) What was the approximate rate of real GDP growth in Canada (in percentage terms) on an annual basis during the year of 2009?

- 2.5 % (RELATIVE TO 2008)

c) What is the approximate current level of nominal, current dollar GDP in Canada? In other words, what is the approximate size of this economy?

\$ 1,600,000,000,000 (1.6 TRILLION \$)

d) What is the approximate rate of price inflation at an annual rate based on the CPI?

1.3 %

2. (18 points) Identify and give the significance of six of the following eight points. You can thus skip two of them, but 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. DO ONLY SIX, AND CLEARLY INDICATE WHICH TWO YOU ARE OMITTING.

I WENT OVER ALL OF THESE IN CLASS PRETTY THOROUGHLY

a) Briefly characterize the macroeconomic performance of the USA and Canada during the 1950s and the 1960s.

THESE WERE THE 'GOOD OLD DAYS' OF LOW UNEMPLOYMENT, LOW INFLATION, AND RAPID ECONOMIC GROWTH. THERE WERE ALMOST 30 CONSECUTIVE YEARS OF EXCELLENT ECONOMIC PERFORMANCE. ALMOST ALL CITIZENS EXPERIENCED RISING LIVING STANDARDS. IT WAS THOUGHT ERRONEOUSLY THAT THESE GOOD TIMES WOULD LAST FOREVER.

b) catch-up effect (hint: context is long-term economic growth)

SEE PAGE 148 OF THE TEXTBOOK. THIS REFERS TO THE PROCESS BY WHICH LESSER-DEVELOPED COUNTRIES EXHIBIT RAPID GROWTH IN REAL GDP, IN LARGE PART BECAUSE THEY ARE STARTING FROM A LOW BASE OF REAL GDP AND A LOW STOCK OF CAPITAL. THEY HAVE ESSENTIALLY NOWHERE TO GO BUT UP, LARGELY THROUGH THE PROCESS OF CAPITAL ACCUMULATION. OVER A LONG PERIOD OF TIME, THESE COUNTRIES CAN 'CATCH UP' WITH RICHER COUNTRIES AS FAR AS GDP LEVELS AND LIVING STANDARDS ARE CONCERNED. THE POORER COUNTRIES GROW FASTER THAN THE RICHER COUNTRIES, IN PART BECAUSE THEY HAVE NOT EXPERIENCED DIMINISHING RETURNS TO CAPITAL YET UNTIL THEY HAVE REACHED A MATURE STAGE OF DEVELOPMENT.

c) core inflation

SEE PAGE 125 OF THE TEXTBOOK. IT IS THE OVERALL CONSUMER PRICE INDEX STRIPPED OF THE PRICES OF THOSE GOODS WHOSE PRICES ARE THE MOST VOLATILE. AS SUCH, IT IS THOUGHT TO BE A BETTER INDICATOR OF LONGER-RUN TRENDS IN CONSUMER PRICES.

d) substitution bias in the context of the CPI (consumer price index)

SEE PAGE 125 OF THE TEXTBOOK. WHEN THE RELATIVE PRICE OF AN ITEM GOES UP, CONSUMERS WILL ALTER THEIR BUYING HABITS, SUBSTITUTING AWAY FROM THAT GOOD TOWARD THE GOOD WHOSE PRICE HAS FALLEN IN RELATIVE TERMS. THEY WILL BUY MORE OF THE GOOD THAT HAS BECOME RELATIVELY CHEAPER AND VICE VERSA. AFTER THESE SUBSTITUTIONS IN THE MARKET BASKET HAVE BEEN MADE, THE RATE OF INFLATION IS LOWER THAN WHAT WOULD OTHERWISE BE THE CASE. CONSUMERS HAVE

ESSENTIALLY HEDGED THEIR BETS – OR PROTECTED THEMSELVES TO A CERTAIN EXTENT – BY REACTING TO CHANGES IN RELATIVE PRICES.

e) real GDP level versus the % change in real GDP realized over a time period

REAL GDP IS NOMINAL GDP ADJUSTED FOR INFLATION. REAL GDP PER CAPITA IS USED TO COMPARE LIVING STANDARDS ACROSS COUNTRIES OR OVER TIME WITHIN A COUNTRY. THE % CHANGE IN REAL GDP IS A MEASURE OF ECONOMIC GROWTH – AT WHICH RATE IS AGGREGATE OUTPUT GROWING (OR SHRINKING)?

f) What are the three primary markets that comprise the macro-economy?

