

Dissertation Abstract of Shuichiro Nishioka

This dissertation studies factor contents of trade with the Heckscher-Ohlin-Vanek (HOV) model. Previous literature has shown that the HOV model performs poorly in the empirical context in particular for developed countries. Three new ideas and methodologies are introduced. I first reconsider international factor productivity adjustments with my unique productivity estimation methodology. I next introduce an unexplored intangible factor knowledge capital into the HOV model. Finally, I estimate knowledge spillovers from the HOV equation.

Chapter 1: “Development-Related Biases in Factor Productivities and the HOV Model of Trade”

Past empirical failures of the basic Heckscher-Ohlin-Vanek (HOV) model related to its restrictive assumptions, particularly identical international technologies and factor price equalization. Trefler (1993) resuscitated the HOV model by introducing a simple Hicks-neutral (HN) factor-productivity adjustment, an approach that was heavily criticized. In this paper, I reexamine the productivity question by estimating factor productivities from the individual technology data of multiple countries. Using a dataset of 15 OECD countries, I find positive evidence for Trefler’s idea, but with factor augmentation. Further, I find that the ratios of factor productivities are strongly correlated with corresponding factor endowments. This systematic bias implies that the ability of the HOV model to explain North-South factor trade depends both on relative factor abundance and productivity gaps.

Chapter 2: “An Explanation of OECD Trade with Knowledge Capital and the HOV Model”

This study examines the international factor trade of the developed (OECD) countries within the Heckscher-Ohlin-Vanek (HOV) model. Previous empirical work largely has not supported the HOV predictions for OECD trade, perhaps because of the similarity in factor abundance among those countries. In this paper a previously unexplored factor -- knowledge capital (measured by cumulative R&D stock) -- is introduced into the HOV framework. Knowledge capital likely plays an important role in determining comparative advantage among OECD countries because they specialize in high-tech products and also show dissimilarity in knowledge abundance. By using a new dataset for fifteen OECD countries, I find strong support for the strict HOV model with the addition of knowledge capital. Moreover, the introduction of knowledge spillovers further improves performance of the HOV model.

Chapter 3: “Estimating Knowledge Spillovers from the HOV equation”

This study examines knowledge spillovers from developed (OECD) to developing countries. Knowledge capital is an important input for high-tech products, and plays a key role in comparative advantage of these products. Because developing countries rely on foreign sources for their production knowledge, spillovers are responsible for the future path of economic growth. In contrast to previous literature that estimates knowledge spillovers using productivity and patent data, I estimate spillovers based on data from international trade, which makes it possible to include not only developed but also developing countries in our dataset. As discussed in Nishioka (2006), knowledge capital performs well in the context of the Heckscher-Ohlin-Vanek (HOV) model. Moreover, the introduction of knowledge spillovers improves the performance of the HOV model. In this chapter, knowledge spillovers are estimated using the HOV model. Due to my new methodology, it is possible to study the mechanism of knowledge spillovers from developed to developing countries.