



## Strategic outsourcing revisited

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### Abstract

This paper analyzes a sequential game where firms decide about outsourcing the production of a non-specific input good to an imperfectly competitive input market. We apply the taxonomy of business strategies introduced by Fudenberg and Tirole (1984) to characterize the different equilibria and find that outsourcing generally softens competition in the final product market. If firms anticipate the impact of their outsourcing decisions on input prices, there may be equilibria where firms outsource so as to collude or to raise rivals' costs. We illustrate our analysis using a linear Cournot model.

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### 1. Introduction

Outsourcing has become a widespread phenomenon in the industrialized world in recent times. Examples of industries where outsourcing is a key feature of the organization of production abound: aircraft, cars, computers, mobile phones, audio/video systems, me-

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chanical watches, and so on. Casual evidence suggests that information technology (IT) and related business services are regularly contracted out in a large number of industries (Domberger, 1998), and econometric studies assign a prominent role to outsourcing in various industries.<sup>1</sup> Yet it is probably fair to say that the industrial organization literature on outsourcing is relatively thin.<sup>2</sup>

In a recent paper in this journal, Shy and Stenbacka (2003) have provided the first intra-industry analysis of the strategic incentives that oligopoly firms face when outsourcing the production of inputs.<sup>3</sup> In their model, differentiated Bertrand duopolists can either undertake investments into in-house production facilities for a specialized input, or they can buy that input from a subcontractor, but at higher variable cost. Hence, if firms do not want to bear the fixed cost of investing into in-house production facilities, they have to incur higher marginal cost for sourcing the input over the market.

The present paper analyzes a similar trade-off, but differs from Shy and Stenbacka in three crucial aspects.

- (i) We focus on outsourcing the production of a *non-specific* input rather than an input specifically tailored to the needs of final good production. The equilibrium market price of this non-specific input will depend on the vertical structure of the industry since a firm's outsourcing decision affects input demand (and possibly also input supply), as suggested by the literature on successive oligopolies. We feel that it is natural to account for changes in input prices, even though the previous outsourcing literature has largely ignored them.<sup>4</sup>
- (ii) We analyze *sequential* rather than simultaneous firm decisions about the production mode. In this setting, we study the conditions under which the first-mover may adopt

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<sup>1</sup> See, for example Abraham and Taylor (1996), Fixler and Siegel (1999), Feenstra and Hanson (1999), Holmes (1999) and Görzig and Stephan (2002).

<sup>2</sup> Following Coase (1937), the choice of a firm's production mode has traditionally been discussed in the context of *transaction cost analysis*. Prominent contributions by Williamson (1985), Grossman and Hart (1986) and Hart and Moore (1990) have further pointed out that asset specificity and incomplete contracts tend to make the organization of market transactions difficult, thereby limiting the scope for outsourcing. Based on this literature, Grossman and Helpman (2002) have studied the determinants of the equilibrium production mode (i.e., integration versus outsourcing) in industries where inputs are fully or partially specialized. Another strand of the literature has focused on *international outsourcing*, the fragmentation of production across borders. For instance, McLaren (2000) has analyzed the relation of international openness and firms' outsourcing decisions.

<sup>3</sup> There are a number of related earlier contributions. Bonanno and Vickers (1988) show that if franchise fees can be used to extract retailers' surplus, a manufacturer will choose vertical separation as its production mode as it induces more friendly behavior from its rival manufacturer and thus facilitates collusion. Gal-Or (1999) explores how asymmetric information between a manufacturer and a retailer affects integration decisions. Chen (2005) examines the effects that economies of scale may have on production mode decisions. Finally, Jansen (2003) gives conditions under which vertical separation is chosen by some upstream firms, while vertical integration is chosen by others in the equilibrium of a symmetric model with Cournot competition downstream.

<sup>4</sup> For instance, McLaren (fn 17) states: "It would be natural to allow the inputs to affect marginal costs as well, but the resulting price effects would be a tremendous source of additional complication [...]." To our knowledge, there is only one other paper (on the relation of trade liberalization and strategic outsourcing) by Chen et al. (2004) that considers input price effects.

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