

European NUTS 2 regions: consistent Inter-regional Trade and Transport flows estimation

Topic: Regional trade

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Economic development is inter-regional in nature, where physical and technological proximity determined by inter-regional and national cross-border interactions in trade, investments and knowledge are important determinants of economic growth. However, quantitative policy research analysing regional development in Europe such as proposed in the regional smart specialisation strategy (McCann and Ortega-Argilés, 2011) has been hampered by data deficiencies. This is particularly the case for the data and the empirical evidence on inter-regional trade relations. The existing data on inter-regional trade are incomplete and based on data points which are far in the past.

This study focuses on the estimation of inter-regional trade in goods and services of the regions, within the same country as well as with regions in other Member States. The estimation is based on a rationalisation of Supply and Use Tables. The production and consumption of goods and services in the European NUTS 2 regions were subsequently interlinked using data on both freight transport (5 modes) for goods and business travel (3 modes) for services. The estimated transshipment locations and the number of transshipment are specific for every good on every trade link.

Regional supply and use tables (SUTs) are the basis for the estimation of the inter-regional trade flows. We use supply and use tables rather than Input-Output tables, because the focus is on the regionalization of both trade and regional technological coefficients (the use and supply of products by different economic actors). An input-output table is built around the assumption that every sector produces only one good. Therefore, depending on the type of IO table, either the sectors are not comparable over the nations and not comparable with regional sector statistics, or products are not comparable over nations and not comparable with trade statistics. Hence, a regionalization of IO tables cannot make use of both regional sector statistics and regional trade statistics.

The central principle in our methodology inferring European regional trade flows from different sources of information is increasing data reliability by imposing consistency with available statistics. Regional trade flows need to be consistent with statistics on production and consumption per region, which, in turn, must be in line with national data on production and consumption. These regional flows must also be consistent with international trade statistics, on a national level. Trade statistics should be mutually consistent. That is, exports from a region or country A to a region or country B should equal the opposite flow of imports received by region or country B. All these consistency checks provide additional information and therefore add to the quality of the estimated trade flows.

The methodology extends the approach proposed in Thissen et al. (2013) (in line with "parameter-free"™ universal methodologies as proposed by Simini et al. (2012)), to improve upon the validity and the quality of the estimate by incorporating the estimation of transport flows into the trade flows estimation. The methodology is based on the distribution of probabilities of transport flows between regions used to estimate transshipment locations, specific number of transshipment per good and the amount of goods and services traded between regions.

Finally, in this study we determined the trade between NUTS 2 regions given the data on freight transport and regionalized SUTs for the EU28 regions.