

Research Statement

September 24, 2017

I am a Ph.D. student at the department of economics at McGill university with an interest in fields of international trade and industrial organization. Specifically, my studies aim to explore the firms' behaviors under varying market conditions or with different government policies, and thus fully understand the mechanisms for the interactions among macroeconomic variables. For example, one of my theses, "Multiple-quality Cournot Oligopoly and the Role of Market Size", studies the mechanisms for two empirical findings in commodity market: (i) the products' average quality is higher but the price level is lower in a larger market, and (ii) in some industries, each firm provides only single quality level of products while some firms belonging to other industries provide multi-quality products. My study shows that different industries have different cost structures and the differences in cost structures lead to different market structures and further result in different market features. If the firms belonging to the industry where to produce higher quality level of products incurs larger fixed cost but the change of variable cost is insignificant, then the firms will choose to produce single quality level of products, i.e. high or low level. In these industries, the average products' quality level increases in market size. Contrarily, if to produce higher quality level of products incurs significant rising in variable cost but the fixed cost keeps unchanged, then all firms will choose to produce both quality levels of products. In these industries, the average products' quality level doesn't change in the market size. These results indicate that the economic integration or trade liberalization could benefit the consumers with resulting in larger share of high quality products in the market but this benefit doesn't apply to all industries. Understanding the micro-fundamentals to the interactions of macroeconomic variables can help us to make better predictions of market outcomes in response to varying government policies or market shocks, and thus helps us to evaluate and design better government policies.

Current Work:

My current researches explore how firms adjust their market strategies, i.e. products' price, quality, and export scopes, in response to varying market conditions. The first paper "**Trade Cost and Export Diversification: Evidence from Chinese Firms**" (job market paper), studies how Chinese

exporters adjust their export scope (the number of product varieties) to different characteristics of destination countries and the reduction of trade cost. Using the Chinese firm-level customs data from the years 2001 and 2006, we obtain the following empirical findings: firms export fewer varieties (indexed by HS6 code) to the destination that are farther away from the home country, larger tariff rate or higher exchange rate volatility; in response to the tariff reduction process by the destination countries after China entering to the WTO in 2001, the high productivity firms expanded the export scope meanwhile the low productivity firms reduced it. As another important contribution to the existing literature, we also constructed a theoretical model which considers firms' optimization decision involving both output and export scopes to explain all our empirical findings, especially the relation between the choice of the export scope and the exchange rate volatility of the destination countries. The Second paper "**Multiple-Quality Oligopoly and the Role of Market Size**", models an oligopoly where firms can choose the quality level of their products by incurring set-up costs that generally depend on quality level. If the set-up cost is independent of product quality, firms may choose to supply both types of quality. We focus on the long run equilibrium where free entry and exit ensure that the profit for each type of firm is zero. Using this framework, we study the implications of an increase in the market size. We show that for the existence of an equilibrium where some firms specialize in the low-quality product it is necessary that the set-up cost for the lower quality product, adjusted for quality level, is lower than that for the higher quality product. In the case where higher quality requires higher set-up cost (per unit of quality) but lower unit variable cost (per unit of quality), subject to certain bounds on the difference in unit variable costs, we obtain the result that an increase in the market size decreases the number of low quality firms, increases the number of high quality firms, and decreases the prices of both products. In the special case where the set-up cost is independent of quality level, we find that all firms will produce both type of quality levels. In this case, an increase in the market size will reduce the value shares of low quality products, but will leave their volume share unchanged; and the market expansion induces a fall in the relative price of the low-quality product, and in the prices of both products in terms of the numeraire good. We carry out an empirical test of a version of the model, where set-up costs now refer to set-up costs to establish an export market, and they vary according to the quality of product that the firm exports to that market. We show that the data supported the hypothesis that the average qualities of the product are higher for bigger export markets. The third paper, "**Income Distribution, Vertical Differentiation, and the Quantity Competition**", analyzes the effects of the change of the income distribution on the equilibrium outcomes in the duopoly-quality model with quantity competition. The analysis results show that with zero quality-cost and an income inequality not too high, then both firms always choose the highest quality level. If the quality-cost is convex, then the average quality level will decrease and the vertical differentiation level will increase in the income inequality. These results are different from the Yurko (2011), who made a similar analysis under the quality-price competition model. Another contribution of the paper is that it gives the sufficient conditions for the single firm to choose multiple

levels of the quality, i.e. the quality-cost function is convex, vertical differentiation is large enough, and the marginal cost is not too high.

Future Work:

Encouraged by my committees, Prof. Long and Prof. Francesco, I plan to focus my study in the area of international economics with applying experiment method and the dynamic models. Experiment method is relatively new in the field of international economics. The method provides much more directed and robust evidences than other methods, and it pursues a bright future with widely applications in the field of international economics. Contrary to the short history of the experiment method, the dynamic models have been applied in this field for quite a long period. Unlike the static models which only characterize the market situations in equilibria, the dynamic models nest the market outcomes in both the equilibrium conditions and time paths towards the equilibria.

In a recent future, I plan to start a work regarding the firms' markups using the U.S. data, i.e. "**Globalization and Firms' Markups in the United States**". Inspired by a recent literature, "The Rising of Markup and Macroeconomic Implications" (Loecker and Eeckhout (2017)), which found that the U.S. firms have been experiencing the rising of markup since 50 years ago, we decide to explore what and how the market trends during the same period that lead to the rising of markups for U.S. firms. Currently, we suppose that three factors may cause the result founded by Loecker and Eeckhout (2017): (i) U.S. firms outsourced their downstream production and focused their production in the upstream chains where the markups are relatively high; (ii) due to the globalization process during the last decades, U.S. firms entered into the third world markets where the local products cannot compete with the U.S. products, and thus U.S. firms increase their markups by charging higher price and lowering average cost with selling more products in a larger market; and (iii) due to the high entry cost to the international market, the large firms with relatively high markups pursue advantage in enlarging their market shares and market power, and in this case the average markup in an industry will increase. My research target is to construct a dynamic model which nests all these features in the economic trends during the last decade to explain the findings by Loecker and Eeckhout (2017).

In next 5 to 8 years, I plan to focus my research on the field of international economics with using experiment method and dynamic models. I propose to do some researches to detect the impacts of government policies or economic integration on firms' behaviors, especially exporting strategies like price, products' quality, R&D investment and products' diversification.