International Economics
M2 PhD track - Homework
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The homework should include both a pdf file explaining methods and results for both questions, as well as the programs used (all in a zip archive). You are free to use R or Stata, but what is needed is a master file that makes sure everything runs from start to end. As a general recommendation, add comments to explain what the important steps of the code are doing.

1) Krugman (1980) and the gravity equation.

Redding and Venables (2004) is one of the early papers showing how to obtain a structural gravity equation from the CES-monopolistic competition setup.

a. Introduce in this setup vertical differentiation such that the varieties from each origin have a specific utility (quality) shifter. How is the bilateral trade equation changed ?
b. Introduce *bilateral* preferences in this setup, such that now quality is assessed differently in each country. How is the bilateral trade equation changed ? Can we separately identify bilateral preferences from bilateral trade costs using bilateral friction variables (distance, common language etc.) ?
c. Does the gravity equation hold when introducing additive trade costs ? Show why (/why not)
d. Does the gravity equation hold when firms are oligopolists ? Show why (/why not)
e. Krugman (1980) is a homogeneous firms / representative consumer model. Keeping with CES demand and monopolistic competition, what is the main additional condition needed for gravity to hold if firms' productivity is heterogeneous? What is a model of heterogeneous consumers that can be used while keeping a gravity prediction? In both cases, be precise about needed functional forms.

2) Empirical exercise : market potential and development.

The goal is to replicate Redding and Venables (2004) regressions and graphs for a recent set of years. The dataset is an updated version of the one in Head and Mayer (2011), with international trade only (no self trade), so that the Foreign Market Potential (FMP) can be calculated.

a. Calculate FMP of each country in 2016 and regress it on GDP per capita (in log-log)
b. Replicate the exercise with all years since 2004. Which fixed effects can you now introduce in the second step? does it change results ?

Link to Redding and Venables (2004) :

http://www.princeton.edu/~reddings/pubpapers/WincJIE2004.pdf

Link to Head and Mayer (2011)

https://sites.google.com/site/thierrymayer/files/JEG_publishedversion.pdf

Link to data :
https://drive.google.com/file/d/1knBUKcTQK-AodUMNzXC41XJYgAX60tRZ/view?usp=sharing