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**HOST COUNTRY-FOREIGN INVESTOR BARGAINING POWER AND
INVESTMENT INCENTIVE PROVISIONS IN MULTILATERAL
INVESTMENT AGREEMENTS**

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Abstract: *The paper is concerned with foreign investment in developing countries and the incentives offered to attract that investment in relation to the use of a possible future multilateral investment agreement as a commitment device over incentive levels. The existing literature has identified two sources of benefit from such commitment, firstly to avoid time inconsistency problems whereby incentives are less effective than otherwise because investors fear that they may be reduced once sunk costs have been incurred, and secondly to avoid excessive competition for foreign investment. This paper demonstrates a third benefit from commitment which arises from low host country bargaining power when negotiating incentive levels with foreign investors. If bargaining power is low, incentives agreed under bargaining will be generous to the investor and host country welfare will be lower than otherwise. It is shown that this consequence of low bargaining power may be avoided if host countries can commit themselves in advance to provisions that limit the incentives they may subsequently agree with foreign investors. It is argued that provisions of this kind should be optional from a host country perspective since those with low bargaining power will gain from them but those with high bargaining power would not.*

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Keywords: Foreign Investment, Bargaining, MFN, Multilateral Investment Agreements.

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1. INTRODUCTION

This paper is concerned with foreign direct investment in developing countries and the incentives offered to attract that investment in the context of a possible future multilateral investment agreement. It considers possible outcomes from bargaining over the level of incentives between host countries and foreign investors and shows that host countries with low bargaining power would gain from being able to pre-commit to binding provisions in a multilateral investment agreement that prevented them from offering incentives more generous than a carefully chosen pre-set level. We consider two possible provisions of this kind; a symmetry rule whereby all foreign investment (possibly within defined groups) must be offered the same terms, and a subsidy ceiling that sets a cap on what is offered but leaves open the possibility of less generous terms. In each case the actual level of incentives under the symmetry rule or subsidy ceiling would be chosen by host countries individually to suit their circumstances. Countries with high bargaining power would not gain from the ability to pre-commit in this way. Hence the key policy recommendation in the paper is that a future multilateral investment agreement should incorporate symmetry rule or subsidy ceiling provisions which would be optional in advance for host countries but binding after that if they had chosen to commit to them.

The analysis thus goes beyond the standard arguments for the benefits of commitment to investment incentives which are to avoid time inconsistency problems when investors will incur sunk costs (see below), and to facilitate international cooperation over incentives to avoid excessive bidding for foreign investment (the "race to the bottom"). It is shown that the use of a commitment mechanism by a host country to avoid the consequences of low bargaining power, the new result, is consistent with the earlier arguments.

The paper draws on insights from theoretical literature on bargaining, the pricing behaviour of durable goods monopolists and optimal selling mechanisms¹ but these have not previously been considered in relation to foreign investment nor have the resulting policy implications been presented.

The policy context of the paper is that in principle the current round of WTO negotiations will include discussions towards a multilateral framework for investment. The round as a whole had an inauspicious start at the Seattle meetings, and the immediate priority is likely to be trade rather than investment issues², but the time prior to negotiations on the investment side is nevertheless an important opportunity to analyse and debate the principles that should underpin an investment agreement.

The possibility of such an agreement raises a very wide range of issues, even within the area of incentives (see Brewer and Young, 1997; Daly, 1997), but the focus of this paper follows from the fact that signatory countries would be subject to WTO disciplines and hence the agreement may potentially be used as a commitment device. One well established argument for the benefits of credible commitment (that dates back at least to Kydland and Prescott, 1977, and is implicit in Vernon, 1971) is that in the absence of commitment host countries cannot credibly promise to pay subsidies or other inducements to foreign investors because once the latter have invested and incurred sunk costs the country can reduce the subsidy without provoking disinvestment. The anticipation of this opportunistic behaviour can prevent the investment from

¹ See in particular Tirole (1988), Bester (1993) and Arnold and Lippman (1998).

² Particularly given the controversies that surrounded earlier negotiations, now lapsed, at the OECD on a possible Multilateral Agreement on Investment (MAI).

taking place despite the mutual benefits that would have arisen from it. If a multilateral investment agreement could be used as a commitment device for incentives this time inconsistency problem would be overcome since the initial agreement over subsidies or investment conditions would be binding over time.³

Thus far the argument is standard but arguably the time inconsistency model is incomplete because it says little about the actual level of subsidies or other incentives agreed between host country and foreign investor, only that whatever is agreed may not be implemented over time in the absence of commitment. It is natural to think of agreement being reached after a bargaining process and the starting point for this paper is concern that if host country bargaining power is low the bargaining outcome may specify very high subsidies or generous investment conditions. If so the net benefits to the host country from the foreign investment will be much lower than they might have been, despite the successful resolution of the time inconsistency problem by using a multilateral investment agreement as a lock-in device on the agreement made. The paper shows that in this situation a pre-set maximum subsidy (at a level still sufficient to attract the investment) would prevent the bargaining weakness of the host country leading to high subsidies. Low bargaining power may arise from factors such as a high discount rate (so the host country is impatient to reach agreement), political economy pressures, and asymmetric information whereby the foreign investor may convince the government that it

³ If the host country's discount rate is sufficiently low the time inconsistency problem could be overcome by reputational effects without external commitment (Veugelers, 1993). Thomas and Worrall (1994) present a model in which the possibility of future gains from cooperation with the same firm prevent opportunistic behaviour. The bargaining power argument that follows is not dependent on the strength of these effects or the size of sunk costs.

will only invest at a high subsidy level, well above their true reservation subsidy. The opposite case is where host country bargaining power is very high so the level of subsidies agreed is only just above the level at which the foreign investor would no longer be willing to invest. In this case the host country gains the maximum benefit available from foreign investment⁴ by having both a commitment device to solve the time inconsistency problem *and* high bargaining power. In this case a symmetry rule or subsidy ceiling would reduce host country welfare; hence the policy conclusion that commitment to such provisions should be optional in advance (but binding if chosen).

