Regional Science and Urban Economics 29 (1999) 33–51

Cross-border shopping and commodity tax competition among governments

Yoshiaki Ohsawa*

Institute of Policy and Planning Sciences, University of Tsukuba, Tsukuba 305-8573, Japan

Received 15 January 1995; received in revised form 22 May 1997; accepted 10 June 1997

Abstract

The purpose of this paper is to analyze Nash tax competition among governments that differ in geographical aspects such as their sizes and positions. Each government lying on a linear market maximizes its revenue with respect to its own commodity tax rate, taking into account the cross-border shoppings induced by the difference in tax rates. In particular, we examine how the size of the countries and their spatial arrangement affect tax rates and government revenues at a Nash equilibrium. We show that a small country chooses a lower tax rate than a big country, and obtains more than its size-proportional share of total revenue at the Nash equilibrium. We also prove that when the size of all countries are identical, the tax rates levied by the governments go down from either market boundary toward the market center, and the adjoining countries of peripheral countries can obtain the largest government revenue.

Keywords: Tax competition; Nash equilibrium; Cross-border shopping

JEL classification: H71; H73; R51

1. Introduction

The establishment of the European Community has been a major event of the last three decades. A new economic space has been created by gradually suppressing the trade barriers between the members of the EC while regulating the

*Tel.: (81-298) 53-5224; fax: (81-298) 55-3849; e-mail: osawa@sk.tsukuba.ac.jp

PII: S0166-0462(99)00028-8

exchanges with external countries. Presently, movements of persons and commodities are theoretically free inside the community. However, the economic integration of the different countries is still in a transitory state, as the national governments as yet pursue, in a certain measure, their own fiscal and budgetary policies (see, for example, Vickerman, 1992). In particular, each government keeps some freedom for fixing its own rates of taxation. Now, commodity taxes varying from country to country associated with free movements of customers induce cross-border shoppings: see Christiansen (1994). For example, the general level of taxes in Luxembourg is relatively low compared with that of Belgium, France and Germany. Accordingly, many people living in these neighboring countries go shopping to Luxembourg in quest for good bargains. Similarly, most tourists passing through Luxembourg gas up their cars at local gas stations, benefitting from the cheapest prices in Europe. By underselling its neighboring countries, Luxembourg experiences a large amount of inward cross-border shopping. In contrast, although Norway produces oil, the price of the gasoline there is one of most expensive in Europe, because of a very high tax rate on gasoline. Why does the government of Luxembourg impose lower commodity tax rates than its neighboring countries? Why does the government of Norway set one of the highest tax rates on gasoline of Europe? This paper attempts to shed light on these questions.

As explained by Vickerman (1992), the present situation of the European Community is but a transition period towards a deeper economic integration where coordination of broad economic policy-making objectives between governments is introduced. In particular, since cross-border shoppings affect the government revenues, international tax design such as tax competition and tax harmonization has been a serious concern for the European Community: see Sinn (1990). Therefore, we also consider centralized tax harmonization such that all the governments set a common tax rate. If such tax harmonization is introduced, there cannot be tax-induced cross-border shopping, that is, the market area of each country coincides with its size. Which countries become more relatively profitable as compared with the other countries if such tax harmonization is introduced instead of tax competition? This paper also tries to solve this problem.

Obviously, a decrease in the tax rate raised by a government extends its market area; however, it reduces revenue of its original market area. Thus each government faces a tradeoff and attempts to make this trade-off effective by establishing an appropriate tax rate. The objective of this paper is to analyze commodity tax competition among $N(\geq 2)$ countries lying on a line segment. More specifically, we shall examine how the relative sizes and positions of the countries affect their equilibrium tax rates and revenues. In addition, we shall compare the share of the total revenues among the countries under tax competition and under tax harmonization, i.e. a common tax rate is introduced.

Many efforts have been made on tax competition. For example, Zodrow and Mieszkowski (1986); Wildasin (1988); Bucovetsky (1991); Wilson (1991); Hoyt