INPUT MARKETS (ALSO KNOWN AS FACTOR MARKETS OR RESOURCE MARKETS)

OUTPUT MARKETS (ALSO KNOWN AS GOODS AND SERVICES MARKETS)
MONEY MARKETS

g) mutual fund

SEE PAGE 168 OF THE TEXTBOOK. IT IS A PORTFOLIO OF FINANCIAL BONDS, SECURITIES, STOCKS, AND INSTRUMENTS THAT IS BLENDED INTO ONE ENTITY IN THE INTERESTS OF DIVERSIFICATION. INVESTORS CAN BUY SHARES OF THE DIVERSIFIED PORTFOLIO (AND THUS TAKE A SMALL STAKE), AND THESE SHARES ARE NOT NEARLY AS RISKY AS ARE SHARES IN A PARTICULAR STOCK OR BOND. THIS ALLOWS SMALL INVESTORS TO INVEST IN BONDS AND EQUITIES WITHOUT ASSUMING TOO MUCH RISK. IT SHOULD INCREASE THE SUPPLY OF SAVINGS OVERALL.

h) crowding-out effect

SEE PAGE 179 OF THE TEXTBOOK. WHEN THE GOVERNMENT RUNS A BUDGET DEFICIT (WHICH IS OFTEN THE CASE), IT MUST FINANCE THESE DEFICITS BY BORROWING FUNDS IN THE LOANABLE FUNDS MARKET. THIS REDUCES THE SUPPLY OF LOANABLE FUNDS IN THE MONEY MARKET, WHICH CAUSES AN INCREASE IN THE EQUILIBRIUM RATE OF INTEREST AND A DECREASE IN THE EQUILIBRIUM QUANTITY OF LOANABLE FUNDS. THE INCREASE IN THE INTEREST RATE REDUCES THE QUANTITY DEMANDED OF FUNDS FOR THE PRIVATE SECTOR, WHICH ENDS UP SPENDING LESS ON INVESTMENT GOODS. IN THIS SENSE, THE PUBLIC SPENDING CROWDS OUT THE PRIVATE SPENDING ON CAPITAL GOODS.

3. (10 points) Productivity is such an important point for this class that it is the focus of 'essential principle' number 8 of the textbook.

a) Define the term, and explain why it is so important.

IT IS OUTPUT RELATIVE TO INPUT. THE QUESTION IS HOW MUCH OUTPUT CAN BE SQUEEZED FROM A GIVEN LEVEL OF INPUTS? ALTERNATIVELY, HOW CAN THE SAME LEVEL OF OUTPUT BE SQUEEZED OUT OF A LOWER LEVEL OF INPUTS? RISING PRODUCTIVITY MEANS RISING LIVING STANDARDS ON AVERAGE.

b) What are some of the factors that determine productivity? I went over four, but I am asking you to give THREE of them. Warning! Some of you are likely to answer the wrong question. I also went over a list of points that relate to public policy. The question that I am asking does not deal with the actions that the government can take to raise productivity, such as enforcing property rights or encouraging foreign direct investment. Instead, talk about the underlying causes of productivity growth that occur without governmental intervention. You should furnish some explanation as to what they are and why they are important for productivity. 6 or 7 sentences should suffice.

SEE PAGES 143-144 IN THE TEXTBOOK.

- **PHYSICAL CAPITAL STOCK PER WORKER, IN THE FORM OF EQUIPMENT AND STRUCTURES. THE MORE THE BETTER.**
- **HUMAN CAPITAL PER WORKER, IN THE FORM OF SKILLS AND KNOWLEDGE EMBODIED IN THE LABOUR FORCE. THE MORE THE BETTER.**
- **NATURAL RESOURCES PER WORKER, IN THE FORM OF INPUTS DERIVED FROM THE LAND. THE MORE THE BETTER.**
- **TECHNOLOGICAL KNOWLEDGE, IN THE FORM OF THE BEST TECHNIQUES AND THE MOST EFFICIENT METHODS OF PRODUCTION. THE MORE REFINED, THE BETTER.**

4. (12 points) Provide brief responses to the next four questions. Two sentences will suffice.

a) Why do economists tend to favor consumption taxes over income taxes?