Before turning to the demonstration of the above results we briefly clarify the scope of the paper. Firstly the paper's contribution to the literature is analytic rather than empirical and to present the new argument concerning bargaining power as clearly as possible we make use of a simple model. This is intended to capture the key ingredients of the comparison between bargaining and the symmetry rule or subsidy ceiling regimes but inevitably it abstracts from many of the empirical complexities of foreign investment. Secondly the paper does not consider wider debates about the desirability of foreign investment and simply takes it as given that there are foreign investors willing to invest at levels of incentives which are below the maximum level that the host country would properly be willing to pay to attract that investment. This establishes a "surplus" from foreign investment in the spirit of Helleiner (1989) and the paper addresses how that surplus is divided between host country and foreign investor across the different regimes (bargaining, symmetry rule and subsidy ceiling). Thirdly in the case of bargaining we do not attempt to make firm predictions about the *actual* outcome of bargaining but we do show that

⁴ It is equivalent to a perfectly price discriminating monopolist or monopsonist.

the *possible* outcomes straddle those under a symmetry rule or subsidy ceiling.⁵ It is plausible that at least some developing countries, especially the least developed, experience unfavourable outcomes from bargaining in which case one of the subsidy commitment provisions would be appealing. The recommendation that these be optional means that the choice may be made at the individual country level taking full account of country-specific circumstances. Fourthly the analysis is chiefly relevant to foreign investment in manufacturing or services in which there are potentially many foreign investors with broadly similar characteristics. In this case it is feasible for a host country to set a subsidy ceiling or symmetry rule in advance at levels appropriate to the pool of potential foreign investors. The approach is less appropriate for large natural resource based or infrastructure projects which tend to be more one-off in nature. In these situations, following Milgrom (1987), the consequences of low bargaining power may in principle be overcome by auction or tendering mechanisms.⁶ Auctions are less applicable in manufacturing or services because in these sectors many investments can take place side by side rather than a single investor being selected from a group to undertake a particular project. Fifthly we analyse the preferred choice of regime chiefly from the perspective of individual host countries or groups of them. We briefly discuss the wider issue of global efficiency in investment allocation but we

⁵ The theoretical bargaining literature itself does not offer this degree of concreteness, especially when information asymmetries are present. The foreign investment literature, while sophisticated in many respects does not offer direct predictions either (see Helleiner, 1989, and more recently Moon and Lado, 2000, for surveys and discussion).

⁶ Lock-in provisions at the individual project level to solve the time inconsistency problem remain useful, however, because infrastructure and natural resource projects tend to have very high sunk costs. The associated large financing requirements of these projects may also make attracting foreign capital particularly important.

do not develop a fully global model to address this issue in depth.

Finally we relate the regimes considered (bargaining, symmetry rule and subsidy ceiling) to most-favoured nation (MFN) and national treatment (NT) provisions. For clarity we discuss these assuming that they refer to tax/subsidy measures only since they are the focus of the paper, keeping non-tax/subsidy provisions such as standards and performance requirements in the background.⁷ Most straightforwardly a symmetry rule is equivalent to an MFN (or most-favoured investor in this context) provision whereas subsidy ceilings and bargaining are inconsistent with an MFN requirement since they imply possible differential treatment of different foreign investors. There is no necessary relationship between the regimes considered and national treatment since the incentives either bargained with foreign investors or resulting from a symmetry rule or binding subsidy ceiling might be more or less generous than national treatment. In this case a national treatment requirement would be costly if subsidies would otherwise be lower or irrelevant if subsidies would otherwise be higher (Brewer and Young, 1997, footnote 21).

The remainder of the paper compares possible bargaining outcomes with those under a symmetry rule in Section 2, including a discussion of the possible determinants of bargaining power and efficiency issues, while Section 3 widens the comparison to the use of a subsidy ceiling. Section 4 presents several extensions to the discussion and implementation issues while Section 5 discusses the interaction between the proposed commitment mechanisms and international cooperation and competition over subsidy levels. Section 6 concludes. The appendix generalises the model in the text with similar conclusions.

⁷ In existing agreements MFN and NT generally refer to the latter while excluding incentives.

2. SYMMETRY RULE AND BARGAINING OUTCOMES COMPARED

a. Core Model of Foreign Investment

We first present a simple model of foreign investment and the incentives used to attract it before turning to the outcomes under a symmetry rule and bargaining and the comparison between them. The derivation of the results and a generalised version of the model are presented in the appendix. We model the benefit to the host country from foreign investment using the simple function shown in (1) where $TB(q)$ is the total benefit from a given quantity, q , of foreign investment.⁸ The parameters a and α are positive constants where α is the elasticity of the total benefit with respect to q .

$$TB(q) = aq^\alpha \quad (1)$$

Analytically we work with (2) which shows the marginal benefit to the host country from an extra unit of foreign investment, $MB(q)$, which may be interpreted as the maximum subsidy that the host country should be willing to pay to attract that investment.

$$MB(q) = \frac{a\alpha}{q^{1-\alpha}} \quad (2)$$

The marginal benefit is shown by the upper line in Figure 1 where $\alpha < 1$ is assumed so the line is downward sloping, but $\alpha = 1$ is also possible in which case the line would be horizontal. In general it is implausible for the $MB(q)$ line to be upward sloping with $\alpha > 1$.

⁸ Implicitly we assume that the quantity of investment is measured in units which directly correspond to its benefits such as jobs created, technology transferred etc. For technical reasons we treat q as a continuous variable, approximating the outcome for many relatively small sized investment projects.

