



Delaying the timing of offshoring low-skilled tasks[☆]

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ABSTRACT

This paper examines the impact of uncertainty on offshoring low-skilled tasks. The model shows that greater demand uncertainty adversely affects the expected profit and timing of offshoring. It is also shown that a home-country tax rate deduction increases the volatility of the expected profits, making offshoring appear to be more risky. One policy implication of our results is that, in order to delay relocation of MNE's production from the home country, a government should adopt tax rate deduction rather than a direct subsidy because the former is more economical and effective than the latter.

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1. Introduction

As globalisation reaches the remotest economies in the world, a considerable number of firms engage in Foreign Direct Investment (FDI) for an increasing number of reasons, in a widening array of locations, in order to take advantage of the spawning business opportunities and also to better accommodate the blistering pace of technological change. Multinational Enterprises (MNEs) have undergone considerable organizational changes and important contributions have been made to model different forms and degrees of involvement of business firms in foreign activities (Carr et al., 2001; Ekholm et al., 2006; Helpman, 2006; Markusen, 2002). However, the traditional trade theory continues to explain a considerable part of the trade and FDI flows (see Helpman, 2006).

The proximity–concentration hypothesis explains the firm's choice between the two alternative modes of foreign penetration, exporting and overseas expansion, as depending on the trade-off between the advantages related to proximity to the foreign market and the economies of scale that might result from the concentration of

production (Krugman, 1983; Horstmann and Markusen, 1992; Brainard, 1993, 1997). The models that underlie this hypothesis assume that each firm operates within differentiated goods sectors. This sector is characterized by increasing returns at the firm level due to some input that can be easily spread among different production facilities, scale economies at the plant level, such that unit costs are decreasing with the plant size, and a variable transport cost. In this set up, and ignoring factor-proportions discrepancies, the proximity–concentration hypothesis predicts that FDI will tend to prevail relative to exporting the more difficult is the access to the foreign market, i.e. the higher are transport costs and trade barriers, and the lower are the economies of scale at the plant level relative to those at the firm level. Using a gravity model, it was showed empirically by (de Mello-Sampayo, 2007; de Mello-Sampayo, 2009) that since the market-size hypothesis holds if there are economies of scale, firms will tend to invest in the larger foreign markets and export to the smaller ones in order to reap scale advantages and minimize transport costs, it can be said that the proximity–concentration hypothesis nests the market-size hypothesis of FDI location.

The factor-proportions hypothesis (Helpman, 1984; Markusen, 1984; Helpman and Krugman, 1985; Ethier and Horn, 1990) explains FDI location in terms of the combination of relative factor endowments with the characteristics of the production technology. In this context, if the production technology is such that different production stages have different factor-intensities, FDI may emerge as a viable way of exploiting lower factor costs. In the simplest case, where headquarters activities are capital-intensive and plant activities are labour-intensive, a single-plant MNE might emerge in order to exploit different factor costs. In particular, the firm will place its headquarters in the capital-abundant market and concentrate production in the

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labour-abundant location, exporting back to the headquarters market. In spite of assigning some opposite roles to some variables (e.g. regarding transport costs), these two hypotheses are not necessarily mutually exclusive (Brainard, 1997), since the proximity–concentration hypothesis is essentially tailored to explain horizontal FDI whereas the factor–proportions hypothesis is more suitable to account for the emergence of vertical FDI.

To capture the recent trends Grossman and Rossi-Hansberg (2006a,b) extend the traditional trade theory framework to allow for trade in tasks. Increasingly, international trade involves not only complete goods, but also individual tasks. In the new global production processes, specialization can be achieved without geographic concentration. This has allowed firms to take advantage of differences in factor costs and expertise across countries. As globalisation has advanced, it has become easier to move intermediate-level tasks offshore.

Tasks can be performed offshore either within or beyond the boundaries of the firm. Much of the recent literature on offshoring distinguishes between firms that are vertically integrated and those that contract out certain activities.¹ Since we assume that a firm needs the same amount of a foreign factor whether it performs a given activity in a foreign subsidiary or it outsources the activity to a foreign supplier, the organizational configuration of MNE's activities is not under scrutiny. Rather, the purpose of this paper is to investigate the role of uncertainty on offshoring low-skilled tasks. Focusing on uncertainty is relevant because emerging markets are characterized by a much greater uncertainty than developed countries. They are also the potential recipients of most offshoring low-skilled tasks since their relative factor endowments and other features differ from those of mature economies where parent firms are based.

