Introduction to The Economic Approach with Microsoft Excel

Welcome to the Economic Approach with Microsoft Excel

You are about to embark on an exciting and challenging tour of modern economic theory, mathematics, and Microsoft Excel.

We're sure you have lots of questions and we begin by trying to answer some of them:

• What exactly will I do?

You will learn about the Economic Approach, that is, the special way economists have of looking at the world, by completing a series of readings and spreadsheets.

You will discover how economists think and present the results of their work.

You will direct and control your education. You choose the pace and you determine if you are ready to go on.

• Why should I do this?

Actually, that question has two possible meanings:

1)	Why should you study the Economic Approach?

2)	Why should you study it this way?

We'll answer each one in turn:

1)	Why should you study the Economic Approach?

You are studying the Economic Approach because it is a powerful intellectual framework for understanding the world.

Modern economics, be it micro or macro, labor or industrial organization, has a central, unifying core that is captured by the Economic Approach. Master this and you open the door to any and every economics sub-discipline. For this reason, learning the Economic Approach is of paramount importance.

As many students have found out, however, the strange thinking and confusing graphs used by economists are formidable barriers to understanding modern economic principles. Only a few can quickly grasp the

economic way of thinking from a standard Principles of Economics textbook and course; most economics majors are left with a bewildering set of new words and ideas that are destined to be memorized again and again in each economics course.

2)   Why should you study it this way?

We are presenting the Economic Approach in this way because we think that the traditional techniques for teaching economics are inadequate and inappropriate. We think that there's a better way. The method we use is different from the routine practice in that the focus is on "hands on learning" the way natural scientists use laboratories. You will spend much of your time actually working on the computer, solving quantitative problems with Excel. Instead of the traditional lecture/reading format with which you are most familiar (an expert talks and you try to follow), you will explore and discover the lessons for yourself.

We are convinced that this "learning by doing" model is more effective than the traditional lecture class, especially in the teaching of computer skills.

The emphasis on self-directed, laboratory work allows you to play a more active role in your education and this translates into more, better learning. The crucial reason is not hard to figure out: *When **YOU** solve the optimization problem or equilibrium system, you understand it a lot better than when you watch someone else do it.*

Thus, you are studying the Economic Approach because understanding the Economic Approach is fundamental to understanding economics. Learn it once and you have access to a dazzling array of applications. You are studying the Economic Approach this way because it is difficult to grasp and the traditional teaching style doesn't seem to work very well. We are dedicated to providing the materials you need to do it yourself because we are sure you will learn a lot more doing it yourself than watching someone else do it.

• *Why are we using Microsoft Excel?*

For two reasons:

1)   ***Microsoft Excel allows us to use the computer to put the lessons together in a way that lets you discover the important ideas and concepts.*** Microsoft Excel's Solver allows us to find optimal solutions for optimization problems and equilibrium values for equilibrium models. By combining Microsoft Excel's Solver with the Comparative Statics Wizard add-in, we can explore the comparative statics properties of an optimal or equilibrium solution. Microsoft Excel allows us to easily and quickly draw a variety of graphs and to combine text, graphics, and calculation.

2)	***Microsoft Excel is a popular, widely used spreadsheet.*** The Microsoft Excel skills you acquire while learning about economics can be readily applied in other courses or on the job.

There is little doubt that this material can be presented with other software, but no other program allows us to combine the advanced problem-solving algorithms and graphics capability of Microsoft Excel with the widespread availability and increasing use of spreadsheets, in general, and Microsoft Excel, in particular. It is this unique combination that has led us to choose Microsoft Excel as our presentation platform.[1]

• *How is the content structured?*

We will begin by laying all of our cards on the table—Chapter 1 is a long reading that explicitly tells you what the Economic Approach is all about.

If you read Chapter 1 and understand everything that it says, then you don't need to do any more work! You are an economist.

If you are confused and unsure, that is good. It means you are ready to move on and learn about economics!

We will constantly stress the common patterns inherent in every application of the Economic Approach. The similar way of interpreting observations and presenting results is a crucial defining feature of economics today.

The idea behind the chapter 1 comprehensive introductory reading is for you to begin to learn the vocabulary, understand the logic, and appreciate the wide applicability of the Economic Approach. It is a condensed, terse version of the issues and topics that will be covered in the next twenty chapters. You can use it as a reference at anytime to get the "big picture."

