

Environmental Policy under International Duopoly: the Comparison between Pigouvian Taxes and Quantitative Restriction

莊瑞傑、賴秉彥；楊維娟

E-mail: 9121378@mail.dyu.edu.tw

ABSTRACT

ABSTRACT This paper discusses an international duopoly model that is related by asymmetric information, and demonstrates that how do government's environmental policies affect foreign firm's imports. We show: under Cournot competition, when quantity restriction is non-binding for high-cost domestic firm, foreign import will be higher than under Pigouvian taxes policy; when quantity restriction is binding for high-cost domestic firm, foreign import quantities are equalized under Pigouvian taxes policy. When there is asymmetric information on foreign firm, government's environmental policies will not affect foreign firm's import quantities. Under Bertrand competition, while quantity restriction is non-binding for high-cost domestic firm, foreign firm's import quantities will be lower under Pigouvian taxes; while quantity restriction is binding for high-cost domestic firm, foreign import quantities are equalized under Pigouvian taxes.

Keywords : Pollution ; Pigouvian taxes ; Quantity restriction ; Bayesian-Nash equilibrium

Table of Contents

目錄 封面內頁 簽名頁 授權書 iii 中文摘要 iv 英文摘要 v 致謝 vi 目錄 vii 圖目錄 ix 第一章 緒論 1.1 研究背景 1 1.2 研究動機與目的 2 1.3 研究方法 3 1.4 本文架構 4 第二章 文獻探討 2.1 污染的定義 5 2.2 污染控制的主張 5 2.3 政府控制污染的工具 6 2.4 相關文獻之探討 7 第三章 庇古稅與數量限制之比較 3.1 基本假設 10 3.1.1 產業特性 10 3.1.2 政府環保政策 11 3.2 對本國廠商具不完全資訊 11 3.2.1 貝氏-那許均衡 12 3.2.2 本國政府對本國廠商課徵庇古稅 13 3.2.3 庇古稅與數量限制之比較 16 3.3 對外國廠商具不完全資訊 21 3.3.1 政府對本國廠商課徵庇古稅 21 3.3.2 庇古稅與數量限制之比較 24 3.4 小結 25 第四章 Bertrand價格競爭 4.1 基本假設與產業特性 26 4.2 對本國廠商具不完全資訊 27 4.2.1 本國政府對本國廠商課徵庇古稅 27 4.2.2 庇古稅與價格限制之比較 30 4.3 小結 34 第五章 結論 35 參考文獻 37 圖目錄 圖3.1 貝氏-那許均衡 12 圖3.2 數量限制對高成本廠商類型不具拘束力 17 圖3.3 數量限制對高成本廠商類型具拘束力 17 圖4.1 價格限制對高成本廠商類型不具拘束力 31 圖4.1 價格限制對高成本廠商類型具拘束力 31

REFERENCES

中文部分: 1. 張帆, 2000, 環境與自然資源經濟學, 五南圖書出版公司。 2. 郭虹瑩 & 黃鴻, 2000, 關稅政策與進口品的品質, 經濟論文叢刊, 第28輯, 第3期, 43-72 3. 巫和懋 & 夏珍, 2002, 「賽局高手 - 全方位策略與應用」。時報出版社。 英文部分: 1. Abrego, L. & C. Perroni, 1999, "Free-riding, Carbon Treaties, and Trade Wars: the Role of Domestic Environmental Policies." *Journal of Development Economics* 58, 463-483. 2. Ballard, C.L. & S.G. Medema, 1993, "The Marginal Efficiency Effects of Taxes and Subsidies in the Presence of Externalities." *Journal of Public Economics* 52, 199-216. 3. Baumol, W.J. & W.E. Oates, 1992, *The Theory of Environmental Policy*, Cambridge University Press. 4. Barrett, S., 1994, "Strategic Environmental Policy and International Trade." *Journal of Public Economics* 54, 325-338. 5. Bovenberg, A.L. & R.A. de Mooij, 1997, "Environmental Tax Reform and Endogenous Growth." *Journal of Public Economics* 63, 207-237. 6. Copeland B.R., 1996, "Pollution Content Tariffs, Environmental Rent Shifting, and the Control of Cross-border Pollution." *Journal of International Economics* 40, 459-476 7. Eaton, J. & Grossman G.M., 1985, "Optimal Trade and Industrial Policy under Oligopoly." *Quarterly Journal Economics* 101, 383-406 8. Gibbons, R., 1991, *Game Theory for Applied Economist*, Princeton University Press, Princeton, NJ. 9. Hwang, H. & C.C. Mai, 1988, "On the Equivalence of Tariffs and Quotas under Duopoly: A Conjecture Variation Approach." *Journal of International Economics* 24, 373-380. 10. Lai, P.Y., 1996, "Three Essays on Duopolistic Competition under Asymmetric Cost Conditions." Ph.D. Dissertation, SUNY Buffalo. 11. Ludema, R.D. & I. Wooton, 1997, "International Trade Rules and Environmental Cooperation under Asymmetric Information." *International Economic Review* 38, 605-625. 12. Markusen, J.R., J.R. Melvin, W.H. Kaempfer, & K.E. Maskus, 1995, *International Trade Theory and Evidence*, McGraw-Hill, Inc. 13. Moomaw, W., K. Ramakrishna, K. Gallagher & T. Fred, 1999, "The Kyoto protocol: A Blueprint for Sustainable Development." *Journal of Environment & Development* 8, 82-90