Growth: Empirical Evidence: Problems

I obtained data from the St. Louis Fed on the ratio of total government consumption and investment to GDP, as well as the male civilian unemployment rate. The data are quarterly and run from January 1947 through April 2011. Because I am a terrible economist, I report the following (actual) regression result:

$$UE_t = 0.21\frac{G_t}{GDP_t} + u_t \tag{1}$$

1. All else equal, a 1% increase in government spending's share of GDP correlates with a 0.21% increase in the unemployment rate. The term "all else equal" is not needed in this particular example because nothing else appears on the right hand side of (1). In general, it implies that all other right hand side variables are unchanged.

2. This value provides the best fit. Specifically, any other value results in the average regression error squared (u_t^2) being larger.

3. There are actually many reasons why this regression result is garbage. In class, we focused on omitted variable bias. Unless I include all of the important variables that affect unemployment on the right hand side, my regression coefficients are erroneous. It isn't hard to think of important factors that I neglected. Some, but not all, include inflation, taxes, and interest rates.

4. By itself, a regression result does not establish causation. In order to establish causation beyond a reasonable doubt, I must be able to provide convincing economic intuition or theory that supports my empirical result. In this case, I could provide some such evidence, but probably not enough to convince most macroeconomists.

5. Maybe. Unemployment does not equal welfare. If lowering government expenditures had no other effects except to reduce unemployment, then we probably should do so. But suppose that lowering government expenditures requires eliminating all unemployment insurance. Many people would argue that this is a bad policy even if it does lower the unemployment rate.

6. Barro finds empirical evidence that GDP converges across countries over time. Specifically, all else equal, 2.3% of a GDP gap between countries is eliminated each year. We thus expect poorer countries to grow at faster rates, all else equal, than wealthier countries. Blowing up

most American factories would obviously reduce GDP (and surely welfare)[1]. Following this drastic decline, we would then expect the rate of GDP growth to increase.

The following three factors, although not discussed in class, were examined by Barro: i) population, 2) religious and ethnic fragmentation, and 3) latitude.

7. There is no single correct answer. I would not expect population to matter for per capita variables. You may argue, however, that more populous countries are better able to specialize which improves their productivity. I would expect increased religious and ethnic fragmentation to reduce growth. Such fragmentation makes it more likely that some groups might not enjoy full property rights. But again, you might be able to come up with an alternate intuition. I would expect very hot and very cold countries to exhibit slower growth due to the hardships of supplying labor in such locales.

8. Barro finds that the optimal latitude for growth is 39 degrees, corresponding to Beijing. He finds that population does not have a significant effect on growth. He also finds that the effects of religious and ethnic fragmentation are small.

9. Copyright concerns do not allow me to post a key to book problems.

[1]Unless one of those factories contains the New England Patriots.