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Strategic investment and international outsourcing in unionised oligopoly

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ABSTRACT

We develop an oligopoly model in which firms facing unionised domestic labour markets choose between producing an intermediate good in-house and outsourcing it to a non-unionised foreign supplier that makes a relationship-specific investment in developing the intermediate. The paper sheds light on the issue of whether international outsourcing offers a means to 'escape' the power of domestic unions and on the existence of intra-industry wage dispersion. We show that outsourcing typically increases marginal costs even when it lowers union wages. Despite this, more powerful unions increase the incentive to outsource.

1. Introduction

This paper develops an oligopoly model in which firms facing unionised domestic labour markets choose between producing an intermediate good in-house and outsourcing[1] it to a non-unionised foreign supplier that makes a relationship-specific investment in developing the intermediate.

The process of globalisation of goods and services markets and improvements in the technology of communication has been accompanied by a deepening in international specialisation and a tendency towards a vertical fragmentation of production across national borders. As a result, the 'make-or-buy' internalisation choice of firms (i.e. whether to produce an intermediate in-house or outsource it to an upstream supplier) is increasingly international in nature — as outsourcing is directed towards suppliers located abroad. In this context, the role of labour markets in influencing the mode-of-operation decision of firms has attracted increasing attention in public and policy debates. The conventional wisdom that emerges from these debates suggests that international outsourcing may be used by firms as a way to 'escape' distorted domestic labour markets. Specifically, given the still significant role played by unionisation in many industrialised economies, it has been suggested that outsourcing may represent a means to weaken trade unions[2] and that strong unions may make outsourcing more attractive. More generally, these views are consistent with the widespread perception that international market integration erodes the power of domestic unions — e.g. Rodrik (1997) and Brown et al. (2009). The key argument underlying this conventional wisdom is that the internationalisation of economies allows for an easier replacement of domestic workers by foreign workers — be it via final good import competition or via the international fragmentation of the vertical production chain. However, a key feature of outsourcing is that it does not necessarily only involve substitute activities but also ones that complement those that a firm continues

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[1] By outsourcing we mean the acquisition of an input or service from a non-affiliated firm. Others have used it in a less restrictive sense to refer to the sourcing of inputs from a foreign operation which could include production in a foreign affiliate of the same firm (an early example of this is Zhao, 2001).

[2] For instance, machinist union leaders at Boeing see the company's refusal to allow them to bid for work against outside contractors as evidence that Boeing's outsourcing policy is not aimed at improving efficiency, but rather at weakening the union (*Seattle Times*, 10th Sept 2008).

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to perform in the domestic economy — and this can have significant effects on the behaviour of unions.

Theoretical work on the effects of labour market institutions on the outsourcing decision is still fairly limited.[3] Lommerud et al. (2009) build on the well-known results by Horn and Wolinsky (1998) and show, within a partial equilibrium monopolistically competitive framework, that outsourcing increases the aggressiveness of unions — provided that the activities performed in the home country are sufficiently complementary to those performed abroad, since in this instance there is a lower incentive for unions to restrain wage demands on behalf of the workers that remain employed in the domestic economy.[4] This result suggests the possibility that, in order to limit these *adverse* wage effects, firms may be less inclined to outsource in the presence of unionisation — and particularly so if the bargaining power of unions is high. Indeed, in Lommerud et al. (2009) a higher bargaining power of unions leads to a ceteris paribus reduction in the incentive to outsource. In discussing this result, they perceptively point to the evidence that outsourcing (measured by a country's share of parts and component in total imports) does not appear to be more prevalent in countries with higher union coverage rates — which suggests that high union coverage does not increase the incentive to outsource, or that unions' strength is not reduced by outsourcing. However, a significant body of empirical work supports the view that the presence of more powerful unions may encourage outsourcing and that outsourcing in turn may lead to a weakening of the bargaining power of unions.[5]

In this paper, we examine the relationship between union power and the outsourcing decision of firms within an oligopoly framework in which there is a high degree of specificity of the outsourced input.[6] We argue that to the extent that firms possess market power, a fuller understanding of the trade-offs involved in their mode-of-operation decision requires acknowledging the role of strategic considerations; furthermore, it is important to recognise that outsourcing activities often involve inputs that are non-generic and that cannot be procured in spot-markets. In these instances, outsourcing requires a firm to enter a bilateral relationship with a supplier that needs to make a relationship-specific investment in the design and production of the input. In the presence of contract incompleteness – that typically characterises these relationships – the relationship-specificity of investment then affects the incentives of firms (e.g. via the emergence of hold-up problems) and interacts with their strategic behaviour with respect to both competitors and unions. To incorporate these features into our analysis, we extend the oligopoly outsourcing framework developed by Leahy and Montagna (2011) to allow for unionisation and the partial outsourcing of labour.[7] Specifically, we consider the choice that oligopolistic firms facing unionised domestic labour markets make between producing a highly specialised intermediate input in-house and outsourcing it to a non-unionised foreign supplier. The intermediate input requires an investment in quality and customisation that determines the productivity of the labour used in the production of a unit of the final good. Under vertical integration, the investment in quality is done in-house, whilst under outsourcing it is made by the foreign supplier that will have to make a relationship-specific investment. With incomplete investment contracts, a hold-up problem will thus arise — which translates in this model into an under-investment in the quality of the intermediate that will work towards an increase in the marginal production cost of the downstream firm.[8] An important difference between this paper and others in the literature is that here the productivity of the intermediate is endogenous. A key implication of this is that our model introduces a distinction between the cost of acquiring the intermediate and the marginal cost of producing the final good incurred by the downstream firm. The latter is affected by more than just the wage negotiated with the union (as instead happens in other models) and depends on the quality (determined by the level of investment) as well as the price of the intermediate (negotiated with the supplier). Our model thus differs substantially from that developed by Lommerud et al. (2009) who rely on a monopolistically competitive framework (and thus rule out by assumption the existence of strategic interaction between firms) and who consider the case of generic inputs that do not require any relationship specific investment by suppliers.[9]