After learning some Excel basics in Chapter 2, we will patiently work our way through the Economic Approach as applied to

Single- and Multi-Variable Unconstrained Optimization

Constrained Optimization

Equilibrium

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[1]	If you are wondering why we keep saying "Microsoft Excel" instead of just "Excel," wonder no more. It's the same reason its icon says Microsoft Excel on the Mac desktop or Windows task bar—it's the law! When Microsoft released its new spreadsheet program in 1985, they called it Excel. Unfortunately, Manufacturers Hanover Trust had an automated banking program also called Excel. They sued Microsoft for trademark infringement and the result was that Microsoft promised to always use the name Microsoft Excel when referring to its spreadsheet program. When we slip up and say Excel, we mean Microsoft Excel.

You will end by rereading Chapter 1—it will make a lot more sense at that time! ***Thus, we see the content as a big circle—you start at the top, work your way around, and end back at the top again. Except that at the end, everything makes a lot more sense.***

• *How do I actually do the work?*

By combining printed chapters of a traditional style book with Microsoft Excel workbooks, we can deliver a coherently packaged set of ideas. We will use printed pages (like this one) to introduce concepts and provide descriptive or background information. ***The Excel files, however, are the heart of our teaching strategy. Unlike their dead, word-processed counterparts, the Excel files are alive, waiting to be manipulated and used to solve a problem.***

The way you do the work is to first read the chapter's "Read" document, then put what you've just read to work with a Microsoft Excel workbook. It is with the active, self-paced engagement made possible by live Excel files that the lessons of the reading are made clear and reinforced.

• *How do I know where I am or what kind of file I'm using?*

It's all in the name.

Basically, we have two kinds of materials:

1) Traditional style, printed pages. These documents have titles on the first page, but ***the real information is carried in the footer at the lower left-hand corner of the page.***

   For example, by looking at the footer at the bottom of this page, you can see that what you are reading is called "C0Read.pdf." That stands for "<u>C</u>hapter <u>0</u> <u>Read</u>ing file that is an Adobe Acrobat (<u>pdf</u>) document."[2]

2) Microsoft Excel files contain the material that you will explore and work with. The Microsoft Excel files, called "workbooks," are not meant to be printed, but to be used on the computer. ***The filename tells you where you are.***

   For example, "C6Lab.xls" means "<u>C</u>hapter <u>6</u> <u>Lab</u>oratory file that is a Microsoft Excel (<u>xls</u>) workbook. These files are designed to be worked on and completed.

In addition, to give you an opportunity to further practice what you've learned, we have exercises for you. These can be either traditional, hand-written assignments or Microsoft Excel workbooks. Consistent with our

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2   There's more on pdf files below.

naming convention, "C5Exer.pdf" in the footer of the printed page indicates that it is a traditional style paper assignment, while the file called "C2Exer.xls" is Microsoft Excel workbook assignment.

The basic idea is that each chapter covers a certain topic and has associated Read, Lab, Exer kinds of work that can be either printed pages (.pdf) or Microsoft Excel files (.xls).

The table below has a complete listing of the files used:

(Remember, *IT'S ALL IN THE NAME!*)

File Name	TOPIC (Chapter and Description)
C0Read.pdf	Introduction (THIS DOCUMENT)
	ECONOMIC APPROACH: BIG PICTURE
C1Read.pdf	1: An Overall View of the Economic Approach
	MICROSOFT EXCEL: INTRODUCTION
C2Lab.pdf C2Lab.xls, C2LabA.xls C2Exer.xls, C2ExerA.xls	2: Sequences through Excel
	ECONOMIC APPROACH: OPTIMIZATION
C3Lab.pdf C3Lab.xls, C3LabA.xls	3: Single Variable Uncon Opt Totals and Marginals with Excel
C4Lab.pdf C4Lab.xls, C4LabA.xls C4Exer.xls, C4ExerA.xls	4: Single Variable Uncon Opt Using Solver
C5Read.pdf C5Exer.pdf, C5ExerA.pdf	5: Single Variable Uncon Opt and CS Using Calculus
C6Lab.pdf C6Lab.xls, C6LabA.xls C6Exer.xls, C6ExerA.xls	6: Single Variable Uncon Opt and CS Using Excel (Solver + Comp Statics Wizard)
C7Lab.pdf, C7LabA.pdf C7Lab.xls, C7LabA.xls	7: Review of Single Variable Uncon Opt and CS Inventory Problem
C8Read.pdf	8: Two-Var Uncon Opt and CS Using Calculus
C9Lab.pdf C9Lab.xls, C9LabA.xls	9: Two-Var Uncon Opt and CS Using Excel
C10Read.pdf C10Exer.pdf, C10ExerA.pdf	10: Con Opt and CS Using Calculus
C11Lab.xls, C11LabA.xls C11Exer.xls, C11ExerA.xls	11: Con Opt and CS Using Excel
C12Lab.pdf C12Lab.xls, C12LabA.xls	12: Review of Con Opt Pollution Problem

