

The role of the technological gap in determining trade intensity between OECD countries

Summary

Technological progress can be considered as one of the most important determinants of economic growth. The level of technology differs significantly between countries. Some of them, located at the world technology frontier, are more innovative than others. The described difference is called the technological gap. Taking into consideration the heterogeneity of technology utilized in various sectors of the economy, recent literature suggests that technological gap should be analyzed at the industry level rather than the country level.

Both classical and modern trade theory postulates that technological gap is one of the most important determinants of bilateral trade. The relationship should be significant if trading partners are at a similar technological level, but also if technological gap is substantial.

It should be noted that the relationship between technological gap and trade intensity was primarily investigated at the country level, mainly due to the availability of properly disaggregated data. Presently, empirical verification of the above relationship at the industry level is possible due to the publication of an industry-level panel dataset concerning Organisation for Economic Co-operation and Development member states. For this purpose gravity model has been utilized.

The main aim of the study was to identify the direction and the magnitude of the impact of technological gap on the intensity of bilateral trade between OECD member countries at the ISIC rev. 4 industry level. The main hypothesis stated that technological gap significantly affects the intensity of bilateral trade at the industry level.

In the dissertation, a critical literature review concerning technological gap has been presented. It described the role of technological gap in trade theory, analyzed foundations of gravity models, as well as recent empirical research devoted to the role of technological gap in determining trade intensity. Taking into consideration the aim of the study, the last, empirical chapter was crucial. It contained estimation results of the gravity model augmented by various technological gap measures. The research sample consisted of bilateral trade between 36 countries over the period 1990-2017 for 21 manufacturing industries. Adopted multi-stage research strategy allowed for verification of the main and auxiliary hypotheses.

Obtained results demonstrated that the gravity model can be successfully utilized at the industry level. Furthermore, the empirical analysis confirmed the main hypothesis of the dissertation. The study shows that the relationship between technological gap and bilateral trade intensity differs between industries, depending on technological level of trade partners or a measure of technological gap. Thereby, the impact of technological gap on trade at the country level depends on several dependencies occurring at the industry level.

Based on obtained results, conclusions, policy implications, limitations of the study, as well as directions of further studies have been formulated.

Keywords: technological gap, gravity model, international trade, OECD, panel data.