Econ7115: Structural Models and Numerical Methods in Economics
Assignment W7

March 4, 2025
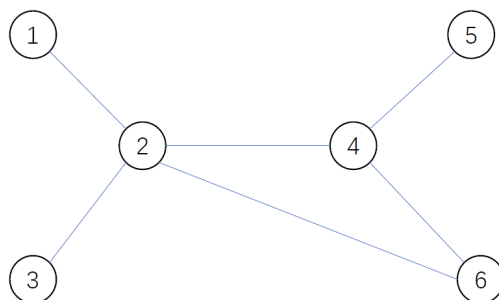
Due 23 April 2025
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1. Consider the transportation model in Allen and Arkolakis (2022) under the following parameterization:

   - Aggregate labor is 1: freely mobile over space

   - There are no agglomeration and congestion forces

   - Productivity and amenity: $A_j = u_j = 1$ for all j

   - Elasticity of substitution: $\sigma = 4$. Substitution across transportation paths: $\theta = 10$

   - The direct trade cost between i and j, t_{ij} is equal to 1.5 if i and j are directly connected and ∞ otherwise. The direct connections are illustrated as follows:

   - Please

     1. Compute wages, labor allocation, and welfare under the baseline parameterization

     2. Suppose that we decrease $t_{12} = t_{21}$ from 1.5 to 1.2. Re-compute wages, labor allocation, and welfare.

3. Suppose that we decrease $t_{24} = t_{42}$ from 1.5 to 1.2. Re-compute wages, labor allocation, and welfare. Discuss the results.