



Vertical integration and strategic trade policies

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Abstract

This paper examines the use of strategic trade policies, such as export subsidies, to encourage domestic production of an intermediate input and a final product in a model with international rivalry between firms in two countries. The choice of subsidies or taxes in several cases is examined. Whether subsidies are welfare-improving depends on whether firms are vertically integrated. We show that as long as firms in at least one country are vertically integrated, the optimal subsidy on final-good production is positive.

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1. Introduction

The appropriate use of strategic export subsidies has long been one of the important topics for trade theorists and government policy planners. On the theory side, [Brander and Spencer \(1985\)](#) describe a framework in which a government can use export (or production) subsidies to encourage domestic firms to produce more, but competing foreign firms to produce less. As a result, the profits of domestic firms and national welfare rise at the

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expense of foreign firms' profits and foreign economic welfare. It has also been pointed out by other economists, that the results in Brander and Spencer (1985) are sensitive to some of the assumptions in their framework. Once these assumptions are relaxed, the optimal policy could be an export tax.¹ In the real world, governments have recognized that widespread use of export subsidies could be disruptive and could hurt their economies. As a result, members of the World Trade Organization (WTO) signed agreements to prohibit the use of government subsidies to promote the trade performance of domestic industries.

Despite the concerns in the theory and the prohibition of the use of trade-promoting subsidies, the discussion about strategic export subsidies is still very alive. This is partly due to the existence of many policies that are under disguised names, but have trade-promoting effects, and partly due to the existence of many trade disputes concerning the use of strategic export subsidies.² There are still quite a number of issues involving possible use of export subsidies that have not been fully addressed.

One issue is the existence of intermediate inputs. In the Brander–Spencer model, only a final product is considered, and only primary factors are used in the production process. This simplification is a convenience in the theoretical work, but not too close to the real world, in which many industries do use not only primary factors but also intermediate inputs. This fact of course has long been recognized, and recently there have been a rising number of papers analyzing various issues involving intermediate inputs and trade policies.³

To see the importance of intermediate inputs, let us consider the computer industry.⁴ Computer is a final product, using primary factors (such as labor and capital) and intermediate inputs (such as computer chips). Both computers and computer chips are tradable, with major firms in some countries producing computer chips, such as Samsung in Korea, Micron Technology in the United States, and Infineon in Germany, and important producers in some countries producing computers; for example, Samsung in Korea and Hewlett Packard in the United States.⁵

Consider a country like Korea, and suppose that her government attempts to promote trade to improve her national welfare. A subsidy on the production of computers most likely will have the type of profit-shifting effect in the final-product industry suggested by

¹ See, for example, Wong (1995) and Brander (1995) for two surveys of some of the issues.

² As Liao and Wong (2003) show, some policies such as minimum quality standards, which appear to be aimed at the local economy and which do not involve any government budget, can have trade-promoting effects.

³ See, for example, Spencer and Jones (1991, 1992), Ishikawa and Lee (1996), and Rodrik and Yoon (1995).

⁴ The computer and computer chip industries are interesting, because there are only big producers concentrating in a few countries. They are oligopolies in the world markets. In many cases, government interventions in the industries are obvious, and there are always claims that foreign governments are illegally subsidizing the industries. In June 2002, Infineon, a German computer chip maker, filed petition to European Union against Samsung Electronics (Korea), and Hynix, claiming they received illegal government subsidy. In November 2002, Micron Technology Inc., a U.S. chip maker, filed complaints against Hynix with the U.S. Commerce Department and International Trade Commission. It claimed that bail-out funds were illegal Korean government subsidies. See Yang (2000) for more discussion.

⁵ A relatively small number of international firms share the world semiconductor market. Hong (1997, p. 76–77) shows that 15 international firms' world semiconductor market share was 67.1% in 1995. Specifically, three Korean memory chip producers, Samsung, LG, and Hyundai had 26.6% of world market share in 1995. In 1998, Hyundai took LG as part of a restructuring effort after the Asian crisis. It changed its name into Hynix. See Yang (2000, p. 123) for discussion of merging as a restructuring strategy in the Korean semiconductor industry.

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