The key results of the paper are that: (i) outsourcing may lead to higher wages and higher marginal costs in the production of the final good — *nevertheless*, even when this is the case, some firms will still have an incentive to outsource; (ii) an increase in the bargaining power of unions increases the incentive to outsource — *and yet* the outsourcing does not succeed in reducing marginal costs (unless the upstream supplier has a substantial underlying cost advantage over the downstream firm); (iii) asymmetric equilibria can emerge in which firms adopt different mode-of-operation strategies and pay different wages — *even* when the downstream firms are ex-ante identical.

A number of key mechanisms underpin these results. First, since the impact of domestic wages on a firm's marginal cost is relatively less important when the firm outsources part of its production abroad, because reliance on domestic labour is lower, outsourcing can result in a higher wage. This is consistent with the Horn and Wolinsky's (1998) complementarity argument discussed above.

[3] Skaksen (2004) studies the implications of the potential of international outsourcing on union wages within a general equilibrium framework in which the decision to outsource occurs *after* union-firm wage negotiations. Koskela and Schöb (2008) analyse the effects of labour market reforms on the decision to outsource of unionised firms when outsourcing and domestic labour are substitute. A related literature studies how unionisation affects the decision to do FDI: e.g. Zhao (1995, 2001), Bughin and Vannini (1995), Leahy and Montagna (2000), Naylor and Santoni (2003), Zhao and Okamura (2010).

[4] Horn and Wolinsky (1998) were the first to analyse the role of complementarities between workers' tasks in determining the incentives underpinning the organisation of unions: they found that unions could benefit from fragmentation of production when tasks are complements. Consistent with this, in Skaksen and Sörensen (2001) outward foreign direct investment can trigger more aggressive wage demands by unions bargaining with a monopoly firm when the degree of complementarities between the domestic and foreign operations is sufficiently high.

[5] Evidence that a higher bargaining power of unions are associated with more outsourcing is provided, e.g., by Kramarz (2008) who estimates matched employer–employee data for France, and by Bas and Carluccio (2010) who use firm-level trade data for multinational firms with operation in France. More generally, a substantial body of literature supports the supposition that union wages and/or the bargaining power of unions are weakened by the internationalisation of the economy; see for instance MacPherson and Stewart (1990), Freeman and Katz (1991), Gaston and Trefler (1995); more recent examples include Dumont et al (2006), Abraham et al. (2009), Boulhol et al. (2006), and Moreno and Rodriguez (2010).

[6] In Zhao (2001) and Zhao and Okamura (2010) the offshored input is generic in nature and does not entail a non-affiliated supplier making a relationship-specific investment (RSI) as happens instead in our case.

[7] Partial outsourcing is a realistic scenario that has received increasing attention in recent years. Partial outsourcing of components, rather than labour, has been examined by Shy and Stenbacka (2005) who show that an intensification of competition increases the set of components that are outsourced relative to those that are produced in-house. Lommerud et al. (2009) study the partial outsourcing of inputs in the context of unionised labour markets. Neither paper looks at outsourcing in the context of asset specificity and contract incompleteness.

[8] As is standard in the literature, contract incompleteness originates from the inability of third parties to verify the suitability of the inputs provided by the suppliers. See Spencer (2005) and Helpman (2006) for overviews. Grossman and Hart (1986) and Hart and Moore (1990) formalise the emergence of a hold-up problem from ex-ante investment distortions in a context in which negotiating advantages arise from asset ownership.

[9] The early transaction cost literature pioneered by Coase (1937) and Williamson (1975, 1985) did not formalise market interactions between competitors and focussed on a single buyer–supplier pair. More recently, this relationship has been contextualised within general equilibrium monopolistically competitive market structures (e.g. Grossman and Helpman, 2002, 2003, 2005) that highlight the role of market 'thickness' in determining outsourcing (see also McLaren, 2000). To our knowledge, in the oligopoly literature Leahy and Montagna (2011) were the first to incorporate issues related to incomplete contracts and relationship-specific investment and their role in determining the nature of the trade-offs facing firms when making their make-or-buy decision. The oligopoly literature on outsourcing typically abstract from these issues (e.g. Nickerson and Vanden Bergh, 1999; Shy and Stenbacka, 2003; Chen et al, 2004).