

**PRELIMINARY EXAMINATION FOR THE Ph.D. DEGREE**

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Please answer a total of four questions, with at least one from each of the three sections.

**Section 1: International Trade Theory**

**Question 1.**

Consider the social welfare function  $W[p, L + tm + py - C(y)] \equiv W(t)$ , where  $p = p^* + t$  is the domestic price of an importable good with specific tariff  $t$  and world price  $p^*$ ,  $L$  is the labor endowment,  $m$  is imports so  $tm$  is tariff revenue, and  $py - C(y)$  is producer surplus or profits in the import competing industry. You can assume that the derivative of  $W$  with respect to its second argument is unity; i.e. the welfare function is quasi-linear.

- (a) Initially, suppose that the country is small ( $p^*$  is fixed) and there is perfect competition. Then totally differentiate the welfare function with respect to  $t$ , to derive an expression for the change in welfare due to a change in the tariff. Use this to prove that the optimal tariff is zero (check both the first-order and second-order conditions).
- (b) Now allow for a large country ( $p^*$  depends on  $t$ ) but still with perfect competition. Then totally differentiate this welfare function with respect to  $t$ , to derive an expression for the change in welfare due to a change in the tariff. Interpret the terms in this expression, and use it to derive an expression for the *optimal* tariff. How does the optimal tariff depend on the “pass-through” of a tariff to domestic prices?
- (c) As a special case of imperfect competition, suppose that profits are *identically zero* due to free entry into an industry, but the world price still depends on the tariff. Totally differentiate the welfare function once again, and evaluate it at a *zero* tariff. Then derive an upper-bound on the pass-through of the tariff to domestic prices (i.e. an upper-bound on  $dp/dt$ ) in order for a small tariff to improve welfare.

**Question 2.**

Suppose that output in industry  $i$  is given by,  $y_i = A_i f(L_i, K_i)$ , where  $A_i$  is a measure of Hick’s neutral technological progress.

- (a) Initially suppose that there is constant returns to scale and perfect competition. Then totally differentiate the production function to obtain a measure of *total factor productivity* (TFP). Explain what data you would use to measure TFP.
- (b) Now suppose that there is increasing returns to scale. To introduce this, we assume that the production function is homogeneous of degree  $\mu_i > 1$ . Then prove that:  $\mu_i f(L_i, K_i) =$

$(f_{iL}L_i + f_{iK}K_i)$ , where  $f_{iL}$  and  $f_{iK}$  are the marginal products of labor and capital.

- (c) With both increasing returns to scale and imperfect competition in product markets, again totally differentiate the production function. Show how the change in output  $\hat{y}_i$  depends on  $\hat{A}_i$  and on the changes in labor and capital,  $\hat{L}_i$  and  $\hat{K}_i$ . Discuss how you can use this equation to measure TFP and also to measure the price-cost margins in an industry.
- (d) Briefly summarize the results of Ann Harrison or James Levinsohn on how the price-cost margins of import-competing industries changed following import liberalization.

### **Section 2: International Macroeconomics**

#### **Question 3. International Monetary System**

(40 points) Outline the debate among the advocates of the gold standard, of the Bretton Woods pegged exchange rate regime, and of the floating exchange rate regime. Evaluate the suitability of the Bretton Woods system as a compromise solution.

(60 points) Evaluate these three positions in light of the post-1973 experiences of North America, Western Europe and Japan, and in light of the Asian financial crisis in 1997-1998. Do the experiences suggest that the formation of the European Monetary Union was the logical outcome?

#### **Question 4. Dynamic Adjustment**

(35 points) Derive the Marshall-Lerner condition that would make devaluation an effective means of improving the trade balance. Relate this to the J-curve phenomenon.

(35 points) The monetary approach does not deny that a devaluation would improve the trade balance. What is the basis of this belief?

(30 points) What is the relationship between PPP and nontraded goods that was proposed by Bela Balassa.

### **Section 3: Topics in International Trade and Investment**

#### **Question 5. Foreign Direct Investment (FDI)**

##### **Part I**

- a) Describe horizontal and vertical FDI. Two to three sentences should be sufficient.
- b) Carr, Markusen and Maskus (2001) create an empirical framework to examine the motivations for FDI (horizontal versus vertical). Describe their empirical framework and how it can be used to distinguish whether FDI activity is horizontal or vertical in nature.
- c) Based on their empirical analysis, what are Carr, Markusen and Maskus's general conclusions

about the nature of FDI?

### Part II

- d) Traditional approaches to FDI suggested that exchange rates should have no effect on the frequency of international acquisitions. Demonstrate why.
- e) Describe the features of Blonigen's (1997) theory of international acquisitions that restore a role for exchange rate effects.
- f) Why does Blonigen study the frequency of acquisitions rather than the value of acquisition activity?
- g) Blonigen's empirical analysis finds that exchange rate effects differ across high tech and low tech sectors of the economy. Describe how they differ. Do these differences support Blonigen's ideas? Explain why or why not.

### Question 6. Competition in Export Markets

In Goldberg and Knetter individual exporting firms  $i$  maximize the following profit function:

$$\text{Max } \Pi_i^{\text{ex}} = p^{\text{ex}} q_i^{\text{ex}} - e C_i^{\text{ex}} \quad \text{through the firm's choice of export quantity } q_i^{\text{ex}}$$

where,

$$p^{\text{ex}} = D^{\text{ex}}(Q^{\text{ex}}, p^1, \dots, p^n, Z)$$

Here,  $(p^1, \dots, p^n)$  are the prices of all other exporters, while  $Z$  is a set of demand shifters.

- a) Show and describe the first order condition for this profit function. [i.e. provide the equation, and then interpret it, linking it to economic determinants and Goldberg and Knetter's concepts of "inside" and "outside" competition.]
- b) Identification is a common econometric problem. How do Goldberg and Knetter gain identification for their model? Describe the necessary assumptions and idea.
- c) You are measuring the competition faced by Taiwanese computer exporters in the U.S. destination market. Suppose that Malaysia (ml) and Thailand (th) are Taiwan's primary competitors in the U.S. market (as measured by market shares). Therefore, you regress the price of Taiwanese (tw) computers sold in the U.S. following Goldberg and Knetter's specification:
- $$\ln p_{\text{mt}}^{\text{tw}} = \lambda_m + \gamma_m \ln Q_{\text{mt}}^{\text{X?}} + \alpha_m \ln Z_{\text{mt}} + \beta_m^{\text{ml}} \ln L^{\text{ml}} + \beta_m^{\text{tw}} \ln L^{\text{tw}} + \omega_m^{\text{ml}} \ln e_{\text{mt}}^{\text{ml}} + \omega_m^{\text{th}} \ln e_{\text{mt}}^{\text{th}} + \epsilon_{\text{mt}}$$
- What is the appropriate superscript in the position X? (i.e., what is X? in  $[\gamma_m \ln Q_{\text{mt}}^{\text{X?}}]$ ) What is the economic interpretation of the coefficient  $\gamma_m$ ?
- d) Suppose that you find that the estimated magnitude of  $\omega_m^{\text{ml}}$  is larger than  $\omega_m^{\text{th}}$ ? How would you interpret this finding?