Turning to the supply of foreign investment, there are in practice a very wide range of factors which affect investment decisions, including firm specific factors and location specific advantages such as host country market size and tariff protection, macroeconomic stability and risk.⁹ For clarity we keep these factors constant and think of the investment incentives offered by the host country (which may take many forms in practice) as being represented by a single variable which we refer to for simplicity as a subsidy. Hence we model the supply of foreign investment as responding to a subsidy, s (which we assume to be locked in to avoid time inconsistency problems), in the way shown by the left hand part of (3) in which b and β are constants, the latter being the elasticity of foreign investment supply with respect to the subsidy level.¹⁰

$$q = bs^\beta \quad ; \quad s(q) = \left(\frac{q}{b}\right)^{\frac{1}{\beta}} \quad (3)$$

The right hand part of (3) is simply the inverse of the left hand part and the function $s(q)$ may be thought of as the minimum subsidy required to attract the q th unit of foreign investment. We think of this supply curve as representing a stock of potential foreign investment, leaving to the appendix explicit consideration of the timing of its possible arrival. It is plausible that the position of the supply curve may depend on the choice of symmetry rule or bargaining regime (the implications of which are discussed below), but we hold it fixed in the first instance. The

⁹ See Moran (1986), Kozul-Wright and Rowthorn (1998), Markusen (1998) and Shatz and Venables (2000).

¹⁰ Empirical work has not always shown investment incentives to be strong determinants of foreign investment though the evidence is mixed (Guisinger, 1985; Brewer and Young, 1997; and Taylor, 2000). The relationship would also be stronger if an investment agreement was in place which allowed host countries to overcome the time inconsistency problem.

position of the supply curve will also be contingent on the incentives offered by other countries but we assume that these are constant until Section 5.

The supply curve is shown by the lower line in Figure 1 where progressively higher subsidies are required to attract more investment. The area between the $MB(q)$ and $s(q)$ lines in Figure 1 up to their intersection may be thought of as the surplus available in the "market" for foreign investment,¹¹ the key questions being the surplus realised by the parties and the efficiency issue of how much of it is realised in total.

b. Outcome Under a Symmetry Rule

It is convenient to first analyse the outcome under a symmetry rule which we define as a single subsidy rate, s^* , which the country chooses and commits in advance to paying to all foreign investment projects. The commitment is made credible by it being made under the auspices of the multilateral investment agreement (with sufficiently severe penalties for not honouring the commitment). When the choice of common subsidy is made it is assumed that the host country knows the likely future pool of foreign investment described by (3), at least to an approximation, and hence sets s^* to maximise its surplus given that information. The appendix gives a formal derivation of s^* but it may be noted that the situation is analogous to a monopsonist buyer of a good facing a given supply curve (the host country is "buying" foreign investment with the subsidy level as the price). The outcome is shown in Figure 2 where s^* is set to maximise area A, the host country surplus, with q_r as the quantity of foreign investment that takes place. The optimal value of s^* equates the marginal benefit of increasing the quantity of investment by raising the common subsidy, shown by $MB(q)$, and the marginal cost of doing

¹¹ Strictly speaking it is the maximum surplus, a point followed up in the appendix.

so, $MC(q)$, which combines the cost of the subsidy to the new investment and the cost of raising the subsidy paid to all the other investment (which is an obligation under the symmetry rule). Area B is the surplus achieved by foreign investors while area C is potential surplus not realised under the symmetry rule because at the optimal s^* the resulting quantity of investment, q_r , is less than that required to maximise the total surplus. We qualify this result below by allowing for possible shifts in the supply of foreign investment in response to the regime choice.

It may be noted that credible pre-commitment is almost certainly required to make the symmetry rule operational. The investment that takes place up to q_r in Figure 2 might otherwise bargain successfully for higher subsidy levels (which is what would make adoption of the symmetry rule desirable). The host country also has an incentive ex post to break a voluntary symmetry rule by agreeing to higher subsidies to attract extra investment above q_r .

c. Bargaining Outcomes

The bargaining theory literature offers a rich array of possible models and outcomes, many of which are sensitive to the particular structure of the bargaining process and the foreign investment literature also offers relatively little guidance as to the typical structure or outcome of host country-foreign investor bargaining.¹² This information is not usually made public and in any case there is likely to be wide variation across countries. Given this we do not attempt to predict the exact outcome from bargaining but instead adopt the Generalised Nash Bargaining Solution as a way of articulating the possible outcomes. The appendix gives further detail but

¹² Helleiner (1989, p. 1461) refers to bargaining processes being "notoriously difficult to model persuasively". For surveys and recent contributions to the bargaining theory literature see Abreu and Gul (2000), Binmore et. al. (1986, 1992, 1998), Kennan and Wilson (1993).

essentially this approach predicts that the subsidy paid to each foreign investment project will be such that the surplus is divided according to the relative bargaining power of the host country and foreign investor. In particular for relative host country bargaining power, B (which is always between zero and one), the host country will receive a fraction B of the surplus and the foreign investor $1-B$. B is a parameter of the solution rather than something determined within it but we discuss its possible determinants below.

Using this bargaining approach we illustrate two possible outcomes in Figures 3 & 4. In Figure 3 host country bargaining power is assumed to be relatively high so the subsidies agreed, $s_b(q)$, which may now differ across different investment projects, are low, host country surplus (area A) is large and combined foreign investor surplus (area B) is small. Figure 4 shows the outcome for low host country bargaining power which results in small host country surplus (area A) and correspondingly large foreign investor surplus (area B). The figures also show that in this framework the efficient total quantity of foreign investment (q_b) takes place though this result is qualified below.

d. Comparison

From the discussion above and Figures 2-4 it is clear that the host country's choice between a symmetry rule and individual project bargaining will depend on its relative bargaining power (the determinants of which we discuss below). Host country surplus under the symmetry rule is always positive but (unless the supply curve is horizontal) always less than the maximum possible, whereas under bargaining it may range between zero and that maximum. Hence the ranking of the regimes is ambiguous in general (implying that a symmetry rule provision should be optional from a host country perspective) but the possibility of low bargaining power means that the opportunity to choose a symmetry rule is likely to be beneficial for at least some

countries. The model allows us to formalise the levels of bargaining power at which one or the other regime is preferred. Defining B^c as the threshold level of relative host country bargaining power, above which bargaining is desirable and below which a symmetry rule is preferred, the appendix derives (4) in which B^c depends on the elasticity parameters α and β .

$$B^c = \left(\frac{\beta}{1+\beta} \right)^{\frac{\alpha\beta}{1+\beta(1-\alpha)}} \quad (4)$$

The value of B^c (which is always between zero and one) across a range of values for α and β is shown in Figure 5.¹³ It is difficult from the evidence in the literature to make any strong claims about either the most plausible values of the elasticities or the likely level of host country bargaining power but it may be noted that all the values of B^c are significantly above zero. This confirms the conclusion that a symmetry rule provision may be desirable for at least some (and possibly many) developing countries but it should remain optional.

e. The Determinants of Bargaining Power

Space constraints prevent a detailed survey of the possible determinants of bargaining power¹⁴ but we highlight three factors from the bargaining literature likely to be important across many different firms and countries. These go beyond the obsolescing bargain model in which host country bargaining power is likely to rise over time once an investment has been undertaken and initial project risk resolved.¹⁵ This model is powerful but it is more informative about changes in bargaining power rather than the overall level. In themselves these factors do not

¹³ Table A1 presents very similar values for the generalised model in the appendix.