A FUNDAMENTAL ECONOMIC PRINCIPLE IS THAT WHATEVER ACTIVITY IS SUBSIDIZED WE WILL GET MORE OF, CETERIS PARIBUS, AND THE OPPOSITE IS TRUE FOR WHATEVER ACTIVITY WE TAX. INCOME TAXES DISCOURAGE THE ACTIVITIES OF WORK AND SAVING. CONSUMPTION TAXES DISCOURAGE CONSUMPTION ACTIVITY, BUT THAT IS PREFERRED TO DISCOURAGING WORK AND SAVINGS, BECAUSE THOSE TWO ACTIVITIES ARE CRITICAL FOR THE PRODUCTION PROCESS. ANOTHER WAY OF SAYING THIS IS THAT IT IS BETTER TO TAX PEOPLE ACCORDING TO HOW MUCH THEY TAKE OUT OF THE ECONOMY RATHER THAN ACCORDING TO HOW MUCH THEY CONTRIBUTE TO IT. WHILE IT MIGHT BE ARGUED THAT NO TAX IS A GOOD TAX, MOST ECONOMISTS AGREE THAT IT IS BETTER TO TAX CONSUMPTION THAN TO TAX INCOME DERIVED FROM SUPPLYING FACTORS TO THE PRODUCTION PROCESS.

b) What is the role of financial markets or money markets in the macro-economy?

THEY ARE PART OF THE MONEY ECONOMY, AND THEY FACILITATE PRODUCTION, CONSUMPTION, AND EXCHANGE IN THE REAL ECONOMY, WHICH CONSISTS OF THE GOODS AND SERVICES MARKET AND THE INPUT MARKET (WHERE TANGIBLE GOODS AND SERVICES ARE MADE AND TRADED) THE MONEY MARKET BRINGS SAVERS AND BORROWERS TOGETHER. THESE MARKETS GENERATE AN EQUILIBRIUM RATE OF INTEREST AND AN EQUILIBRIUM QUANTITY OF LOANABLE FUNDS.

c) Why must it necessarily be the case that national income, as generated by the factor payments approach, equal GDP, as generated by the expenditure approach?

BECAUSE EVERY TRANSACTION HAS A DUAL IDENTITY AS EXPENDITURE AND AS INCOME. \$ 1 SPENT BY ONE ECONOMIC AGENT REPRESENTS \$ 1 OF INCOME EARNED BY 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.

d) The production process involves the generation of economic ‘bads’ or by-products such as pollution, congestion, and environmental degradation. 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?

THE VALUE OF THE PRODUCTION THAT CAUSED THE ECONOMIC BAD IS COUNTED IN THE OFFICIAL ACCOUNTS FOR GDP, BUT THE COST OR NEGATIVE VALUES OF THE BADS – THOSE UNAVOIDABLE BY-PRODUCTS – IS TOTALLY IGNORED. IF WE WERE TO ACCOUNT FOR THOSE COSTS, IT WOULD INVOLVE SUBTRACTING THEM FROM THE VALUE FOR GDP, WHICH MEANS THAT OFFICIAL GDP WOULD BE LOWER. THEREFORE, THIS FACTOR CAUSES AN OVERSTATEMENT OF OUR WELFARE BASED ON THE GDP ACCOUNTS.

5. (10 points) Consider the following data on Canadian GDP. This is taken right out of the textbook. You must show your work in order to receive any credit. The base year for the deflator is 1997.

year	Nominal GDP (in billions)	GDP deflator
2000	1075	105
1999	982	101

THIS QUESTION IS EASY

a) What was the growth rate of nominal GDP between 1999 and 2000?

$$(1075 / 982 - 1) * 100 = + 9.5 \%$$

b) What was the growth rate of the GDP deflator between 1999 and 2000?

$$(105 / 101 - 1) * 100 = 4 \%$$

c) What was real GDP in 1999 measured in 1997 prices?

$$982 / 101 * 100 = \$ 972.28$$

d) What was the growth rate of real GDP between 1999 and 2000?

$$\text{REAL GDP IN 2000: } 1075 / 105 * 100 = \$1,023.81$$

$$\text{SO THE \% CHANGE IN REAL GDP} = (1023.81/972.28 - 1) * 100 = 5.3 \%$$

e) Was the growth rate of nominal GDP higher or lower than the growth rate of real GDP? Explain why.

