INTERNATIONAL MACROECONOMICS

Economics 419H/2303H

Tuesdays 11AM to 1PM -- Fall Term -- Rm UC57

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Important Message For Potential Students!

This is a 400-level course for upper-level undergraduates and graduate students. Undergraduates should contact me before enrolling. Those who have more than one C and no A's in the prerequisite courses and plan on working no harder here than they have in the past can very easily fail this course! Undergraduates who have the ability and work habits to eventually do graduate work themselves should not find it difficult to compete with the graduate students in this course---indeed, the top undergraduates typically get high A's. But this is not an appropriate course for students who are anxious to get on to other things and whose overriding objective is simply to obtain a mere 50% grade to get the necessary credit to graduate.

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General Information About the Course

The objectives of this course are to help you develop a basic understanding of how the international monetary system functions and how macroeconomic policy is conducted in individual countries embedded in that system. Analytical tools will be developed to critically evaluate public policy arguments and comments appearing in the popular press. An introduction to the methodology and techniques of current research in the field will be given and you will develop your ability to read critically some of the professional literature. All this requires the establishment of an analytical framework into which current and historical issues in theory and policy can be placed. Building this framework is the central focus of the course.

Prerequisites for this course include a decent background in intermediate microeconomics and macroeconomics and elementary statistics. Some elementary calculus and matrix algebra will be used from time to time. Those who have excellent backgrounds in mathematics and statistics can get by with a weaker background in economics because ease with technique will permit more time to be spent on the basics of economics. Upper-level undergraduates and M.A. students, and potential Ph.D. students as well, will find this course useful in developing skills that will be useful for entry-level positions in the financial services industry.

Study question assignments have been prepared and can be downloaded from this web-site. You are expected to use the study questions and exercises to stimulate your thinking about the issues dealt with in the readings. In some of these exercises you will "get your feet wet" in real data.

There will be twelve two-hour classroom sessions, two of which will be used for tests. In those two cases, students will write the test in the first hour and the answers will be taken up in the second hour. Students and can see me in my office (I am usually there most afternoons) to discuss their answers to the study question/exercise assignments, which they will not hand in for grading. I am also there to provide any other help students might feel they need.

Because the background and initial preparation of students entering this course will be diverse, some elementary computer-assisted study modules will be assigned during the term. These will bring everyone up to speed on some of the basics which will therefore not have to be reviewed in class. Past experience indicates that students who have done previous work in macroeconomics at an advanced level, or who have taken a third year international macroeconomics course, do not take these modules seriously, figuring that they already know the material. This is a big mistake! My experience is that even quite advanced students do not really understand the material they have taken in previous courses. One reason for this is that macroeconomics courses differ in organization and content so that students in this class will have specific views of what macroeconomics is about that differ both from student to student and from the approach taken here. As a result students are typically unable to deal with questions posed in different ways than that to which they are accustomed. A second reason is that students' primary objective is often to get an appropriate grade in a course rather than learn the material, so they tend to learn just what is necessary to be able to put the "right things" down on the final exam. Figuring out what might be asked on the final exam and how to phrase an answer to it is quite different than learning the fundamentals of a subject. A third reason is that international macroeconomics is a difficult subject and it takes several courses before students begin to understand the fundamentals. The fundamentals are the *sine qua non* for understanding what is going on in this field. Every model has to be based on and relate properly to these fundamentals if it is to be of any use---students who understand models but not the fundamentals on which they are based have no useful knowledge of macroeconomics. On the other hand, students who understand the fundamentals and have a good mathematics background can easily construct and evaluate models to deal with specific questions as they arise. The basic objective here is to teach you the fundamentals. These are completely contained in the modules. The rest of the course is necessary to get you to the point where you have a sophisticated understanding of the material in those modules and more fully understand the theoretical foundations of that material. You should therefore take the computer modules very seriously, because you will not get a decent grade in this course without understanding the material they contain.

The course material to be covered is divided into four sections or units. All reading material assigned is compulsory except where noted---the main exception will be background material covering statistical techniques where your existing skills may be sufficient to make review redundant.

All the published materials required in this course are on [on reserve in Robarts Library]. Xeroxed copies of background materials in mathematics and statistics Scholar House Productions at 100 Harbord Street. The computer-assisted study modules can be worked through by just clicking on the links to the relevant html files below.

There will be two major tests and a final exam. The first test will cover the computer-assisted study modules assigned plus the material covered in class during up until it given, which will be about 5 weeks into the course. The second term test will cover the computer module and class material up to the time it is

given, 9 or 10 weeks into the course. The final exam will, of course, cover the entire course including those parts that were not covered in the second term test. The term tests will each count for 20 percent of the final grade. In-class participation will count for 10 percent of the final grade and the final exam will count for the remaining 50 percent.

