行政院國家科學委員會專題研究計畫 期中進度報告

策略性貿易理論與所得差異(2/3)
期中進度報告(精簡版)

計 畫 類 別 ：個別型
計 畫 編 號 ：NSC 95-2415-H-002-003-
執 行 期 間 ：95 年 08 月 01 日至 96 年 07 月 31 日
執 行 單 位 ：國立臺灣大學經濟學系暨研究所

計 畫 主 持 人：黃鴻

報 告 附 件 ：國外研究心得報告
出席國際會議研究心得報告及發表論文

處 理 方 式 ：期中報告不提供公開查詢

中 華 民 國 96 年 05 月 25 日

附件一

行政院國家科學委員會補助專題研究計畫 □成果報告 ☑期中進度報告

策略性貿易理論與所得差異(2-3)

計畫類別：☑ 個別型計畫　　□ 整合型計畫
計畫編號：NSC 95－2415－H－002－003－
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共同主持人：
計畫參與人員：李玫郁(博士生助理)

成果報告類型(依經費核定清單規定繳交)：☑精簡報告　□完整報告

本成果報告包括以下應繳交之附件：
□赴國外出差或研習心得報告一份
□赴大陸地區出差或研習心得報告一份
☑出席國際學術會議心得報告及發表之論文各一份
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中　華　民　國 九十六年　五月　二十五 日

1 Introduction

Factor price equalization occurs if all individual factor prices, such as wage and rental payments, are the same between countries. The factor price equalization (FPE hereafter) theorem states that given all the assumptions of the Heckscher-Ohlin model (the HO model hereafter), free international trade will lead to the international equalization of individual factor prices. See, for example, Ohlin (1933), Samuelson (1948), Jones (1956, 1965) and Helpman (1999). One of the most important and crucial assumption of the HO model is all the markets being perfectly competitive. This assumption is convenient but not realistic. It is hard to find any market close to perfect competition. The purpose of this project is to challenge the factor price equalization theorem by relaxing the perfect competition assumption.

Since 1980s, trade economists have been working on this direction and have come up with many fruitful results. For example, Brander (1980) sets up a two-country model with one firm in each country. He concludes that there will be cross-hauling (i.e., intra-industry trade) even if the products produced by the two firms are homogeneous. This could never occur in the HO model in which only does inter-industry trade take place. According to Brander (1980), intra-industry trade is caused by the oligopolistic rivalry between domestic and the foreign firms. In addition, according the HO, export subsidy is necessarily welfare-reducing. But Brander and Spencer (1985) and Eaton and Grossman (1986) have shown that if firms in the market play Cournot competition, an export subsidy is called for. This once again indicates that once the perfect competition assumption in the HO model is relaxed, trade policy can be very different.

This project intended to set up an income distribution model to examine several trade propositions such as factor price equalization etc. In the first year of the project, we did establish an income distribution framework. But the framework is too complicated to be useful for further analysis. We could at most assume factor markets to be perfectly competitive and examine trade policies for final goods. Moreover, bringing income distribution into a trade model is by itself interesting, but it may obscure the focus of the factor price equalization under market imperfection. According the HO model, factor price must be equalized if there is free trade in the two countries and all the markets in the model are perfectly competitive. Hence, if we intend to figure out how sensitive the factor price equalization is to the market imperfection, it is better to assume away all the other variations, such as income distribution, in the model. For this purpose, we leave aside the income distribution issue and focus on the market imperfection. We shall study whether factor price equalization holds if there is free trade between the countries and the final goods' markets are imperfectly competitive in a partial equilibrium framework..

There are several interesting works along our line of research. Markusen (1981), Lahiri and Ono (1995), and Shimomura (1998), all assume final goods' markets are oligopolistic in a general equilibrium structure. Markusen (1981) show that factor price equalization theorem does not hold when the markets are imperfectly competitive. Lahiri and Ono (1995) show that factor price equalization theorem hold if firms are allowed to enter and exit markets freely. Shimomura (1998) takes a different approach and agrees with the finding of Lahiri and Ono (1995) that free entry is an important assumption for the theorem to hold.

In this project, we shall examine FPE in a partial equilibrium analysis. We shall examine

if FPE can hold is a framework similar to Brander (1981). We shall construct a two-country (H/F), one-good, one-factor (L) trade model. There are N firms in the home and the foreign countries, producing a homogenous product, playing Cournot competition and selling their outputs to either their domestic markets or their foreign markets. Each firm faces the same production function. But each country has a different labor endowment. We assume the home country has a high labor endowment and hence has a higher labor supply curve. Or, for any wage rate, country H has a higher supplied labor than country F.