HIGHER BECAUSE GROWTH IN NOMINAL GDP = INFLATION RATE + GROWTH IN REAL GDP, AND INFLATION WAS POSITIVE OVER THE PERIOD

6. (4 points)

The following transactions took place in the economy of Lowland last year.

Wages paid to labour	800,000
Consumption expenditure	650,000
net taxes	200,000
firms' profits	250,000
gross investment expenditure	300,000
government expenditure	250,000
exports	250,000
saving	300,000
imports	300,000
depreciation	100,000
transfer payments	500,000

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

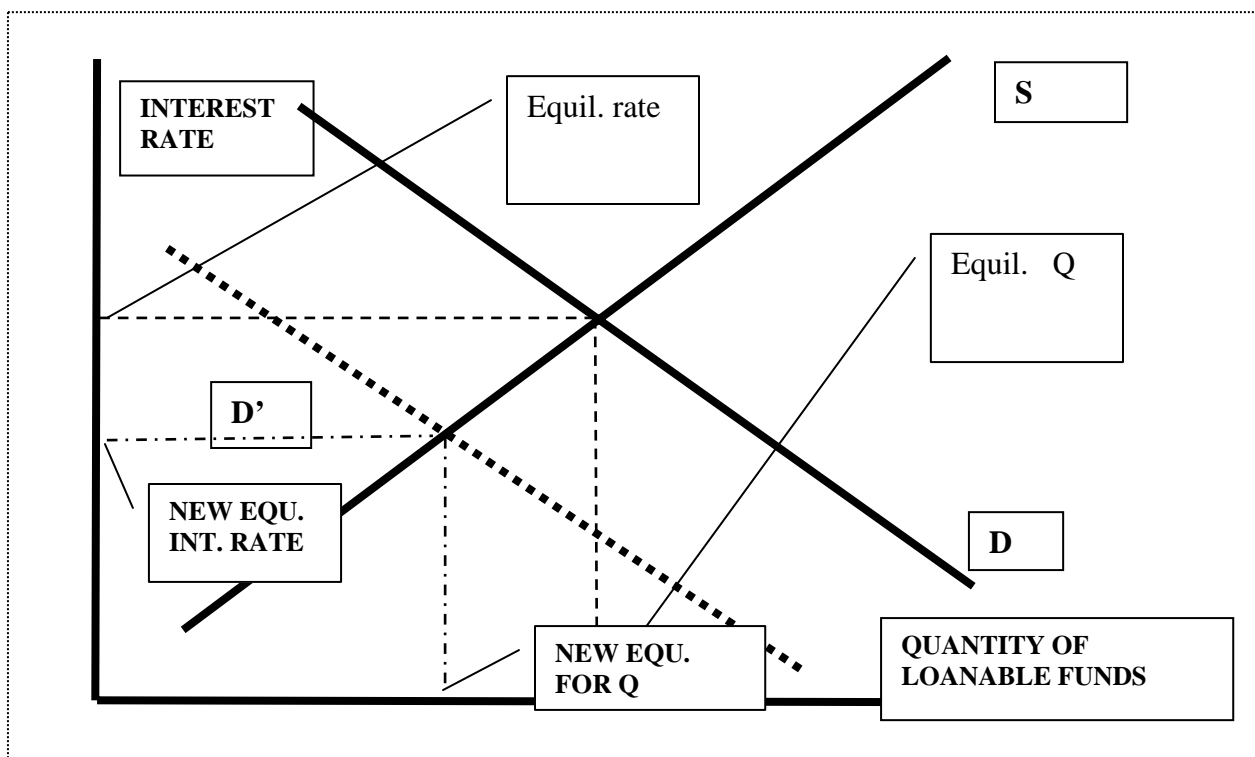
THIS QUESTION IS VERY EASY.

$$\text{GDP} = C + I + G + NX = 650,000 + 300,000 + 250,000 + 250,000 - 300,000 = \$1,150,000$$

7. (9 points)

a) On the axes that are provided below, depict the loanable funds market in equilibrium. Label all axes and curves.

b) On the same figure, show what happens in this market if investment becomes less attractive such that investors do not want to spend as much as they did before on capital goods. In the United States, some right-wing pundits claim that having a 'socialist ideologue' in the White House is having exactly this effect. Indicate which curves, if any, shift, and explain how the loanable funds market adjusts. Explain your work below.