¹⁴ See Helleiner (1989) and references therein. More recently, Moon and Lado (2000) survey the literature and analyse firm-level characteristics likely to affect bargaining power but give less consideration to *relative* bargaining power between firms and countries.

¹⁵ Vernon (1971, 1977), Moran (1974).

conclusively point towards low bargaining power but they do suggest that it is a serious possibility, perhaps especially for poorer economies.

i) Time discount rates. Bargaining outcomes are almost invariably worse if a bargainer has a high discount rate (so they are impatient and value current outcomes highly), essentially because an impatient negotiator will be more tempted to accept an offer from the other party (or make a more generous offer themselves) rather than hold out for a possibly better outcome at a later stage. The ranking of host country and foreign investor discount rates is not immediately obvious but it is plausible that discount rates tend to be high in poor countries.

ii) Political economy factors. Political economy considerations may raise a host country government's discount rate and thus worsen the bargaining outcome if policy makers feel under pressure to demonstrate rapid economic progress. For the same reason there may also be a risk that governments will overestimate the benefits of foreign investment in which case they would be too willing to agree to high subsidies.¹⁶

iii) Asymmetric information. Early bargaining models tended to assume that both parties to a negotiation had full information about each other's characteristics, particularly their discount rates and the maximum or minimum (reservation) subsidy at which they would be willing to agree, whereas in practice information is likely to be asymmetric.¹⁷ If the asymmetry is one sided

¹⁶ Corruption between government negotiators and foreign investors is also possible (Gatti, 1999).

¹⁷ This was the main motivation for Harsanyi and Selten's (1972) generalisation of the original Nash bargaining solution.

(so the foreign investor knows about the government's characteristics but not vice versa) the literature contains the very strong Coase conjecture result that the host country government will have *no* bargaining power. Intuitively if the foreign investor knows the maximum subsidy the government would be willing to pay it will refuse all offers below this level and the government, unless it is infinitely patient, will have little choice but to raise its offer towards that level. If the asymmetry is two-sided the bargaining literature provides much less clear predictions with multiple equilibria of the bargaining game a common result. It is plausible in general that foreign investors may have better information about government characteristics than vice versa (since the firm's discount rate and reservation subsidy are likely to depend on a host of firm and sector specific factors) and use this to their advantage in bargaining. The relative outcome may, however, be reversed if the government does have good information at the firm/sector level while keeping its own valuation on foreign investment secret. If the government knows little about individual foreign investors' reservation subsidies the best it may be able to achieve is to misrepresent its own by adopting a strategy of refusing to pay subsidies above a chosen level. This would require a very low discount rate but even if this was the case the government would choose the same common subsidy level as under the symmetry rule and thereby do no better than under the latter.

A further factor which may be relevant is home market size and whether an investment project is intended to produce for the home or export market. In the first instance production for a large home market (assuming there to be some advantage in locating production in the same market) would be expected to lower the foreign investor's reservation subsidy, because they do not have the same option to produce elsewhere, rather than necessarily lower their bargaining power though it would be helpful to the government to know that the reservation subsidy was likely to be lower than otherwise. It is also plausible that there may be early-mover advantages

in home market production in which case foreign investors may have high discount rates in bargaining and the government may also be able to misrepresent the likelihood of rapid entry by other firms.

A broader perspective on the bargaining power issue is that if there were measures available to enhance bargaining power there would be much less need for devices such as a symmetry rule to mitigate its consequences. Improving host country governments' ability to estimate the reservation subsidy of foreign investors is one possibility (though the requirement for firm-specific information places a ceiling on how feasible this might be) but beyond that it is difficult to see this as a promising approach. One suggestion has been that governments might delegate bargaining to an independent agency with a carefully structured contract that led that agency to bargain effectively on the governments behalf. There are, however, strong reasons to doubt the efficacy of this arrangement given that; a) the government's short term interests may in practice lead to the contract being put to one side, b) if low bargaining power reflects asymmetric information it is not clear why the agency should have superior information (or if it does why the government does not purchase its services in an advisory role), and c) there may be a significant risk of hidden payments between foreign investors and the agency such that the latter no longer acts in the host country's interests.

f. Efficiency Issues

We comment here on efficiency issues as they relate to the choice between bargaining and a symmetry rule. Independent of this choice a significant improvement in efficiency in investment allocation should follow from a multilateral investment agreement due to reduced overall investment risks and greater transparency and stability in regulatory regimes. Firstly, in

the model above the symmetry rule involves an efficiency loss (area C in Figure 2) which is not present under bargaining where all the surplus is realised. If the symmetry rule is preferred the host country chooses a common subsidy such that the quantity of investment is lower (q_r in Figure 2 rather than q_b in Figures 3-4) in order to pay significantly lower subsidies on the investment that does take place. It is plausible, however, that the simple model may overstate this loss because the position of the supply curve may be contingent on the regime chosen.¹⁸ In particular the symmetry rule makes the subsidies that will be paid to foreign investment much more predictable and also avoids the costs of researching an appropriate bargaining strategy and the potential delay before agreement is reached. If these factors are significant the supply curve would move to the right with the adoption of the symmetry rule and area C shrink or be eliminated altogether. A related point is that under bargaining host countries have an incentive to downplay their valuation on foreign investment (to gain advantage from asymmetric information) which may send discouraging signals to investors about future government behaviour towards their investment.

