



Subsidy competition and the mode of FDI[☆]

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ARTICLE INFO

Article history:

Received 18 January 2008

Received in revised form 6 February 2009

Accepted 10 February 2009

Available online 6 March 2009

JEL classification:

F15

F21

F23

Keywords:

Subsidy competition

FDI

Greenfield investment

Mergers and acquisitions

Regional integration

Positive externalities

ABSTRACT

We model subsidy competition for a foreign MNC's investment in two trading partners. Taking into account acquisitions as an alternative investment mode weakens the case for subsidising greenfield investment. Competition between countries results in welfare losses, which are reinforced by positive externalities from the MNC's presence and regional integration. The results also apply to situations where the acquisition price accounts for the possibility of subsidies and when governments use acquisition subsidies as an alternative to greenfield subsidies.

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1. Introduction

The widespread use of investment incentives to influence MNC location, leading to 'subsidy wars', is now well documented (UNCTAD, 1996; Oman, 2000; Charlton, 2003). Subsidy wars have occurred in emerging and rich countries alike, particularly within regional blocs. Indeed, some of the most notable and fierce bidding contests have arisen in the European automobile and semi-conductor industries, while AFTA and Mercosur have been accompanied by increased competition for investment in South East Asia and South America respectively.¹ At the same time, there has also been intense subsidy competition taking place within some large countries, most notably in Brazil, the US, Canada, India and China (see Oman, 2000 for examples).

[☆] We thank Ives Zenou, two anonymous referees, Thierry Mayer, Peter Neary, Thierry Verdier, seminar participants at ETSG 2005 (Dublin), EEA 2007 (Budapest), University of Birmingham and the Paris School of Economics.

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¹ European examples include competition leading to heavily subsidised car plants for BMW in Leipzig, Germany in 2001 and Nissan in Sunderland, UK in 2000, while in 2004, AMD was offered \$550 million to locate a microchip production facility in Dresden, Germany. In ASEAN, Thailand outbid the Philippines in 1996 to land a \$500 million investment from General Motors. More details on these and other examples are provided in the working paper version of this paper, while Oman (2000) and Charlton (2003) offer far more comprehensive discussion.

Recent years have also seen an increase in FDI, with cross-border mergers and acquisitions increasing in importance relative to greenfield investment, accounting for a majority of new investment in developed countries. Calderón et al. (2002) report that merger and acquisition activity almost doubled as a percentage of GDP (and increased as a share of total investment) in industrialised countries between the late 1980s and the late 1990s. Over the same period in developing countries, while greenfield investment still accounted for a majority of FDI, mergers and acquisitions increased by more than nine times as a share of GDP, whereas the increase in total FDI inflows was approximately threefold.

In this paper, we study the welfare effects of subsidy competition for FDI. We model two trading partners that compete for the location of foreign firms by offering investment subsidies in a context where firms consider cross-border acquisitions as an alternative to greenfield investment. We show that this alternative worsens the expected welfare consequences of subsidy competition. Intuitively, in a world where governments compete for greenfield FDI, acquisition serves as an outside option for the investor. This outside option strengthens its bargaining position vis-a-vis the host country governments, resulting in a higher greenfield investment subsidy often sufficient to reduce regional welfare. Interestingly, this result carries over to the case where there are positive externalities from FDI such as job-creation effects. Therefore taking cross-border acquisitions into account can dramatically affect the welfare implications of subsidy competition for FDI.

A premise of our argument is that MNCs may consider greenfield FDI and mergers and acquisitions as substitutable alternative methods of investment. Indeed, there is no reason to think that an MNC would not choose the optimal mode of investment. It is a surprising feature of most of the literature on FDI that it exclusively considers either greenfield or mergers and acquisitions, as if the two were independent activities. In this sense, our paper complements a growing literature that investigates the investment choice in equilibrium (Mattoo et al., 2004; Bjorvatn, 2004; Bertrand, 2005).

Some authors have argued that subsidies can make investors internalise the wedge between social and private returns to FDI. With asymmetric externalities, subsidies may direct FDI to the location where its social return is higher, potentially reversing the location outcome and restoring allocative efficiency.² In addition, subsidies can help governments trigger agglomeration even in an initially symmetric world, and capture part of the agglomeration rents enjoyed by foreign multinationals.³ We contribute to this literature by showing that the realistic assumption of acquisitions as an alternative mode of FDI reinforces the negative effects of subsidy competition even in the presence of positive externalities associated with greenfield investment.

We consider a region composed of a large and a small country. We model subsidy competition as a (second-price) auction where governments non-cooperatively offer lump-sum subsidies to an extra-regional investor. We initially assume that subsidies are only available to greenfield investors, in line with the observation that none of the 'landmark cases' mentioned in the UNCTAD and OECD-commissioned surveys involve mergers or acquisitions. To the best of our knowledge, investment incentives have only been granted to greenfield projects. This might be partly due to employment effects and other positive externalities associated with greenfield investment that are unlikely to accrue to the same extent with acquisitions. In addition, policy makers often view acquisitions of domestic firms by foreign predators as undesirable, fearing anti-competitive effects of increasingly concentrated ownership by large MNCs while ignoring the possible transfer of improved technology into a country, with potentially beneficial effects for consumers in the region.⁴ One possible reason for this is that policy makers do not recognise that acquisitions involve payments to the original owners of the firm, which should compensate them for any lost future profits. We later extend the model to allow for acquisition subsidies and find that there are equilibria in which governments subsidise acquisitions and acquisition-subsidy competition will arise with sufficiently high fixed costs of greenfield investment.

