Econ7115: Structural Models and Numerical Methods in Economics
Final Project

---

1. Consider the example in Week 3 "Variable Markups in the Quantitative Trade Model", with the following parameters

   - $N = 2$. Country 1 is the North, with $T_1 = 2$ and $L_1 = 15$, whereas Country 2 is the South, with $T_2 = 1$ and $L_2 = 10$
   - Fixed marketing cost $F_n = 10$ for all n
   - Fixed entry cost $f^e = 1$
   - Iceberg trade cost $\tau_{in} = 2$ for all $i \neq n$
   - $\sigma = 4$ and $\theta = 4.5$
   - $\varepsilon/\sigma = 2$

   1. Consider the special case where $\varepsilon = 0$ (CES utility). Please derive the equilibrium system in terms of $(w_i, M_i)_{i=1}^2$ and compute the equilibrium $(w_i, M_i, P_i, D_i)_{i=1}^2$ in this special case

   2. Consider the general case with variable markups. Please compute $(w_i, M_i, P_i, D_i, c_i^*)_{i=1}^2$, the aggregate markup $\bar{\mu}_i^D$, and welfare $U_i = \frac{w_i}{P_i}$ using the algorithm provided in the W3 slides page 20-22

   3. Suppose that the iceberg trade cost from the North to the South, τ_{12}, is decreasing from 2 to 1.5. Please re-compute the equilibrium both under the CES case and under the general case. Discuss your results.