I have constructed a set of Occasionally Asked Questions together with rather complete answers. You may find these useful.

Mathematics, Statistics and Econometrics Background Material

Students who need to improve their background in the basics of mathematics and statistics should download and work through the material I have prepared for that purpose --- Basic Mathematics Review for Economics Students and Basic Statistics Review for Economics Students. Students who find these reviews insufficient can refer to appropriate parts of the documents that were used in constructing those review materials. A good reference from which students can brush up on their basic mathematics skills is Alpha C. Chiang, *Fundamental Methods of Mathematical Economics*, McGraw Hill, 1984. For the basics of algebra, read pp. 7-32. Equilibrium analysis and matrix algebra are covered on pp. 35-87. Discussion of derivatives and slopes of functions can be found on pp. 128-178 and pp. 254-262. Exponential and logarithmic functions are covered on pp. 268-306 and integrals are discussed on pp. 437-454. All these pages are reproduced in the Econometrics Background Material for the course that can be purchased from Scholar House Productions at the address noted above. That material also contains a nice review of matrix algebra contained in Appendix A of Jack Johnston and John DiNardo, *Econometric Methods*, McGraw-Hill, 1997, pp. 455-67 (to the end of section A.2.7).

To acquire further statistical background students should read, as their circumstances dictate, G. S. Maddala, *Introduction to Econometrics*, Chapters 2 and 3, pp 9-51. Alternatively, you can read James H. Stock and Mark W. Watson, *Introduction to Econometrics*, Addison Wesley, 2003, pp. 3-195. The Maddala reading is available in the course material from Scholar House Productions, while the Stock and Watson book is on reserve in the library. If you find this material too difficult you can work through the notes I have prepared for my basic statistics course. Also, to learn about heteroskedasticity- and autocorrelation-consistent standard error estimation you should read pp. 607-617 of the Stock and Watson Book---these pages are reproduced in the material from Scholar House Productions. A matrix-algebra-focussed treatment of multiple regression is contained in Johnston and DiNardo book noted above, Chapter 3, Section 3.1, pp. 69-76 and Section 3.4, pp. 86-98 (you can skip Sub-section 3.4.4). Appendix B, pp. 485-90 (to the end of section B.4), contains a further presentation of statistics concepts. This material is also in the package available from Scholar House Productions.

Students are encouraged to empirically investigate on their own some of the analysis presented in the course. For this purpose they can obtain relevant data from this web-site which can be analysed using the freely-available statistics softward program Gretl or even MS-Excel, a sufficent clone of which, called Gnumeric, is also freely available off the web. For the basics of working with Gretl and getting started doing statistical programming in free programs XLispStat and R, a free clone of the statistical program S, you can consult some materials I have prepared for that purpose in Statistical Analysis Using XLispStat, R and Gretl: A Beginning.

Course Outline

I: The Preliminaries: Inter-temporal Foundations of Macroeconomic Equilibrium

The analytical framework used for most of this course is single-period focused---that is, it examines aggregate equilibrium of the economy in a single period or a succession of single periods, most frequently with reference to deviations of output around the full-employment level. But consumption, investment and government budget decisions are based on the maximization of utility not just in the current period but simultaneously in the current and all future periods.

Ideally, therefore, to completely understand the current state of the economy we should solve simultaneously for equilibrium not only in the current period but in all future periods as well, with the equilibria in future periods representing the expected and planned future outcomes as viewed from the present. Decisions in the present are thus interconnected with all future decisions and cannot be analyzed without understanding agents' inter-temporal utility functions and expected future constraints.

The problem with inter-temporal models is that they become extremely complicated when we try to focus on more than one or two simple relationships at a time and as a result do not provide a good overview of the broad picture. Single-period aggregative models, on the other hand, can provide an excellent framework to think about the important day-to-day macroeconomic problems. Indeed, they form the basis for virtually all the current analysis and forecasting efforts of practitioners in the field.

But single-period aggregative models can do this only if they take all of the important implications of inter-temporal maximizing models implicitly into consideration. This is why the computer-assisted study module on fiscal policy, for example, considers the effects of taxes on permanent income and on inter-generational asset accumulation. It is also why the fiscal policy analysis developed there could say far less about the effects of fiscal policy than older Keynesian *IS-LM* models claim to be able to say. In fact, I could not have written those computer modules and most of the other material presented in this course without prior knowledge of the implications of inter-temporal maximizing models.

