

36-473/673, ECONOMETRIC METHODS
SYLLABUS FOR FALL 2006

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OFFICE: CF 322 OFFICE HOURS: MW 1:50-2:50

COURSE Gujarati, Essentials of Econometrics.
MATERIALS: SHAZAM Econometric software program.

COURSE 36-206/208, 36-207/209, and 36-210 with a grade
PREREQUISITES: of "C" or above.

This is a course in economic research. In this course you will be doing your own research project, and in the process become acquainted with the statistical techniques most used by empirical economists. You will, by the end of the course, be able to understand published econometric research, as well as to test your own research hypotheses.

<u>Week</u>	<u>Topic</u>	<u>Chapter</u>
1 Sept. 6-8	Statistics Review	1,2
2 Sept. 11-15	Correlation; Estimation	3,4
3 Sept. 18-22	Hypothesis Testing	5
4 Sept. 25-29		
5 Oct. 2-6	TEST I	
6 Oct. 9-13	Simple Regression	6
7 Oct. 16-20	Regression Inference	7
8 Oct. 23-27	Multiple Regression	8
9 Oct. 30- Nov. 3	Nonlinearity	9
10 Nov. 6-10	Dummy Vars	10
11 Nov. 13-17	Specification Error; Collinearity	11,12
12 Nov. 20- Dec. 1	TEST II	
13 Dec. 4-8	Heteroskedasticity	13
14 Dec. 11-15	Logit; TEST III	16

Evaluation:

Three tests will be administered, all primarily focusing on hypothesis testing, each worth roughly 20% of your overall grade. Tentative dates are:

Test 1: Oct. 4

Test 2: Nov. 20

Test 3: Dec. 15

Note: this syllabus is available at
http://www.uwosh.edu/faculty_staff/mcgee/473.html

In addition, as stated above, since this is a course in economic research, you will be doing your own research project. The choice of the project is up to you, but it must involve a **cross sectional study** using **regression techniques**. Some examples of possible projects are:

- Any project that compares some attribute across **cities** (like crime rates or population growth rates);
- Any project that compares some policy across **states** (like gun control laws or the death penalty or economic or prison growth rates);
- A project that compares policies (economic growth, education, infrastructure, health, women's rights, human rights, trade) across **countries**;
- A project that compares returns to education or wages or investment across **industries**;
- A project that compares investment returns or sales growth or other performance measures across **corporations**, using **Compustat**;
- A project that compares **family** incomes or education, using the **Panel study of Income Dynamics**;
- A project that compares sports revenues or other characteristics of sports teams.

In your study, you will examine how a single dependent ("Y") quantity variable is related to **at least 3** separate independent ("X") quantity variables. For example, you may choose to investigate how infant mortality rates in the 50 states (your Y variable) depend upon per capita income, per capita health care expenditures, and percent health insurance coverage in those states. Choosing more than 3 independent variables will usually result in a better study, and a higher grade on your paper. If you are taking the course for Honors or Graduate credit, **or if you want to be eligible to be nominated to present your study at an Undergraduate Research forum in the Spring, or to have your study submitted for publication in an undergraduate research journal,** your study must have **at least 5** explanatory quantity variables.

As part of your research project, 4 reports will be due. Two of them, each worth about 5% of your grade, will be short (2-4 page) synopses of two econometric research papers, both **related to the topic you choose to investigate**, published in any recent economic journal. I recommend that you choose papers that are not overly complex, for example papers from any of the following journals (all available in Polk Library): *Econ Devpmt & Cult Change*; *J. Bus. Research*; *J. Econ & Bus.*; *J. Finan. & Quant Anal*; *J. Mark. Res.*; *J. Risk & Insur.*; *Nat. Tax J.*; *Public Fin. Rev*; *Quart. J. of Econ.* If you need assistance in using the Economics database **EconLit** to locate appropriate articles, let me know.

These first two, due **Oct. 30** and **Nov 27**, must review research papers that use **regression techniques** on **cross-sectional** data. These reports should detail, **in your own words**, (a) what the author (or authors) intended to investigate; (b) what, if any, justification they gave for the regression specification they used; (c) the principle regression results, and the statistical significance of these results; (d) the economic significance of these results; and (e) how this author's results compare with any similar studies. A copy of the paper you review should be attached to your report.