Secondly and more broadly the choice of appropriate structure for a multilateral investment agreement should be guided by global efficiency considerations in addition to the essentially partial equilibrium approach at the single country level adopted above. A full general equilibrium analysis of foreign investment allocation is beyond the scope of the paper but such an analysis would be likely to involve; a) the point made above that for individual countries a symmetry rule involves an efficiency loss for a given supply curve but this may be partly, wholly or more than offset because gains from the predictability of subsidies and saving of bargaining costs move the supply curve, and b) the explicitly multi-country point that under bargaining the

¹⁸ I am very grateful to John Roberts for this point.

allocation of foreign investment will be strongly affected by the distribution of bargaining power across host countries which may correlate little with economic fundamentals. The subsidy ceiling and symmetry rule subsidy levels should better reflect those fundamentals.

3. SUBSIDY CEILINGS

We have delayed introducing the subsidy ceiling regime, both for clarity and because it is a hybrid of the bargaining and symmetry rule cases. A subsidy ceiling sets a maximum but not a minimum subsidy to which the government can agree, with bargaining determining whether the agreed subsidy is at the ceiling or below it. As with the symmetry rule, the level of the subsidy ceiling is decided in advance and applies to all foreign investment projects (possibly within defined groups). To fix ideas we first assume that the supply curve of foreign investment is the same across the regimes and suppose that host country bargaining power is such that all subsidies end up being set at the ceiling (so they would have been higher in the absence of the ceiling). If this outcome is anticipated the government would set the ceiling at a level equal to that under the symmetry rule since this situation essentially reproduces that regime. As a result the government would be indifferent between the two while preferring both to unconstrained bargaining.

If government bargaining power is higher such that the subsidy levels on at least some projects are below the ceiling (and the supply curve remains fixed as before) a subsidy ceiling will be preferred to the symmetry rule. If we suppose initially that the subsidy ceiling was at the same level as the optimal symmetry rule (and hence the quantity of investment is the same) the host country would pay lower subsidies to some projects and the same to the remainder and hence it will be better off. In fact in this situation the net benefit from foreign investment will

be higher still because the subsidy ceiling may optimally be raised to attract a greater quantity of investment since the increase in the subsidy ceiling required to do this will not have to be paid to all of the other projects.

Hence with an unchanged supply curve for foreign investment the subsidy ceiling is at least as good as the symmetry rule but the comparison is less clear if the position of the supply curve depends on the choice between the two. In particular if it moves adversely in response to unpredictability of subsidies and anticipated bargaining costs the symmetry rule may be more desirable after all. The likely size of this effect is difficult to ascertain and hence it seems appropriate to continue to consider both regimes as alternatives to bargaining.

4. EXTENSIONS

This section notes some extensions to the analysis and implementation issues, each of which merits further attention while arguably not altering the thrust of the conclusions above.

i) The analysis of the symmetry rule and subsidy ceiling cases assumed that the government had good information about the supply curve for foreign investment. In practice this information will be imperfect and hence the relevant subsidy levels will not necessarily be set at the exact optimal levels. At the margin this would favour bargaining but it may be noted that small errors in setting the symmetry rule or subsidy ceiling levels will lead to only small reductions in welfare (for envelope theorem reasons) and very poor information about the supply curve would also greatly worsen the bargaining outcome. The symmetry rule (and subsidy ceiling) also has less stringent informational requirements since governments need to know the supply curve across potential projects collectively rather than the characteristics of each one

individually as it does for effective bargaining. In either case improving the government's information about the potential pool of foreign investment is clearly a priority. A related point is that there may be an argument for delaying the introduction of the subsidy ceiling or symmetry rule regimes because other provisions in a multilateral investment agreement may shift the supply curve and a period of learning about the new environment may be optimal.

ii) If there are known systematic differences between the reservation subsidies of foreign investors (for example by sector or whether production is for the home or export market) it is optimal, all else equal, to set a different symmetry rule or subsidy ceiling for each group. The arguments against doing this, at least to a fine level of disaggregation, is that complexity costs (and demarcation issues) may arise and because as the relevant group of firms becomes smaller there would be greater risk that each group would lobby vigorously for increases in the subsidy levels set. If more firms are affected by a measure such as a symmetric subsidy it is less easy for them to lobby collectively because the impact of each firm on the lobbying outcome becomes small (the free rider effect).

iii) If the supply of foreign investment was very stable over time the symmetry rule or subsidy ceiling levels would essentially only have to be set once and then remain unchanged. In practice conditions are likely to change over time and hence (for the symmetry rule and subsidy ceiling cases) it is desirable for there to be a mechanism for changing the subsidy levels set. The literature on the Coase conjecture implies that this needs to be approached with care. For example if the government could change the subsidy levels at will, and the change only applied to new investment, foreign investors who anticipated an increase in those levels would delay their investment. Observing the lack of investment the government may conclude that the

previous levels had been too low and the anticipation of higher subsidy levels would become self-fulfilling. In order to avoid this it would be desirable to have fixed time periods during which the subsidy ceiling or symmetry rule levels could not be changed (or a defined limit on the rate at which they could be adjusted), and a backwards-looking element to changes such that a foreign investor would still invest even if more generous levels were anticipated in the near future because they would still benefit from the change. In situations of this kind the way in which changes can be made needs to balance the lack of flexibility necessary to establish credibility and the need for flexibility to respond to changes in the economic environment. Further analysis of this issue would also require careful consideration of the interaction between the rules determining how the subsidy levels could be altered and the likelihood of the new levels set being influenced by lobbying processes. Panagariya and Rodrik (1993, Model I) present an analysis of lobbying over a uniform tariff rate on all imports and individual sector tariffs which is a closely analogous situation. They find that adoption of a uniform tariff rate has an ambiguous effect on average tariff levels since it implies a higher tariff for some sectors but lower overall lobbying due to the free rider effect. The analysis of this paper may be more positive for the symmetry rule/subsidy ceiling, however, because in their model tariffs are determined solely by lobbying whereas in the model above individual project bargaining may give rise to higher average subsidies due to greater asymmetric information problems in addition to lobbying effects.

