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Martinho, Vítor João Pereira Domingues

Escola Superior Agrária, Instituto Politécnico de Viseu

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A MODEL BASED ON THE RYBCZYNSKI EQUATION FOR PORTUGAL. ANOTHER WAY

Vitor João Pereira Domingues Martinho

Unidade de I&D do Instituto Politécnico de Viseu
Av. Cor. José Maria Vale de Andrade
Campus Politécnico
3504 - 510 Viseu
(PORTUGAL)
e-mail: vdmartinho@esav.ipv.pt

ABSTRACT

We built a model analyzing the importance which the natural advantages and local resources are in the manufacturing industry location, in relation with the "spillovers" effects and industrial policies. To this, we estimate the Rybczynski equation matrix for the various manufacturing industries in Portugal, at regional level (NUTS II) and for the period 1995 to 1999. As a summary conclusion, noted that the location of manufacturing in Portugal is still mostly explained by specific factors, with a tendency to increase in some cases the explanation by these factors, having the effect "spillovers" and industrial policies little importance in this context.

Keywords: geographical concentration; Portuguese regions; linear models.

1. INTRODUCTION

In this work, taking into account the work of (1)Kim (1999), seeks to analyze the importance of the natural advantages and local resources (specific factors of locations) have in explaining the geographic concentration over time in the Portuguese regions, relatively effects "spillovers" and industrial policies (in particular, the modernization and innovation that have allowed manufacturing in other countries take better advantage of positive externalities). For this, we estimated the Rybczynski equation matrix for the different manufacturing industries in the regions of Portugal, for the period 1980 to 1999. It should be noted that while the model of inter-regional trade, the Heckscher-Ohlin-Vanek, presents a linear relationship between net exports and inter-regional specific factors of locations, the Rybczynski theorem provides a linear relationship between regional production and specific factors of locations. In principle, the residual part of the estimation of Rybczynski, measured by the difference between the adjusted degree of explanation (R2) and the unit presents a approximated estimate of the importance not only of the "spillovers" effects, as considered by Kim (1999), but also of the industrial policies, because, industrial policies of modernization and innovation are interconnected with the "spillover" effects. However, it must be some caution with this interpretation, because, for example, although the growth of unexplained variation can be attributed to the growing importance of externalities "Marshallians" or "spillovers" effects and industrial policies, this conclusion may not be correct. Since the "spillovers" effects and industrial policies are measured as a residual part, the growth in the residual can be caused, also, for example, by growth in the randomness of the location of the products manufactured and the growing importance of external trade in goods and factors.

The designation of externalities "Marshallians" or "spillovers" effects, is because (2)Marshall (1920) have identified in a systematic way the causes of geographical concentration in industrial activities. Some recent works in these areas of thought, have sought to precisely identify solutions to these and other assumptions, present in some works, such as (3)Krugman (1991), (4)Krugman (1992), (5)Krugman et al. (1995), (6)Fujita et al. (1999), (7)Matsuyama (1991), (8)Gali (1994) and other related with spatial issues. It is also important to note that Marshall identifies the natural advantages as a major cause of geographical concentration (Kim, 1999). Another classification for the causes of concentration was made by (9)Scitovsky (1954), in other words, this author made a distinction between technological externalities, materialized through interactions unrelated to the market that directly affect consumers' utility or production functions of companies and pecuniary externalities that result from market interactions, in the proportion that companies engage in trade of products.

2. THE BASE MODEL

The base model is then the following (10)(Martinho, 2011):

$$\ln Y_{it} = \alpha + \beta_1 \ln Labor_{it} + \beta_2 \ln Agriculture_{it} + \beta_3 \ln Florestry_{it} + \beta_4 \ln Extraction1_{it} +$$
$$\beta_5 \ln Extraction2_{it} + \beta_6 \ln Energy_{it} + \beta_7 \ln Construction_{it} + \beta_8 \ln Capital_{it} + \varepsilon$$

In this context, it is expected that there is, above all, a positive relationship between the production of each of the manufacturing industry located in a region and that region-specific factors required for this industry, in particular, to emphasize the more noticeable cases, between food industry and agriculture, among the textile industry and labor (given the characteristics of this industry), among the industry of metal products and metal and mineral extraction and from the paper industry and forest.

3. STATISTICAL DATA USED

Taking into account the variables of the model presented previously, we used statistical data of the five temporal regions of mainland Portugal, from the regional database OF INE (National Accounts 2003). The data are relative to regional gross value added of agriculture, fisheries and forestry, extractive industry of metallic and mineral products, extractive industry of various products, the industry of fuel and energy products, each of manufacturing industry and construction and public works. We used also data relating to employees in each of the manufacturing industries and gross formation of fixed capital.

4. THE ESTIMATES MADE

In the results presented, there is a strong positive relationship between gross value added and labor. On the other hand, there is an increased dependence on natural and local resources. We found that the location of manufacturing industry is yet mostly explained by specific factors of locations, with a tendency to increase in some cases and poorly explained by "spillovers" effects and industrial policies.

5. SOME CONCLUSIONS

In short, be noted that the location of the Portuguese manufacturing industry is still mostly explained by specific factors of locations, with a tendency to increase in some cases, capital has little influence on this location and the industrial policies of modernization and innovation are not relevant, especially those that have come from the European Union, what is more worrying.

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