14.750x: Political Economy and Economic Development

Module 4 Problem Set

Part 1: Reading Section

1. Please answer the following questions regarding Dell (2010), "The Persistent Effects of Peru's Mining Mita".

   (a) What work were the conscripted laborers in the Mita areas forced to do?
      i. Logging
      ii. Mining
      iii. Shipping
      iv. Sugar production

   (b) In which year was the Mita system first put into place? (Enter a whole number.)

   (c) What econometric technique constitutes Dell's main tool of analysis in comparing Mita and non-Mita areas?
      i. Differences-in-differences
      ii. Instrumental variables
      iii. Ordinary least squares
      iv. Regression discontinuity design

   (d) According to Dell's analysis, which of the following are potential causes of lower household consumption in the Mita areas? (Select all that apply.)
      i. Land tenure / haciendas / communal land
      ii. Public goods provision
      iii. Agricultural market participation / prevalence of subsistence farming

Part 2: R Section

2. Use `mitaData.RData` to answer the questions below.

   (a) Given longitude and latitude variables x, y, construct x^2, y^2, xy, x^3, y^3, x^2y, xy^2.
      i. Enter the mean of x^2, with three places after the decimal.
      ii. Enter the mean of y^3, with three places after the decimal.
      iii. Enter the mean of xy^2, with three places after the decimal.

   (b) Regress the 2001 log equivalent household consumption [`lhhequiv`] on *mita* [`pothuanmita`], all polynomial terms in question 2a (including x and y themselves), elevation [`elv-sh`], mean slope [slope], [infants], [children], [adults], and boundary segment fixed effects [`bfe4-1`, bfe4-2, bfe4-3]. Cluster the standard errors by [district]. Run the regression for three different subsets of the data: first, for observations where the distance to *Mita* boundary [d-bnd] is less than 100km, next when it is less than 75km, and lastly

when it is less than 50km.

R Tip: To cluster data, use `cluster.vcov` after using `lm()`. Look at the example of the `cluster.vcov` command in the package `multiwayvcov`.

What is the coefficient on *Mita*? Are the results significant at the 5% level?

Please enter numerical responses below rounded to three places after the decimal (for example: 5.555)

   i. 100km: the coefficient is _____, and the results are (significant/not significant) at the 5% level

   ii. 75km: the coefficient is _____, and the results are (significant/not significant) at the 5% level

   iii. 50km: the coefficient is _____, and the results are (significant/not significant) at the 5% level

(c) Run the same regressions as in question 2b, but instead of polynomial terms in longitude and latitude, use a cubic polynomial in distance to Potosi [dpot]. That is, include the first, second, and third powers of this variable in the regressions. Again, cluster the standard errors by district and run the regression in 3 ways (for observations where the distance to *mita* boundary [d-bnd] is less than 100km, less than 75km, and less than 50km).

What is the coefficient on *Mita*? Are the results significant at the 5% level?

Please enter numerical responses below rounded to three places after the decimal (for example: 5.555)

   i. 100km: the coefficient is _____, and the results are (significant/not significant) at the 5% level

   ii. 75km: the coefficient is _____, and the results are (significant/not significant) at the 5% level

   iii. 50km: the coefficient is _____, and the results are (significant/not significant) at the 5% level

(d) Do the coefficients on *Mita* in questions 2b and 2c differ in either size or their significance?

   i. No, there is no difference between the coefficients on *Mita* in (b) and (c). They are significant in both (b) and (c).

   ii. No, there is no difference between the coefficients on *Mita* in (b) and (c). They are not significant in either (b) or (c).

   iii. Yes, the point estimates are relatively similar in size, but they are signficant only in (b).

   iv. Yes, the point estimates are relatively similar in size, but they are signficant only in (c).

   v. Yes, the point estimates are vastly different in size, although they are significant in both (b) and (c).