The other 2 reports, worth roughly 10% and 20% of your grade respectively, will report the results of **your research project**. The first report will be an initial draft; the second the final draft. Your paper should detail (a) what hypothesis you chose to investigate; (b) why you chose the specification you did; (c) what results you came up with; (d) their statistical significance; and (3) a thorough interpretation of those results, regarding the light they shed on your original hypothesis.

The due dates on the 4 reports are:

1. An initial idea (or ideas) for what topic you want to research, **Sept. 20**. You will need to schedule a time to meet with me in my office to discuss the feasibility of your idea, either before the due date or in the week following it.
2. A 2 page statement of your research topic, your cross-sectional hypotheses describing anticipated relationships, and a discussion of why the topic is important or interests you, and an Excel printout of your data set, **Oct. 9**.
3. Copies of the two cross sectional articles you plan to review, **Oct. 20**.
4. First cross-sectional review, **Oct. 30** (5%).
5. Second cross-sectional review, **Nov 27** (5%).
6. Your draft paper, **Dec. 1** (10%).
7. Your final paper, **Dec. 15** (20%).

WRITING AN ECONOMETRIC REPORT

An econometric research paper is not unlike any other paper: it has an introduction, a body, and a conclusion. Unlike other papers, however, it will contain information on your statistical procedures and findings, which must be presented in a way that is both sufficiently complete to be replicable and sufficiently summarized to be easily readable. The typical components of an econometric paper are:

- A. The Introduction: In this section you describe the research topic you are exploring, and why it is an important or interesting topic (you should use here what you turned on **Oct. 9th**).
- B. Literature Review: You provide background on your research, such as what other researchers have looked at and found (taken from your **two reviews**).
- C. Description of Procedures: You explain the model you have investigated. The econometric model(s) to be estimated will be specified, usually using a formula like: $GNP_t = a + bGS_t + dTx_t + gMS_t + e$). The more sophisticated papers will include an economic model to justify the variables and specification used; I would expect you to at least present your intuition as to why your specification makes sense. . I would also expect you to compare your procedures with those of the two papers you reviewed.

- D. Presentation of Statistical Results: Usually your results are presented in tabular form, especially if two or more specifications were estimated (see next page). It is mandatory to report either t-statistics or standard errors for each of your estimated coefficients. Usually such summary measures as R^2 or F statistics are reported for each estimated equation as well.

Table 1: Regression Results

<u>Variable</u>	<u>Equation 1</u>	<u>Equation 2</u>
GS	5.72 (2.51)	2.05 (2.06)
GS2	-	.63 (3.72)
TX	-4.15 (-1.85)	-3.85 (-1.41)
MS	6.24 (3.71)	6.41 (4.09)
R2	.63	.71

- E. A discussion of tests employed and/or alternative specifications used would appear in this section. Keep this description brief. Your paper should be a report of *what you found*, **not** a diary describing everything you did.
- F. Interpretation of Statistical Results: Often included in with the presentation of the numerical findings, this is the most important part of the paper. What does the coefficient for GS (of 5.72) in Equation 1 mean? How do you interpret the fact that when GS² was added as a variable, it had a positive and significant coefficient, while the coefficient for GS fell to 2.05? You should be able to present an economic story that explains your numerical results, that makes them make sense. You should also compare your findings to those of the authors whose studies you reviewed.
- G. Conclusion: This section summarizes the papers findings. If the hypotheses of (A) and the interpretations of (D) have not already been compared and reconciled, that should be done here. You should also discuss any policy implications of your results. It is also common to discuss any ideas for future research that this study suggests; i.e. if I paid you \$2000 to do the study all over again, how would you (with 20/20 hindsight) do it differently? Any other concluding remarks may also appear in this section.

When you read the research papers you'll review in the economic journals, observe how they contain in some way, shape, or form each of these 5 sections. Then use them as models in writing your own papers.