Volume Discounts in Export Pricing under Asymmetric Information

Various mechanisms have been proposed to coordinate the actions of independent channel members and overcome the inefficiencies caused by the double marginalization problem (Spengler, 1950). These mechanisms include, two-part tariffs or franchise agreements, profit sharing through volume discounts, buy-back programs, target rebates, and linear rebates.

However, in the case of information asymmetry, when local demand for the traded product is a function of the agent's effort and when the principal (exporting manufacturer) neither knows the local demand, nor can observe the agent's effort, it becomes exceedingly difficult to design a straightforward, easily implementable, and enforceable contract that will maximize channel profit: not only does the manufacturer need to overcome the double marginalization problem, he also needs to come up with ways to motivate agents to put forth an efficient level of sales effort.

In the real world of international trade, geographic and cultural distances make it indeed difficult for manufacturers to know the local demand schedule and thus infer the importer's amount of effort. To boost importers' sales effort, manufacturing exporters have been trying various approaches, in particular volume discount policies, which are the focus on our research. However, the effectiveness of this widely used pricing policy has been questionned. In a series of empirical papers, Obadia (2013) and Obadia and Stöttinger (2015) have shown that despite their widespread use, volume discount policies have systematically failed to reach their targets and may even have been counter-productive.

The object of this research is to complement these empirical findings on the underperformance of volume discount policies by offering theoretical explanations. For this, our first step is to identify useful, theoretical models. Here we observe that theoretical models framing the interaction between exporter and importer as static, one-shot games fail to capture the essence of the relationship between both parties, which is of a dynamic nature: price and volume negotiations between manufacturer and importer take place over time.

In particular, dynamic interaction can lead to learning, which may, under some circumstances, significantly reduce informational asymmetry. As such, static models may point to impossibilities where there are mere difficulties. Last, but not least, static models are not equipped to identify problems associated with opportunistic behavior, an intrinsically dynamic issue.

We therefore restrict our attention to models that explicitly take the

time dimension into consideration, by assuming repeated interaction between principal and agent.

For this class of models, we can easily see that *even* in the case of full, symmetric information, volume discounts can fail to achieve efficient channel coordination if the traded goods have a sufficiently long product life cycle and low cost of storage. The reason is that agents have an incentive to act opportunistically when offered quantity discounts: they may use the offer to stock up at a lower cost, but sell off their stock at a reduced level of effort over a stretch of multiple time periods.

A straightforward solution, then, would be to take the frequency of orders into account when drafting target rebate policies. But when information is asymmetric and effort cannot be observed, the problem is further exacerbated and the straightforward solution may no longer be implemented effectively. The practical question of whether it is possible to design a menu of prices and a contract that, over time, helps reveal actual demand and helps restore the agent's incentives for high effort continues to be a challenging problem.