

**Essays on Patterns of International Trade**

**Chapter 1: Comparative Advantage, Firm Heterogeneity, and Selection of Exporters (Job Market Paper)**

This paper investigates how the fraction of exporting firms among domestic firms in a country differs across industries, depending on the country’s comparative advantage. Although it is a known stylized fact that some firms export while others do not, the variation of the shares of exporters across industries, as well as across countries within the same industry, has been little explored. This paper derives and tests one relationship between exporter share and the underlying sources of its heterogeneity across industries, with a particular focus on relative factor intensity. In the context of the international trade literature, this paper extends the Heckscher-Ohlin theory of comparative advantage to the issue of selection of exporter firms by providing new empirical evidence.

This paper builds on the theoretical work of Melitz (2003) and Bernard, Redding and Schott (2007) to construct a model of an economy with two countries, two production factors, and many industries that are populated by a continuum of firms with different levels of productivity. Firms are required to incur fixed costs to export. The model predicts that the probability of a domestic firm being an exporter will rise monotonically with its industry’s rank in the distribution of input shares of the production factor that is relatively more abundant in the domestic economy. For example, if a country is relatively more abundant in skilled labor, the ratio of exporters to all domestic firms will be higher in industries with higher skilled-labor intensity.

To test this theoretical prediction, I use data from the manufacturing censuses of Chile, Colombia, India, and the United States. The result of the empirical analysis confirms the comparative advantage-driven cross-industry patterns in exporter selection. That is, I find that in a country with a higher relative abundance of skilled labor there is a larger correlation between the fractions of exporters in domestic firms and the relative intensities of skilled labor in industries.

**Chapter 2: Explaining Export Varieties: The Unexplored Role of Comparative Advantage (with Na Yang)**

This paper examines cross-country and cross-industry patterns in the numbers of product varieties in exports. The literature on product variety in international trade, and its increase (“extensive margin”), has grown rapidly. Yet, few studies have addressed differences in the number of product varieties in exports across countries and industries, as well as their determinants. This paper investigates whether the relative abundance of production factors of countries, together with the relative intensities of input factors in industries, explain these differences in export variety.
A model of a two-country, two-factor, and multi-industry economy with productivity-heterogeneous firms predicts that the number of product varieties in exports from a country, relative to that from other countries, will be larger in an industry which uses more intensively, relative to other industries, a factor with which the country is relatively better endowed. We test this semi-Heckscher-Ohlin prediction using data on manufacturing exports to the United States from 115 other countries. In these data, products are classified according to the 10-digit Harmonized System (HS). The result of the empirical analysis shows that (i) if a country is relatively more abundant with (un)skilled labor, the country’s share of exported varieties tends to be higher as an industry is more (un)skilled-labor intensive; and (ii) this correlation becomes larger for a country with higher (un)skilled-labor abundance. These findings suggest that there is a role for factor proportion-based comparative advantage in determining patterns of product variety exported from various countries in various industries.

Chapter 3: Revisiting the Revisited: An Alternative Test of the Monopolistic Competition Model of International Trade

This paper proposes an alternative test for the monopolistic competition model of international trade in terms of its implication for the volume of bilateral trade. A standard monopolistic competition model, such as the one presented by Helpman and Krugman (1985), implies that the volume of trade between countries, relative to their total income, will be larger as the countries are more similar in income size. This implication has been empirically tested in the literature (e.g., Hummels and Levinsohn (1995) and Debaere (2005)) using data on aggregate trade and GDP. However, this implication may not hold for aggregate trade when trade across countries involves non-differentiated goods and countries are not completely specialized in production.

In this paper, I re-examine the volume-of-trade implication of the monopolistic competition model. The equation derived under less restrictive assumptions states that the volume of bilateral trade of differentiated products can be predicted by an index of income similarity between countries that is adjusted by the degree of symmetry of the countries in production of differentiated goods. This alternative sectoral volume-of-trade equation is empirically tested using industry-level data on trade and production in which industries are classified into differentiated and non-differentiated products according to Rauch (1999). Using a variety of estimation methods, I find that the proposed alternative sectoral specification outperforms the conventional aggregate specification in the sense that it supports the volume-of-trade implication of the monopolistic competition model for both OECD and non-OECD countries.