Accordingly, in this first section of the course we must establish appropriate inter-temporal foundations for the models that will be later developed. The task is not to develop a big inter-temporal maximizing model of a multi-country world---such a model would be too complicated to shed any light on the issues we want to examine. On the contrary, what we must do is make sure that the features of the single period models we will be using take proper account of the underlying process of inter-temporal maximization that forms the basis for the individual decisions that ultimately combine to create the observed magnitudes of the economic aggregates on which our models will focus.

The task here essentially involves understanding the process by which the full-employment level of output gets established at each point in time and, since saving and investment are occurring, the underlying growth rates of those full-employment magnitudes. This will be accomplished by working through the material in a couple of chapters of my book ***Interest Rates, Exchange Rates and World Monetary Policy*** which published by Springer-Verlag in Heidelberg Germany. I have decided against having my students buy this book as a textbook. Accordingly, I have placed four copies on reserve in Robarts Library. Two of those copies can be taken out on loan for three hours, and two can be taken on loan for two days. Also, the book is

available in e-book form in Robarts Library and can be read by everyone directly off the web.

Assigned Readings and Computer Study Modules

The purpose of working through this material is to develop a solid understanding the full-employment levels of the basic variables that will be analyzed throughout the course. This involves the development of a basic growth model that will be in the background of the analysis in the rest of the course. It also involves understanding the role of money and the determination of the relative prices of the outputs of various countries---that is, their real exchange rates---along these growth paths.

To begin with, you should work through the first computer-assisted learning module, The Dimensions of Economic Activity . The material it contains is very elementary but it provides a bit of focus. Then you should work through the second module Interest Rates and Asset Values and the third, Money and Inflation For students with a good economics background this material should be an easy review as a prelude to working through material in my book. Two additional computer study modules, Interest Rates and Growth and Unemployment are available for interested students but not assigned because it is simply assumed in this course that wages and prices are slow to adjust but do so eventually, and the details of the growth process that you need to know are covered in the assigned readings from my book. The assigned reading for this section of the course is

John E. Floyd, ***Interest Rates, Exchange Rates and World Monetary Policy***, Springer-Verlag, 2010, Chapters 2, 3, 4 and 5 pages 11 through 57 and 71 through 86. In doing this reading, students should focus on the questions in Assignment Number 1, and on Class Notes for Section I which outline the issues and material that will be discussed in class. The material in the book skipped will be covered later in computer study modules and in class discussion.

Another very useful read is the first 39 pages of the book *Foundations of International Macroeconomics* by Maurice Obstfeld and Kenneth Rogoff, published by MIT Press. The material presented provides a solid basis for arguments pursued thus far and in the rest of this course. Reading this material is suggested for those who are interested, but it is not required reading. Those who choose to work through it will find the solutions for the problems in Obstfeld and Rogoff available in .pdf form from Rogoff's home page at Princeton. Also Bridget O'Shaughnessy and I have made some notes (postscript 195k) to help those who want to read the assigned section of Obstfeld and Rogoff and do problems 1 through 4c at the end of Chapter 1.

II: The Foreign Exchange Market and the Balance of Payments

Before proceeding further, you should work through the next three assigned computer assisted study modules Asset Markets, The Foreign Exchange Market and The Balance of Payments and the Exchange Rate,

Next you should print out the assignment for this section of the course, Assignment Number 2. Keep an eye on the assignment questions as well as the Class Notes for Section II as you do the readings and use them as a guide to what you should be learning.

You should read

- Bennett T. McCallum, *International Monetary Economics* , Chapter 2, Exchange Rate Concepts, pp. 14-42.

and then more material in ***Interest Rates, Exchange Rates and World Monetary Policy***, in particular Chapters 7, 8, 9, and 10, consisting of pages 99 through 208. Again concentrate on the arguments, equations, empirical evidence and conclusions that are in the Class Notes. It will become apparent as we work through this material that some knowledge of elementary time-series analysis will be necessary. If you feel you need it, you should read

- Walter Enders, *Applied Econometric Time Series* , Chapter 4, pp. 211-227 and pp. 233-250.

In reading the Enders material your focus should be on understanding the basic ideas rather than developing proficiency in time-series analysis, keeping in mind that this is a course in economics, not statistics.

You should also read

- Kenneth Rogoff, "The Purchasing Power Parity Puzzle," *The Journal of Economic Literature*, Vol. 34, June 1996, 647-668.

For bed-time reading (not required if you have something better to do at bed time) you might read

Christopher J. Neely, "Technical Analysis in the Foreign Exchange Market: A Layman's Guide" *Federal Reserve Bank of St. Louis Review*, Vol. 79, No. 5, September/October, 1997, pp.23-38.

