THE ANALYSIS OF INTER-REGIONAL TRADE AND INVESTMENT FLOWS:
THE AGGREGATED NET TRADE LEVEL IN THE SPANISH PROVINCES

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This study examines the relationship between trade and potential determinants: GDP, FDI, unemployment rate in Spanish provinces while incorporating spatial dependence. This methodological paper contributes to the literature because it evaluates trade at a more disaggregated level and includes FDI to explain the trade pattern. The research concludes that: (1) Only considering GDP and unemployment rate; increase in economic growth or a decrease in unemployment rate could motivate trade in the province; likewise trade of the neighbors will increase the competition, which could decrease the province sales. (2) If FDI is included, FDI received by the neighbor provinces could decrease the exports of the province because it makes its rivals more productive and competitive.

The objective of this study is to test whether there is a relationship between a specific provincial trade and three factors: the GDP per capita, the international foreign direct investment (FDI), and the unemployment rate of the province and its neighbors while including the spatial dependence with the trade flow of the provincial neighbors. This paper contributes to the literature in several aspects: (1) We will include the impact at a more disaggregated level: the provincial level, which has been unexplored and contains a higher level of heterogeneity. (2) The analysis also includes the impact of the provincial neighbors using an extension of the gravity model.

OBJECTIVE AND CONTRIBUTION

RELEVANCE OF THE TOPIC

International flows of commodities and products between countries represent a significant portion of the world GDP. The two channels are trade and foreign direct investment (FDI) (Laurin, 2012). The Spanish economy became one of the receptors of foreign investments and also a potential trade partner because its closeness to several regions of Europe and North Africa. However, despite the economic growth of the country, not all the provinces receive this internalization of productivity growth with the same intensity.

At a national level, heterogeneity in trade has been intensively explored in the recent years in terms of cross-country heterogeneity and its relationship with trade (Rodrik, 2007). However, there is not any empirical study that focuses on the evaluation of the trade pattern inside a national perspective (i.e. interprovincial trade), which expresses the internal variation of trade within a nation, whereby the trade of a province could depend on the trade flow of the partners and its geographical location and characteristics.

INTERNATIONAL VS. PROVINCIAL TRADE

The study of the intraregional effects is different because:

- Generally transportation cost is larger between nations than regions especially if the commodities are subject to tariffs.
- Provinces are under the national government control, therefore political/federal laws apply for all the provinces which does not happen in the relation between countries.
- There are natural barriers between countries such as language and cultural aspects.
- There is free trade between all the provinces inside the country which eliminates potential trade barrier effects (Falvey and Foster, 2012).

DATABASE

The model is based on Helpman et al. (2004) for heterogeneous firms. We first obtain the ratio of the revenues from exports and FDI (SXX):

\[ SXX = \frac{\text{Exports}}{\text{FDI}} \]

Multiplying by revenues from FDI. We obtain the following relation:

\[ \text{Exports} = f(\text{Distance}, \text{Unemployment}, \text{FDI}, \text{GDP}, \text{POP}) \]

Transportation costs depends on distance which is represented by the spatial weight matrix. We use unemployment as a proxy for \( k \). Consumers inside the country have the same elasticity of substitution. We assume no entry costs because we are at a national level. Allowing differences in GDP and population, our model is as follow:

\[ \text{Exports} = f(\text{Distance}, \text{Unemployment}, \text{FDI}, \text{GDP}, \text{POP}) \]

RESULTS AND CONCLUSIONS

In our methodological study we found that the model is consistent with trade and financial theory between countries:

- The exports per capita of each province could increase if there is an economic expansion (higher GDP per capita) of the province. However, it could decrease if there is higher own unemployment rate.
- Additionally, the results of this model shows that the FDI received by the neighbor provinces could decrease the exports of the province. One of the explanations of this behavior is that receiving direct investment from other countries could increase the productivity in that province. Thus, the province becomes more competitive in comparison to their neighbors. This motivates the province to export (Diaz, 2001; Nocke and Yeaple, 2007), therefore this could decrease the quantity traded by the rival neighbors and vice versa.