File Name	TOPIC (Chapter and Description)
	ECONOMIC APPROACH: EQUILIBRIUM
C13Read.pdf	13: Introduction to Equilibrium The Recipe
C14Lab.pdf, C14LabA.pdf C14Lab.xls, C14LabA.xls	14: Equilibrium Profit in an Entry/Exit Model Initial Solution and CS with Excel
C15Lab.pdf, C15LabA.pdf C15Lab.xls, C15LabA.xls	15: Equilibrium Profit in an Entry/Exit Model Understanding Phase Diagrams
C16Read.pdf	16: Equilibrium Output in a Macro Model: Initial Solution, Understanding Phase Diagrams, and Comparative Statics with Pencil and Paper
C17Lab.pdf, C17LabA.pdf C17Lab.xls, C17LabA.xls	17: Equilibrium Output in a Macro Model: Initial Solution, Understanding Phase Diagrams, and Comparative Statics with Excel
C18Lab.pdf C18Lab.xls, C18LabA.xls	18: Review of Equilibrium Models Equilibrium Rate of Return in an Educational Choice Model
	PUTTING OPTIMIZATION AND EQUILIBRIUM TOGETHER
C19Lab.pdf C19Lab.xls, C19LabA.xls	19: Equilibrium Allocation in a Pollution Permits Model
C20Read.pdf	20: Comparing Two Solutions to the Pollution Problem: Understanding the Market System
C21Read.pdf C21Lab.xls	21: Course Review OPTIMIZATION: Misery Index EQUILIBRIUM: Supply and Demand Model

• *How will I know how I'm doing?*

After you've finished the assignment, you can look at the answer key. Every assignment has an associated "A" (for <u>A</u>nswer) file (as you can see in the table above).

You should always check the answer key to see what you missed or to make sure that you completely understand the topic at hand.

• What's a "pdf" file?

"Pdf" stands for "<u>p</u>ortable <u>d</u>ocument <u>f</u>ormat." It is the type of file created by Adobe Acrobat and its main claim to fame is that it can take any postscript file (which is what's created when you print a document) and display it on any platform's screen. That means that we can make our readings available to users on Macs or Windows-based machines.

All you need is the free Adobe Acrobat Reader with search. You can read the .pdf handouts on the screen or print them. The on-screen version has a variety of links that you can click on to move around the various chapters. Instead of a detailed description of the available commands, we'll let you explore and figure out how to use Adobe Acrobat Reader on your own.

One nice feature is a fully searchable index. While the Find button lets you search for words in an individual pdf document, the Search Query button does a full-text search of the entire collection of pdf documents.

These two buttons are located next to each other in the button bar.

This is the Find button. Use it to find text in a single pdf document.

This is the Search Query button. Use it to find text in ALL of the documents.

Use Adobe Acrobat Reader's Help to learn more about searching and viewing pdf documents.

• These questions have all been great, but what if I get stuck or have a question that you haven't answered?

Get in touch with us!

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You can also FAX us at (765) 361-6277 or visit our www site at
http://www.wabash.edu/econapp

• OK, I'm ready! How do I get started?

You begin by reading the long, introductory essay on the Economic Approach that is Chapter 1. Remember that "An Overall View of the Economic Approach" is designed to begin teaching you about the words, logic, and style of economics—you need not understand every detail at this point. We will return to this reading at the end, and it is there that it will all come together.

Enjoy!