We consider the problem of a firm whose production is located exclusively in one country but is contemplating relocating its intermediate production abroad, i.e. offshoring low-skilled tasks. The firm will engage in offshoring only if such a move is deemed beneficial in the medium and long terms. That in turn will depend on the perceived evolution of demand. The higher the uncertainty regarding the profitability of the offshoring initiative, the more likely it is that a favourable situation will turn into an unfavourable one, and the more the firm will gain from waiting for more information before committing itself to investment (or dis-investment) whenever there are significant sunk costs (Pindyck, 1988). This result is a prediction of the “option-pricing” approach to the analysis of irreversible investment under uncertainty (Dixit, 1989a,b; Dixit and Pindyck, 1994).

Furthermore, Grossman and Rossi-Hansberg (2006a,b) decomposed the effect of “offshoring” low-skilled jobs into three component parts: a productivity effect, a relative-price effect, and a labour supply-effect. Offshoring makes firms more productive: the tasks that are best kept close to home remain onshore and other tasks can be taken care of in cheaper places abroad. However, when some tasks are taken overseas, that leaves less work for home-country employees and wages fall or, in the presence of labour-market frictions, unemployment increases. Offshoring enables companies to produce more what may depress the price of its exports on world markets, damaging the country's terms of trade, and affecting workers. Grossman and Rossi-Hansberg (2006a) describe this as a “new paradigm”.

There is increasing recognition that globalisation opens up new channels through which countries can enhance their competitiveness, including via outward FDI (see UNCTAD, 2005, 2006). From a home-country perspective, more and more countries are dismantling barriers to outward FDI. However, the effects of outward FDI on

home-country employment have been a matter of concern for developed countries, especially in the context of relocation of activities by efficiency (or cost reduction) seeking MNEs. Similarly, the effects of outward FDI can be a concern for developing countries. Most countries have at some stage exercised control over FDI outflows through various rules and regulations to mitigate potentially negative effects from such investments. Virtually all investor countries, including the United States, have exercised some control over outward FDI from time to time. One common policy has been to limit capital outflows out of concern for the country's balance of payments. In addition, countries have occasionally manipulated tax rules to try to encourage their firms to invest at home. The objective behind such policies is to create jobs at home rather than abroad.² Finally, countries sometimes prohibit national firms from investing in certain countries for political reasons. Such restrictions can be formal or informal.

Traditionally, when a firm engages in offshoring low-skilled tasks, home-country workers that lose their jobs tend to be older, less educated and hence less easily re-employable than others. Being conscious that helping to retrain these workers improves the economy's efficiency, increases the political appeal of labour-market policies.

Hence, we also focus on how home-country policies, intended to delay³ the timing of offshoring (in order to set up, for example, a retraining scheme for the workers that will be unemployed when the firms exercise the option to invest abroad), actually affect offshoring in practice. Generally, a home country either offers a tax rate deduction or provides a non-tax subsidy.⁴ Comparing these two policies, we want to find out which one is more economical and efficient in terms of delaying the timing of MNE's offshoring tasks.

To the best of our knowledge, there is no literature studying home-country policies to delay the timing of outward FDI. Most of the existing related literature focuses mainly on how the policy uncertainty or strategic consideration alters the level of investment. Others focus on the timing of FDI related to the attractiveness of host countries (Brito and de Mello-Sampayo, 2005) and, similarly, there is also literature analysing how to use policies to attract FDI (Yu et al., 2006; Pennings, 2000) as well as the mode of foreign penetration (Pennings and Sleuwaegen, 2004).

The rest of the paper is organized as follows. Section 2 lays out the stochastic option-pricing model, specifying the two feasible modes of production (onshore and offshore) as well as examining the impact of demand shocks on both the timing of offshoring and the profits of each mode of production. Section 3 evaluates the impact of home-country fiscal policies on the timing of offshoring. Section 4 presents the empirical application and Section 5 concludes.

2. The model

In this section, we consider an economic set up which basically follows Aizenman and Marion (2004) and Aizenman and Noy (2006). However, we go further by assuming the demand to evolve according to a geometric Brownian motion and then, in Section 3, we evaluate the effects of fiscal policies on the timing of offshoring and comparing their effects. We consider a global economy composed of two countries, Home (*h*) and Foreign (*f*). Asterisks indicate foreign (country *f*) variables.

² The British advanced corporation tax system taxed British companies' foreign earnings at a higher rate than their domestic earnings. This tax code created an incentive for British companies to invest at home.

³ Bearing in mind that there is increasing recognition that countries can enhance their competitiveness via outward FDI, we assume that governments implement these policies with the intent to delay not deter FDI.

⁴ For a non-tax subsidy we will assume a direct subsidy or a direct cash transfer to the MNE.

¹ “Offshoring” means the performance of tasks in a country different from where a firm's headquarters are located whereas “outsourcing” means the performance of tasks under some contractual arrangement by an unrelated party. Thus, offshoring can be conducted in-house or at arms-length, while outsourcing can be performed in a domestic or foreign location.

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