iv) A further extension to the analysis concerns disinvestment threats which we note briefly since it is not of prime importance to the choice between bargaining and a symmetry rule/subsidy ceiling. Under a regime of unconstrained bargaining there is a risk to the host country that foreign investors, with projects that have already been initiated on the basis of a given agreed subsidy level, may threaten to disinvest unless the subsidy is raised. This threat is

less likely to be effective when sunk costs are high (since the time inconsistency argument suggests that subsidies are more likely to be lowered) but if not the host country government may be vulnerable to demands for higher subsidies, particularly if they are made at politically sensitive times. A multilateral investment agreement with lock-in provisions is useful in this situation. Under bargaining (or the subsidy ceiling when the ceiling is not binding) the disinvestment threat problem is removed if agreed subsidy levels are made inflexible upwards (as well as downwards to avoid time inconsistency problems). Under a symmetry rule the subsidy level is already inflexible in both directions. A related point is that lock-in mechanisms of this kind could be used to make the cessation of infant industry subsidies more credible.

5. INTERNATIONAL COOPERATION AND COMPETITION

The analysis so far has addressed the situation of a single host country interacting with potential foreign investors when the subsidies of other host countries are fixed. If these change the foreign investment supply curve will shift and hence a thorough analysis should take account of possible interactions between countries. It is well understood that in the absence of external restraints there is a significant risk that host countries will compete with each other to attract foreign investment, thereby reducing their collective welfare through this "race to the bottom".¹⁹ An external constraint or lock-in mechanism can avoid this problem if host countries use it to harmonise their incentives. This is also more likely to be credible and sustainable than voluntary harmonisation in the absence of an external commitment device since countries have a strong incentive to break such agreements.

¹⁹ UNCTAD (1995), Haaparanta (1996), Brewer and Young (1997). See Kehoe (1989) and Edwards and Keen (1996) for different approaches.

Since this area has been widely discussed in the literature we do not discuss it in detail but focus on how it interacts with the main analysis of the paper. Firstly one interpretation of these results concerning competition and cooperation over foreign investment is that a multilateral investment agreement should *require* countries to coordinate their incentives, essentially by all adopting symmetry rules or subsidy ceilings at harmonised levels. It is clear that making this an obligation would be highly controversial and negotiating the levels at which the subsidies would be set (including possible differentials between countries) would be very difficult since the optimal symmetry rule/subsidy ceiling levels for each country are likely to differ widely. High bargaining power countries would also lose out even under an optimally set symmetry rule though not necessarily under a subsidy ceiling which would rarely bind for them. A second approach is to retain the optional nature of the symmetry rule or subsidy ceiling provisions in which case the likely outcome depends closely on the strength of competitive forces in terms of how readily foreign investment moves between host countries in response to subsidy differentials. If these are very strong, outcomes in the absence of an investment agreement are likely to be dominated by incentives competition (rather than bargaining power at the country level) and host countries would be unwilling to commit themselves to low subsidies through a symmetry rule or subsidy ceiling provision because it would leave them exposed to competition from elsewhere. If foreign investment is less mobile between countries or regions,²⁰ bargaining power would be a more important determinant of subsidy outcomes and countries would be much less constrained in adopting these provisions to counter low bargaining power due to fear of exposing themselves to competition. Where the forces of competition remain strong, at the

²⁰ Because production is mainly for local or regional markets (with some advantage to locating production in those markets) and/or other country or region specific factors are important in location choice.

regional level, there would be a better chance of voluntary agreement to harmonise incentives through using symmetry rule or subsidy ceiling provisions. In these cases the number of countries involved would be smaller than for a global harmonisation agreement, thus facilitating negotiations, and they are more likely to see a common interest in harmonisation, especially if they are also members of a regional trade arrangement.

6. CONCLUSION

This paper has addressed the incentives offered by host countries to attract foreign investment in the context of a possible future multilateral investment agreement. In particular it has analysed the desirability of such an agreement incorporating lock-in mechanisms whereby host countries could improve their welfare through enhanced commitment in their use of incentives. At the most general level the analysis has reinforced the potential importance of including incentives in such an agreement.

A well established benefit from the use of a commitment device over incentives is at the individual investment project level where the locking-in of incentives would reassure investors that agreements to provide subsidies or tax breaks would be fully implemented. In the absence of an external commitment device, host countries have an incentive to scale back incentives they provide once investment has occurred and the anticipation of this may prevent the investment taking place. The existing literature has also emphasised that external commitment would assist groups of countries to coordinate their incentives and avoid excessive competition in attracting foreign investment. Without commitment, voluntary arrangements to harmonise incentives are vulnerable to breakdown since countries would experience large gains from raising their incentives a little above those of the group.

The key innovation of this paper has been to demonstrate a third rationale, based on low host country bargaining power, for the use of a multilateral investment agreement as a commitment device on incentives. Locking-in incentive levels at the individual project level is beneficial but if host country bargaining power is low the overall level of incentives will be generous to the foreign investor and the benefit from the investment to the host country will be lower than otherwise as a result. The benefit from commitment in this case is that if a host country can bind itself in advance to a provision that sets a maximum level of incentives the consequences of low bargaining power are avoided since it cannot subsequently be pushed into agreeing to incentives more generous than that level. The paper considered two provisions of this kind; a symmetry rule which sets a common level of incentives to all foreign investors (possibly differentiated by group) and a subsidy ceiling which sets a maximum level but leaves open the possibility of bargaining for less generous terms. In both cases the host country would choose the specified levels of incentives in advance. The key policy conclusion from the paper is that the incorporation of these provisions into a multilateral investment agreement would benefit host countries if their bargaining power was low but the provisions should be optional since host countries with high bargaining power would prefer not to adopt them.

These provisions would also be appropriate instruments for countries that sought to harmonise their incentives to prevent excessive competition for foreign investment and are fully consistent with benefits of locking-in incentives over time. It is also plausible that host countries would benefit from an increased supply of foreign investment in response to greater transparency and predictability of incentives and the avoidance of bargaining costs.