THE DEMAND FOR LOANABLE FUNDS SHIFTS TO THE LEFT AS INVESTMENT SPENDING BECOMES LESS ATTRACTIVE. AT EACH POSSIBLE RATE OF INTEREST, THE QUANTITY DEMAND FOR LOANABLE FUNDS FALLS. THE EQUILIBRIUM RATE OF INTEREST FALLS, AS DOES THE EQUILIBRIUM QUANTITY.

8. (7 points) These questions concern the articles that I posted on the courseweb.

THESE QUESTIONS WERE DESIGNED TO BE GIVEAWAYS FOR ANYONE WHO DID THE SMALL AMOUNT OF READING THAT I ASSIGNED. I TOLD THEM TO GRADE GENEROUSLY.

a) There is an article dealing productivity that was drawn from a report released by the

Conference Board of Canada. According to this article, what is the most pressing need for Canadian businesses as far as an improvement in productivity is concerned? What reform do they recommend for the government to take?

THIS IS ARTICLE # 11. IT CITES A LACK OF INVESTMENT IN EQUIPMENT AND OTHER PARTS OF THE CAPITAL STOCK. THEY RECOMMEND LOWERING CORPORATE INCOME TAXES AND/OR ABOLISHING TAXES ON CAPITAL.

b) The national accounts were released recently for Nov 2009. At the same time, similar data were released for the United States pertaining to the 4th quarter of 2009. How fast, and in what direction, was real GDP growing in both countries (at an annual rate) during this time period? Your answer does not have to be exact. Were these reports considered to be good news, bad news, or so-so news?

SOMEWHERE IN THE NEIGHBORHOOD OF 5 %, AND THIS WAS VERY GOOD NEWS.

c) There is an article dealing productivity that was drawn from the Globe and Mail (authored by economist Kevin Lynch). According to this article, what is the most pressing need for Canadian businesses as far as an improvement in productivity is concerned?

THEY MUST INNOVATE MORE AS FAR AS DEVELOPING NEW GOODS AND SERVICES AND IMPLEMENTING THE MOST MODERN, MOST PRODUCTIVE PRODUCTION TECHNOLOGIES. IT IS HIGHLY DESIRABLE TO ENCOURAGE MORE RESEARCH AND DEVELOPMENT AMONGST CANADIAN PRODUCERS.

d) I posted articles by two very well-known economists who correctly predicted that a very steep recession was coming to the industrialized world (long before it arrived). One of them has the nickname of 'Dr. Doom.' Can you recall either name? (1 point).

NOURIEL ROUBINI AND OLIVIER BLANCHARD

9. (4 points) Jay and Joyce meet George, the banker, to work out the details of a mortgage. They all expect that inflation will be 2 % over the term of the loan, and they agree on a nominal interest rate of 6 %. As it turns out, the actual inflation rate is 5 % over the term of the loan. Ignore the effects of taxes when answering the questions below. Show your work.

a) What was the expected real interest rate?

$$6 \% - 2 \% = 4 \%$$

b) What was the actual real interest rate?

$$6 \% - 1 \% = 1 \%$$

c) Who benefitted and who lost because of the unexpected inflation? Explain.

THE BORROWERS WON BIG TIME BECAUSE THEY ARE NOW REPAYING THEIR OUTSTANDING LOANS IN DEFLATED \$. THE BURDEN ON REPAYMENT IS LOWERED BY THE MAGNITUDE OF THE EXPECTED INFLATION. THE LENDER WOULD HAVE DEMANDED A HIGHER INTEREST RATE HAD IT BEEN KNOWN THAT THE INFLATION WOULD BE HIGHER.