Problem Set 1

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January 2025

Part I

1. Income
$$E_n = w_n N_n \tag{1}$$
2. Labor market clearing
$$w_n N_n = \sum_{k \in \mathcal{K}} \beta^k X_n^k \tag{2}$$
3. Total firm revenues of country n in sector k
$$X_n^k = \sum_{i \in \mathcal{I}} X_{in}^k \tag{3}$$
4. Total expenditure of country n in sector k
$$E_n^k = \sum_{k' \in \mathcal{K}} \lambda^{kk'} \sum_{i \in \mathcal{I}} X_{in}^{k'} + \mu^k E_n \tag{4}$$
5. Total exports from country i to country n in sector k.
$$X_{ni}^k = \frac{T_i^k [c_i^k d_{ni}^k]^{-\theta^k}}{\Phi_n^k} E_n^k \tag{5}$$
6. Multilateral resistance term
$$\Phi_n^k = \sum_{i \in \mathcal{I}} T_i^k [c_i^k d_{ni}^k]^{-\theta^k} \tag{6}$$
7. Price index of composite goods from each country i in sector k
$$P_i^k = A^k [\Phi_i^k]^{-1/\theta^k} \tag{7}$$
Where A^k is a constant.
8. The price of a bundle of intermediate inputs for each sector
$$m_i^k = \prod_{k' \in \mathcal{K}} (P_i^{k'})^{\lambda^{k'k}} \tag{8}$$
9. Cost of a bundle of inputs
$$c_i^k = \Lambda^k (w_i)^{\beta_k} \prod_{k' \in \mathcal{K}} (P_i^{k'})^{\lambda^{k'k}} \tag{9}$$
where Λ^k is a constant

Part 4

Counterfactual 1: increase the TFP of country 1 in sector 1 by 20 percent.

Counterfactual 2: increase the TFP of country 2 in sector 1 by 20 percent.

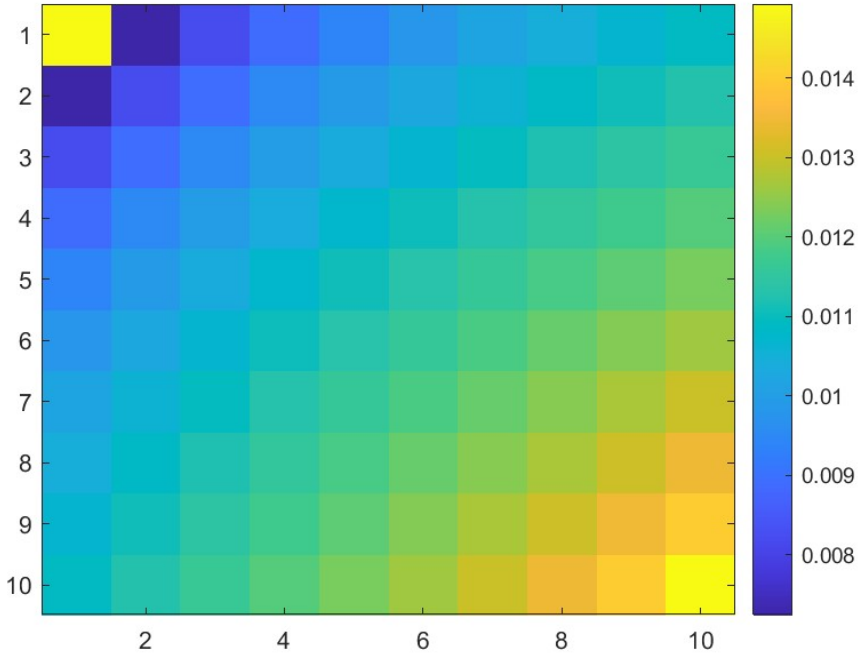

Figure 1: Counterfactual 1

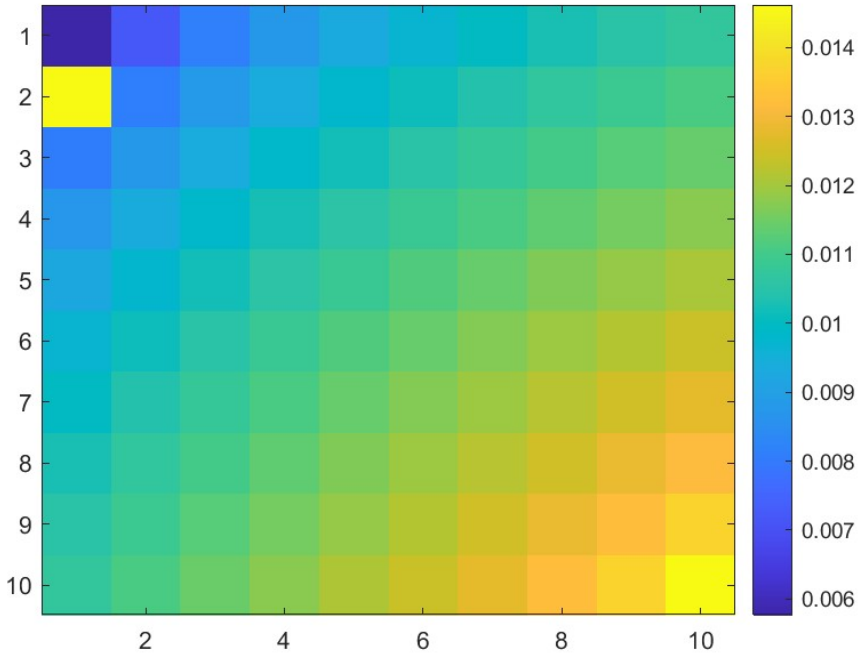

Figure 2: Counterfactual 2