Fixed Capital, Increasing Returns and Regional Manufacturing Structures

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In this paper, we propose a two-industry, two-factor and two-region model to investigate the formation of regional manufacturing structure. Besides labor, both industries use the Dixit-Stiglitz type of local intermediate goods to produce different types of final goods. The local increasing returns are brought about by the variety of intermediate goods, which equals the amount of local fixed capital.

This model answers the following three questions:

1.How increasing returns relate with comparative advantages in a regional economy?

2.How regional manufacturing structures are determined given that labor is mobile across-region and fixed capital is immovable?

3.How the distribution of labor would be determined given the exogenous distribution of fixed capital? We yield three critical propositions:

1.A region having more fixed capital stock will have comparative advantages for a high-tech industry to be located, which uses fixed capital more intensively. In contrast, a region having less fixed capital will have comparative advantages for a commodity industry to be located, which uses fixed capital less intensively.

2. Industrial structures of each region are determined by the ratio of variety of intermediate goods across-regions. The region having more capital stock has a larger share of high-tech industry in regional manufacturing structure. Given an increase of such ratio, Region E will have a regional industrial structure that has larger share of high-tech industry, meanwhile Region E have a regional industrial structure that has larger share of commodity industry.

3. The distribution of labor is brought about by the ratio of local fixed capital amount between Region E and W, which has two opposite effect. An increase of local capital amount brings about a larger share of high-tech industry, which implies a lower local demand for labors (wage share effect). Meanwhile the region having more local capital has higher productivity, and thus acquires larger market share and tends to hire more labor (market share effect). Generally, the market share effect would dominate the wage share effect, and the increase of local fixed capital would bring about more labors to locate in the region.