Time-consistent protection with learning by doing

Eugenio J. Miravete[a,b,*]

[a] *Department of Economics, University of Pennsylvania, McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6297, USA*
[b] *Center for Economic Policy Research, London, UK*

Abstract

Can a government induce efficiency gains in his domestic industry by protecting it against foreign competition? Would such trade protection be time consistent? The present paper builds a dynamic equilibrium model that accounts for learning-by-doing effects that link firms' strategies over time. The model shows that the existence of dynamic economies of scale suffices to overcome the traditional government's lack of commitment of its tariff policy. This paper compares the infinite horizon Markov perfect equilibrium of this game with the dynamic equilibrium under commitment as well as the static Nash equilibrium. Equilibrium strategies are derived in closed form by solving a linear-quadratic differential game. Optimal trade policy involves higher tariff levels than in the static setup in order to account for future gains in efficiency. Under reasonable assumptions, the unique stable MPE is characterized by a domestic price and tariff that decrease as experience accumulates, thus supporting the future liberalization of trade as an equilibrium feature of this dynamic game.
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1. Introduction

Infant industry arguments have long been used to justify protectionist trade policies. The essence of such arguments is that local producers must be allowed some time to overcome a temporary disadvantage with respect to foreign competitors. This

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* Correspondence address. Department of Economics, University of Pennsylvania, McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6297. USA. Tel.: +215-898-1505; fax: +215-573-2057.
E-mail address: miravete@sssc.upenn.edu (E.J. Miravete).
URL: http://www.sssc.upenn.edu/~miravete

disadvantage might come from technological backwardness, lack of access to efficient credit markets, local scarcity of the required human capital, or lack of an established reputation. However, the existence of a temporary disadvantage is not sufficient to justify protection. For this, two additional conditions must be satisfied.

First, overcoming the initial handicap must be socially beneficial although not necessarily privately profitable (at least in the short run). This requires some sort of future positive externality to compensate the current welfare loss associated to any protection policies. One possible externality is due to the existence of dynamic economies of scale in the industry (Corden, 1974, Section 9; Krugman, 1984). Another type of externality is associated to the existence of experience goods in consumption. Governments could create temporary trade barriers against imports with the argument of defense of diversity through the promotion of the local variety. Thus, temporary protection would generate dynamic efficiency gains through increases in production and/or improved management methods, but also in developing a biased taste for domestically produced goods.

Second, policy intervention must be effective. At least two problems may arise here. One difficulty is that protection policies designed to help domestic producers to become internationally competitive may lead to socially costly collusion between foreign and domestic firms (Gruenspecht, 1988) or among domestic infant-firms in a protective environment. The second difficulty is that protection should only be granted for the shortest period possible required to make domestic firms competitive. In other words, the government must be able to credibly commit to liberalize trade within a reasonable period of time. Unfortunately, governments can rarely commit credibly to trade policies for more than short periods of time: Laws can be changed, treaties can be broken, and government turnover might be high. As pointed out by Matsuyama (1990) this lack of commitment of governments to liberalize trade may explain the persistence of tariff protection. Given the governments' lack of commitment (political, institutional, or due to lack of reputation), local firms prefer not to become internationally competitive, and given that strategic choice, the best policy for the government is to extend trade protection for some additional period.

This paper presents a framework that identifies a time-consistent tariff protection policy by incorporating the dynamic issues surrounding infant-industries. In doing so I am addressing some common shortcomings in the current treatment of the topic in the trade literature. The basic elements of the model are the following.

1.1. Tariff protection policy

While subsidies or quotas may achieve the same goal of protecting an infant-industry, I choose to study the case of tariff protection policy because this is the instrument most frequently used to protect industries in the early stages of development. Tariff protection was already vindicated by some classic economists, such as List in the 19th Century, as an effective tool to reduce the gap between less developed and industrialized countries. [1]

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[1] The commonly intended superiority of subsidies over tariffs can only be explained because the shadow cost of rising funds in the rest of the economy is unreasonably assumed to be zero.