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11.482J / 1.825J / ESD.193J Regional Socioeconomic Impact Analyses and Modeling
Fall 2007

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Problem Set #1: Introduction to Simulation in Regional and Urban Economics: Economic-Base Analysis

PART I Due: Three days after SES # 3.

Final Essay Due: Three days after SES # 5.

Please conduct an economic-base analysis of Boston, its vicinity, and the whole state. The following tasks are needed to accomplish the objectives:

PART I:

1. Collect NAICS (North American Industry Classification System) 3-digit and 5-digit data for:
 - a. Employment in Suffolk County (where Boston is located), the 3 surrounding counties as one region (Essex, Middlesex, and Norfolk), the State of Massachusetts, and the United States. Include in appendix a state map showing the three regions studied (MA, Suffolk and the surrounding counties).
 - b. Two years: 2001 and 2005.
2. Explain the data-collection procedure, quoting the data source(s). Include in appendix the two year 3- and 5-digit employment data for the three regions. (10 points)
3. Choose a criterion to define which sectors are in the economic base and explain. (10 points)
4. Calculate the Economic Base for the three regions for each year and for two industrial classifications (3-digit and 5-digit). (10 points)
5. Describe how the economic base has changed for the three regions during this period. How can you connect the performance of each region with the economic-base analysis? (20 points)

Hint: County Business Pattern Data, <http://www.census.gov/epcd/cbp/download/cbpdownload.html>

Note: Excel will not be sufficient to extract relevant data from the downloaded datasets due to its limited capacity. Skills in using Access, SPSS, Stata, Matlab or other statistical software are necessary. Students can cooperate in collecting the data and discussing the problem set, but each student has to submit a separate report representing individual thinking. Please provide your name and the names of students with whom you collected the data and discussed the problem set.

PART II:

6. Compare the results of using the 3-digit and 5-digit industrial classification. Explain why we may expect differences in the two measures. What can you learn from these differences? (10 points)
7. Use 2001 data to forecast the data for 2005. What can you say about the economic base as a forecasting technique? Explain how you tested the accuracy of the forecast. (10 points)
8. Assume that an investment will increase the employment in BioTech-related firms in Massachusetts by 20% of the current (2005) level. Use the economic-base model to forecast the expected impact on 2010. Explain how you did the forecast including how you divided the increase between the regions. What will be the main socioeconomic impact in each of the three regions? (20 points)
9. How would your answers change if you had adopted a different criterion in 3 above? (10 points)

Prepare a four-page, double-spaced typed report (excluding references and appendix) with at least one-inch margins and no smaller font than 12 (put the tables and figures separately in an appendix), applying and discussing Tasks 1 through 9. Write your answer as a complete essay, with an introduction, conclusion, and a list of references, focusing on one or more key issues. We will judge the paper based on good writing and on your ability to argue effectively about the dynamics of the regions. Refer to the "Suggestions for Writers" handout concerning common writing problems. Points will be deducted for any papers submitted late.