CALIFORNIA STATE UNIVERSITY – SACRAMENTO
ECON 145 Economic Research Methods
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Supplement
Introduction to Regression Analysis

Introduction to Regression Analysis

Overview
Regression analysis is used in nearly all empirical work in economics. It allows us to study the relationships between several variables at once.

We've studied the relationship between two variables. Now imagine that instead of looking at the relationship between education and income, we could look at how other factors (like gender, work experience, race, age, etc.) affect income at the same time.

To understand regression analysis, it is easiest to start with imagining how it works with two variables, known as a bivariate regression.

Steps to Regression Analysis

1. **State the hypothesis**
   <u>Dependent variable</u>: the variable that we want to explain the behavior of.
   <u>Independent variables</u> (explanatory variables): the variables we use to explain the behavior of our dependent variable. These are also called regressors.

   The relationship between the variables is based on economic theory.

   <u>Bivariate regression</u>: A regression with one dependent variable and one explanatory variable.
   <u>Multiple regression</u>: A regression with one dependent variable and more than one explanatory variables.

2. **Test the hypothesis** (estimate the relationship between the variables)
   EViews will estimate the relationship for you, but you need to learn how to interpret the results of your regression. See the accompanying handout for an overview of how to read EViews regression output.

3. **Interpret the test results**
   - To what extent do the coefficient estimates conform to the maintained hypothesis you stated in Step 1?
   - Are the coefficient estimates statistically significant?
   - Are they economically significant?
   - Are the coefficient estimates plausible for the real world, consistent with the economic theory, and within the range of previous estimates?
   - How "good a fit" is the overall regression model?

More on these later:

4. Check for and Correct Common Problems of Regression Analysis

5. Evaluate the Test Results