FIGURE 1

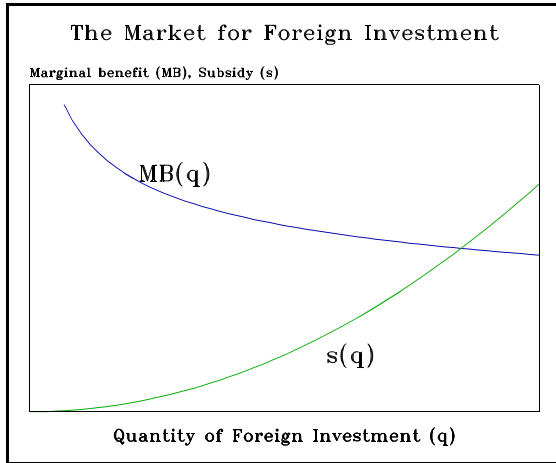


FIGURE 2

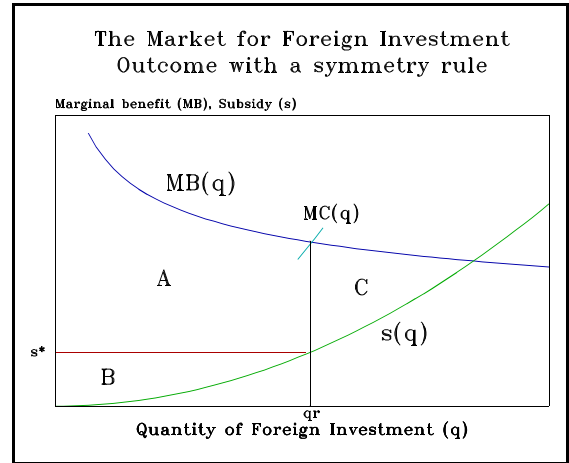


FIGURE 3

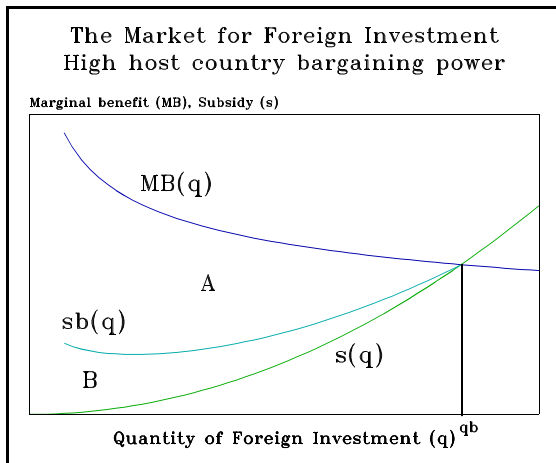


FIGURE 4

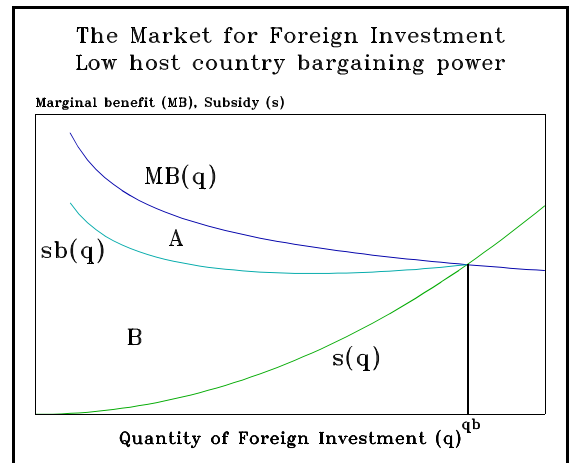
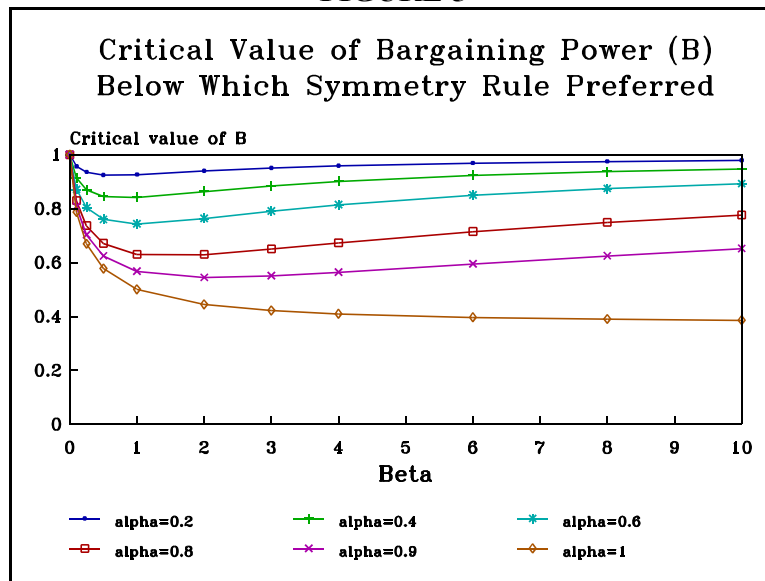


FIGURE 5



APPENDIX

We present a more general model than that in the text to show that the numerical results from (4) above, shown in Figure 5, are similar to those of a less restrictive model while also providing more detail on the Generalised Nash Bargaining Solution (GNBS) and its applicability to the foreign investment context. In place of (1) we represent the total benefit to the host country from a quantity of foreign investment, q , using (A1) in which Q is a constant to generalise the function. The constant second term of (A1) is present to normalise the function so $TB(q=0)=0$. The presence of Q makes the elasticity vary with q and it also implies that the marginal benefit of the first unit of q in (A2) is finite whereas in (2) it becomes large as q approaches zero. In Figures 1-4 this would mean that $MB(q)$ would have an intercept with the vertical axis which is arguably more realistic given existing foreign investment and/or the domestic capital stock.