III: International Monetary Systems: The Balance of Payments Under Fixed Exchange Rates

1. Alternative International Monetary Arrangements: The Process of Money Creation

You should now work through two more computer assisted learning modules, Small Open Economy Equilibrium II: Monetary Policy Under Flexible Exchange Rates and Small Open Economy Equilibrium III: Monetary Policy Under Fixed Exchange Rates. Then you should print out Assignment Number 3a, so you can refer to the assignment questions and exercises as you read the material that follows. And you should use the Class Notes for Section III for guidance as you work through the readings below.

2. Fixed and Flexible Exchange Rates, Key Currencies and the Gold Standard

Now read

- Trevor J. O. Dick and John E. Floyd, "Balance of Payments Adjustment under the International Gold Standard: Canada, 1871-1913," *Explorations in Economic History*, 28, 1991, 209-238.

In order to understand everything in the Dick-Floyd paper you may need to review your understanding of multiple-regression analysis. It is easiest to do this in a linear-algebra framework. If you need review you should read

- Jack Johnston and John DiNardo, *Econometric Methods* , McGraw-Hill, 1997, Appendix A, pp. 455-67 (to the end of section A.2.7), Appendix B, pp. 485-90 (to the end of section B.4), and Chapter 3, Section 3.1, pp. 69-76 and Section 3.4, pp. 86-98 (you can skip Sub-section 3.4.4).

Next you should read Chapters 6 and 13 of ***Interest Rates, Exchange Rates and World Monetary Policy***, consisting of pages 87 through 94 and 269 through 288. You should also have a go at Assignment 3b

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IV: Fixed vs. Flexible Exchange Rates and Optimal Currency Areas

Now you should work through the last four modules, Small Open Economy Equilibrium IV: Fiscal Policy, Small Open Economy Equilibrium V: Additional Policy Issues, Big Open Economy Equilibrium and Conducting Monetary Policy.

Again, you should print out the assignment, Assignment Number 4, before doing the reading. And, as before you should use the Class Notes for Section IV for guidance as you work through the readings.

To acquire relevant background knowledge of relevant historical and institutional material, read

- Bennett T. McCallum, *International Monetary Economics*, Oxford University Press, 1996, Chapter 11, pp. 227-247.

For a review of the institutional details surrounding the establishment of a common currency in Europe, you should read

- Jay H. Levin, *A Guide to the Euro*, New York: Houghton Mifflin Company, 2000.

Next, you might find interesting a simple application of the principles you have learned thus far to some Canadian issues:

- J. E. Floyd, "Are Canadian Interest Rates Too High?" *Canadian Public Policy*, June 1995, 143-158.

You should now work through material below. You should find interesting a joint paper by myself and Jack Carr that deals with the effects of real and monetary shocks on real and nominal exchange rates.

- Jack L. Carr and John E. Floyd, "Real and Monetary Shocks to the Canadian Dollar: Do Canada and the U.S. Form an Optimal Currency Area? " University of Toronto, December 7, 2001 (postscript 257k) (PDF Version)(253k). This paper addresses the recent controversy about whether Canada should continue to have its own currency or join some sort of monetary union with the United States. Those of you who are interested might wish to look at other papers dealing with this issue.

Now work through Chapters 11, 12, 14 and 15 of ***Interest Rates, Exchange Rates and World Monetary Policy*** consisting of pages 209 through 264 and 289 through 358. Again, concentrate on the material that is discussed in the lectures and, hence, in the Class Notes for Section IV for guidance.

Then read an an excellent summary analysis of the case for flexible vs. fixed exchange rates by Alan Stockman.

- Alan C. Stockman, "Choosing an Exchange-Rate System", *Journal of Banking and Finance*, Vol. 23, 1999.

and, finally, Mick Devereux's paper

- Michael B. Devereux, "Real Exchange Rates and Macroeconomics: Evidence and Theory", *Canadian Journal of Economics* Vol. 30, No. 4a, 1997, pp. 773-807

which provides a very good review of work on the analysis of real exchange rates in the tradition of real business cycle models. Read it as a road-map of the research direction in which an important segment of the profession is headed.

For an excellent practical discussion of monetary policy in Canada, you might want to read

- David E.W. Laidler and William B.P. Robson, *Two Percent Target: Canadian Monetary Policy Since 1991*, C.D. Howe Institute, Policy Study 37, July 2004, Chapters 2 and 3.

And, before heading off to work in the financial district you could profit by reading John Crow's book *Making Money: An Insider's Perspective on Finance, Politics, and Canada's Central Bank*, John Wiley and Sons Canada Ltd, 2002, and, if you have not had a course in forecasting, you might want to read pages 430-488 and 534-552 of James H. Stock and Mark W. Watson, *Introduction to Econometrics*, Addison Wesley, 2003.

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