We show that subsidies allow the allocation of FDI to the large country, which is the efficient location as the costs of accessing both markets are minimised.⁵ However, subsidy competition also distorts the investment type towards greenfield FDI, with the large subsidies required often sufficient to reduce regional welfare. We identify cases where subsidy competition for greenfield investment reduces regional welfare when the alternative of acquisition is available. We show that subsidy competition will be harmful in a number of plausible cases,

² This argument has been made in the cases of employment effects (Barros and Cabral, 2000), technological spillovers (Fumagalli, 2003), increase in host-country competition (Bjorvatn and Eckel, 2006), or any other positive country-specific externality associated with MNC operations (Blomström and Kokko, 2003).

³ See for example Kind et al. (2000) and Ludema and Wooton (2000).

⁴ Although the positive effects of foreign acquisitions have not been clearly established by the literature, Arnold and Javorcik (2007) show how foreign acquisitions raised plant productivity in Indonesia. Kendall and Ryan (2008) consider the welfare and competition policy implications of international acquisitions. Acquisitions that involve the transfer of technology from a more efficient foreign predator to a domestic target are shown to be welfare-improving for the domestic country.

⁵ Haaland and Wooton (1999) and Haufler and Wooton (1999) study tax competition for FDI in the presence of geographical advantages such as proximity to a large market or to a pool of suppliers or workers.

depending on the fixed costs associated with the investment project, and never beneficial. This is because competition leads to situations where greenfield FDI occurs in the efficient location, but regional welfare would be higher if the foreign firm entered through acquisition, which would be the outcome without subsidisation. An interesting implication for policy purposes is that welfare is greater under duopoly after the foreign acquisition than in a triopoly formed by subsidy competition.

As mentioned above, these results persist even in the presence of positive externalities such as employment effects. Indeed, we find that subsidy competition will be harmful for an even greater range of fixed costs. This is because the small country's social benefit from hosting the MNC is now greater relative to accepting an acquisition in the rival country. This forces the large country to subsidise the MNC in a greater range of cases. This result contrasts with the above-mentioned models where positive FDI externalities strengthen the case for subsidy competition.

We explore three extensions. First, we study the effect of falling trade costs. Second, we allow acquisition prices to react endogenously to subsidy offers. Following Norbäck and Persson (2008), we model the acquisition price as a result of an auction between the target firms. We show then how the possibility of subsidies affects the price. Lastly, we investigate the effect of subsidies to FDI for acquisition. In all these cases, the welfare-reducing effects of subsidy competition are reinforced.

The rest of this paper is set out as follows. Section 2 sets up the model. Section 3 characterises equilibria of the subsidy game between the two governments in the region. This allows us to first analyse welfare effects arising purely from changes to market structure and then allow for additional externality effects of FDI. Section 4 analyses the extensions of the model. Section 5 concludes.

2. The model

The world is assumed to consist of three countries, 1, 2 and 3. Countries 1 and 2 are potential partners in a preferential trade agreement (PTA) while 3 is a foreign country from outside the region. Each country contains a firm, indexed by country: firms 1 and 2 already sell in their own and each others' markets, while firm 3 can choose between greenfield investment and mergers and acquisitions to supply the markets in the two potential PTA partners.⁶ The foreign firm is assumed to have a lower marginal cost than the other two firms and can transfer this cost advantage to any plant it buys or establishes in another country.⁷

We consider a three-stage game. In the first stage the two partner governments set the levels of lump-sum location subsidies to the foreign firm, should it choose to invest in either partner country.

In the second stage, the foreign firm chooses how to supply the partner countries. It faces two choices (assuming at least one to be profitable): greenfield FDI, setting up a new plant in either country 1 or 2; or acquiring the existing firm in either country 1 or 2. If it chooses greenfield FDI, it will face a fixed set-up cost and a trade cost for each unit shipped between countries 1 and 2. If it chooses acquisition, it will also pay this trade cost, plus an acquisition price whose formation is explained below.

In the third stage, all firms remaining in the market sell a homogeneous product under Cournot competition. Markets are segmented, meaning that we can ignore the market in country 3 when analysing the effects of regional integration on countries 1 and 2. We note that,

⁶ In order to concentrate on the choice of investment mode, we rule out the possibility of exports from country 3. To reduce the number of cases that must be considered we also rule out the possibility of buying out both firms.

⁷ Unlike Mattoo et al. (2004), we do not allow firms to choose the degree of technology transfer, instead we assume the full technological advantage is always transferred.

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