Thesis Abstract

Keio University

Title of Thesis:
Essays on machinery production networks and the globalizing world economy: a comparison between Latin America and East Asia

Summary of Thesis:
This Ph.D. dissertation is composed of a collection of five essays, fruit of the research effort during my studies in the Graduate School of Economics, Keio University. The main topic that connects each chapter is the recently established way of organizing the manufacturing production, referred as production networks. A consequence of the production fragmentation, or the second unbundling, the international production networks are considered as one of the main causes of the international trade boost in the last decades. It promoted a reduction in the production costs, taking advantage of different locations comparative advantages. Besides this, it opened new possibilities to developing countries, allowing their engagement on some steps of the production of goods they could not produce before. In other words, international production networks is a topic of extreme relevance in the international trade and development economics field.

The emphasis on machinery is explained by the fact that this is the industry that employs the highest number of parts and components, being naturally the most prone to and developed one in terms of production fragmentation. Consequently, the machinery industry is the most appropriate to the study of this type of manufacturing organization.

Despite the reductions in trade and service link costs promoted by the Industrial and the Information and Communication Technology (ICT) revolutions, the core of production networks are still localized inside geographical regions. Therefore, many articles were produced to evaluate the machinery production networks inside three main blocs: East Asia, European Union, and NAFTA. In general, these articles revealed the production structure characteristics of each bloc and contrasted their specificities. During my studies, I identified a scarcity of research related to Latin America and its role in machinery production networks evolution. The essays in this dissertation are part of an effort to contribute to the international trade and development economics literature, aiming complement the incipient studies comprising Latin America. In fact, to facilitate the comprehension of Latin America’s condition, the aggregate of the chapters provides a contrast between the situation in Latin America and East Asia. The choice for East Asia was grounded in three main reasons: East Asia is considered the state-of-the-art in terms of machinery production fragmentation; different from European Union and North America, East Asia configuration is more similar to the Latin American one, being composed mainly of developing economies; the existence of many previous studies in the economics field comparing both regions and their development patterns, makes it a natural choice.

The objective of this dissertation’s first chapter is double-fold: update machinery production fragmentation evolution, providing the general scenery of international production networks in the globe, and identify the new tendencies promoted by East Asia’s increase in trade of parts and components.
Once that the first chapter concentrated more on East Asian trade patterns, the second chapter provides descriptive and quantitative analyses of Latin American performance. It also provides a comparison between Brazilian and Mexican evolution in machinery trade along the same period (1996–2011). In the third chapter, international Input-Output (IO) tables were used to estimate indicators that provide evidences of the East Asian and Latin American production fragmentation structure that could not be captured using trade data. The use of this different source of data has the advantage of capturing features like the level of integration in vertically fragmented production networks, the length of this production networks and the distance to the final demand, allowing a comparison between East Asian and Latin American countries. The fourth chapter investigated the effects that the increase in the importation of machinery parts and components and the changes in the supplier composition had in the quantity and quality of final products and parts and components traded inside Latin America.

The first four chapters used descriptive and quantitative analysis to reveal the evolution of machinery production networks. We identify an enhance of East Asian role in fomenting production networks inside third regions, while Latin American region is slowly engaging in this production organization. We also provide evidences of East Asian countries importance in the promotion of machinery production networks inside Latin America.

The fifth chapter approaches the production networks theme from a totally new perspective. Unifying the tariff evasion literature with the production networks literature, this chapter objective is to confirm if production networks trade are less, equally, or more prone to import tariff evasion than non-production networks trade. Production networks trade relations are, in general, more intensive and stable, increasing the number of times given products are traded in a given period, facilitating the identification of the correct unit value of the traded product. Besides this, the engagement of a country in this type of production organization presupposes a standard of rule of law stability, efficiency dealing with products and competitive prices. Consequently, it is expected that products traded inside production networks would be less prone to tariff evasion. As a robustness check, East Asian and Latin American intra and inter-regional import data were studied. The prevalence of dissimilitude among the two regions tariff evasion patterns endorses the hypothesis that patterns found in the East Asian case are specific of production networks.

To sum up, the essays in this Ph.D. dissertation provide a rich panorama of machinery production networks development in the period 1996–2011. It contributes to the literature highlighting the increasing importance of East Asian role as a supplier of parts and components to third regions, the slow engagement of Latin American countries on this type of production organization and the quantity and quality impacts that imports of parts and components from the different regions of the world have on Latin American intra-regional machinery trade. Besides these contributions, this Ph.D. dissertation reveals another dimension of production networks effects that is less trivial. It discloses that production networks indirectly contribute to the decrease in machinery import tariff evasion and restrict the channels available for this practice.