Based on the aforementioned model, we shall discuss two equilibria—Autarky equilibrium and free trade equilibrium. For the latter, we shall discuss two cases—with and without transport cost for the final goods to be traded between the two countries. By doing so, we shall be able to compare our results to those derived under the HO model and to specify the conditions under which the FPE holds in a partial equilibrium analysis.

The final report is structured as follows. In the first section, we review the literature and discuss the motivation of the project. Section 2 presents an intra-industry trade model with homogeneous goods in a closed economy to derive the conditions under which the factor prices between the two countries will be equalized. Section 3 examines the similar issue in an open economy framework. Section 4 provides a numerical example to support the results of Section 3 and the importance of transaction costs in the study. Finally, conclusions are drawn in Section 5.

2 The model

Assume the production function in question is given by, x=f (*l*), where x is the quantity of the output produced by a given firm, *l* is the firm's labor demand. This production can be inversed to *l*=h (x). We also assume there is a fixed cost, C associated with each firm. The market demand function is p=p (q), which is the same in both countries. In the labor market, we assume the following inverse labor supply function w=w (L, α), where L is the total labor supplied at wage w and α is a parameter to express the abundance of each country's labor supply. A higher value of α implies a larger labor supply for any give wage rate. Moreover, variables associated to the foreign country will be distinguished by an asterisk (*).

As our purpose is to examine if the FPE originated in the HO model, is robust under a partial equilibrium framework with a oligopolistic setting. To highlight the effects of oligopolistic rivalry, we shall inherit all the other major assumptions employed in the HO model which include nil transaction cost, CRS technology.

Based on the setting, we expect to establish the following lemma and propositions.

Lemma 1 *Assume transport costs are nil and there is free trade in the final good market. Even if the two countries differ in their labor supplies, the price and quantity in each market will be the same in equilibrium.*

Proposition 1 *Assume transport costs are nil and there is free trade in the final good market. For a given number of firms, the factor prices in the two countries are in general not equal.*

This outcome is the same as the one under the HO model. As the home country is abundant in labor supply, other things being equal, the factor price tends to be lower there. Or, the factor prices in the two countries will become equalized if the labor abundance in the home country disappears.

Proposition 2 *As the numbers of firms in the two countries increase, the divergence in the factor price shrinks. The factor price equalization restores when the number of firms goes to infinity.*

Accordingly this proposition can be regarded in some extent as a generalization of the FPE theorem of the HO model. When the number of firms goes infinity, Cournot competition bears the same market outcome as the one under perfect competition. The above proposition indicates that perfect competition is crucial to the FPE theorem in the HO setting.

Proposition 3 *The existence of transport cost will make factor prices between the two countries less likely to become equalized.*

3 Conclusion

In this report, we have proposed a framework to examine if the famous factor price equalization theorem is still robust under a partial equilibrium framework with oligopolistic market. We assume there are two countries in the model and the two countries are symmetric in every aspect except the difference in their factor endowments. The tentative finding is that under oligopoly, the factor price in the two countries will not be equalized after free trade in the final good market. Nevertheless, if the number of firms goes to infinity, or equivalently, the market structure getting close to perfect competition, the factor prices in the two countries will become identical. This result indicates that market structure in the final good market plays an important role in the factor price equalization. Factor price equalization takes place only if the market of the final good is of perfect competition.

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Report on attending the Sixty-Third International Atlantic Economic Conference in Madrid, Spain
March 14-18, 2007

The conference took place in Madrid, Spain from March 14 to March 18. There are more than 50 sessions plus one special speech given by Jean Pisani-Ferry. I attended the speech which discussed the fiscal policy coordination among the EU members and also explained the reasons why the Euro dollar became such a strong currency. It is an interesting and stimulating speech. My presentation was arranged in the afternoon of March 15. There are 5 papers in the session. Due to one of the presenter was absent; all the other paper presenters had more time for presentation and discussions. I was the first presenter of the session and my presentation went well and was well received by the participants. I received several interesting comments from the floor. For example, one of the comments suggests me to make the capacity an endogenous variable as the quantity as compared to price, is a long run decision. This comment is well taken, though not within the scope of the paper. I shall reserve it for my future research. I have also made comments on other presenter's papers and exchanged views with participants from other countries. In all, I enjoyed the conference very much.

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