$$TB(q) = a(Q+q)^\alpha - aQ^\alpha \quad (A1)$$

$$MB(q) = \frac{a\alpha}{(Q+q)^{1-\alpha}} \quad (A2)$$

In a similar vein we introduce a constant, S , to (3) to give (A3). S may be interpreted as the subsidy required to attract the first unit of foreign investment (the point where $s(q)$ crosses the vertical axis in Figures 1-4) which was implicitly set to zero in (3).

$$q = b(s-S)^\beta \quad s(q) = S + \left(\frac{q}{b}\right)^{\frac{1}{\beta}} \quad (A3)$$

For the symmetry rule outcome of the more general model we first derive the optimal common subsidy, s^* , in terms of its corresponding quantity, q_r , by expressing the net benefit to the host country from a given q_r in (A4) and differentiating it to obtain the first order condition for the optimal q_r in (A5). The second order condition is satisfied with α no greater than one. The maximised net benefit under the symmetry rule is thus given by (A4) with q_r at the value implicit in (A5).

$$NB(q_r) = a(Q+q_r)^\alpha - aQ^\alpha - [S + (\frac{q_r}{b})^\beta]q_r \quad (A4)$$

$$a\alpha(Q+q_r)^{\alpha-1} - S - (\frac{1+\beta}{\beta})(\frac{q_r}{b})^\beta = 0 \quad (A5)$$

In applying the GNBS to the model above we make four assumptions, each of which could plausibly be varied but arguably without affecting the key conclusion from the bargaining model that the range of possible outcomes straddles those under the symmetry rule or subsidy ceiling. Firstly we take $MB(q)$ and $s(q)$ as being the outside options of the two parties which implies that they define the range within which agreement will be reached, and assume that their payoffs are linear in the subsidy rate. Secondly we assume that relative bargaining power (B for the host country) remains constant across all units of foreign investment. This means that total host country surplus is the simple fraction, B , of total surplus. Thirdly we assume that the foreign investment which takes place is that which maximises total surplus. In Figures 3-4 there are projects to the right of q_b which have potential gains from trade with the country in that their reservation subsidy, $s(q)$, is less than $MB(q)$ if cumulative foreign investment has not yet reached q_b . We assume that it is projects between the origin and q_b which make agreements with the government and thus exclude these other projects from consideration. Fourthly we assume that $s(q)$ represents a stock of potential foreign investment and suppress a possible time dimension to the analysis by not modelling the arrival of those projects over time. An alternative and more complex strategy would be to model foreign investment supply as a probability distribution over $s(q)$ with additional assumptions made about the arrival rate of projects. This would give further emphasis to the importance of the host country's discount rate since if this was sufficiently low relative to the arrival rate of new projects the country would not only gain in negotiations with one investor but would also acquire the outside option of waiting for other foreign investors to arrive.

Under these assumptions the subsidy resulting from the GNBS, denoted s_b , for each unit of q is the result of the maximisation problem (A6). The solution to this is (A7) in which $s_b(q)$ divides the surplus, $MB(q)-s(q)$, between the host country and foreign investor in the shares B and $1-B$ where B is the relative bargaining power of the former. The total quantity of foreign investment is given by q_b in (A8) derived from $MB(q_b)=s(q_b)$. The equivalent point is shown in Figures 3-4.

$$\arg \max_{s_b} [MB(q)-s_b]^B [s_b-s(q)]^{1-B} \quad (A6)$$

$$s_b(q) = s(q) + (1-B)[MB(q)-s(q)] \quad (A7)$$

$$a\alpha(Q+q_b)^{\alpha-1} - S - \left(\frac{q_b}{b}\right)^{\frac{1}{\beta}} = 0 \quad (A8)$$

The total net benefit from foreign investment received by the host country (area A in Figures 3-4) is given by $NB(q_b)$ in (A9) with q_b given implicitly by (A8).

$$NB(q_b) = B \left[TB(q_b) - \int_0^{q_b} s(q) dq \right] = B \left[a(Q+q_b)^\alpha - aQ^\alpha - Sq_b - \frac{\beta q_b^{\frac{1+\beta}{\beta}}}{(1+\beta)b^{\frac{1}{\beta}}} \right] \quad (A9)$$

Results for B^c , the level of bargaining power at which the host country is indifferent between the symmetry rule or bargaining, in this more general model are derived by comparing (A4) and (A9), using the values of q_r and q_b given by (A5) and (A8). If $S=Q=0$ these expressions reduce to give (4) in the text, and in the special case of $\alpha=1$ they reduce to (4) for any values of Q and S , but in general we must derive B^c numerically. Results for B^c across a range of parameter values, similar to those in Figure 5, are shown in Table A1.

**Table A1: Critical Values of Host Country Bargaining Power
(below which a symmetry rule is preferred).**

	S	Q	a	b	α : β :	0.5 0.5	0.75 0.5	1 0.5	0.5 1	0.75 1	1 1	0.5 2	0.75 2	1 2
Core case	0	0	All a>0	All b>0		0.80	0.69	0.58	0.79	0.66	0.50	0.82	0.67	0.44
S>0, Q=0	0.1	0	High	High		0.95	0.72	..	0.89	0.69	..	0.87	0.70	..
	High	Central		0.91	0.72	..	0.87	0.69	..	0.86	0.69	..
	High	Low		0.89	0.71	..	0.85	0.68	..	0.85	0.69	..
	Central	High		0.99	0.76	..	0.93	0.72	..	0.88	0.72	..
	Central	Central		0.97	0.75	..	0.91	0.71	..	0.88	0.71	..
	Central	Low		0.95	0.74	..	0.89	0.70	..	0.87	0.71	..
	Low	High		1.00	0.87	..	0.97	0.79	..	0.91	0.75	..
	Low	Central		1.00	0.83	..	0.95	0.77	..	0.90	0.74	..
	Low	Low		0.99	0.80	..	0.93	0.75	..	0.88	0.73	..
S<0, Q=0	-0.1	0	High	High		0.71	0.67	..	0.71	0.63	..	0.76	0.64	..
	High	Central		0.73	0.67	..	0.73	0.64	..	0.77	0.64	..
	High	Low		0.74	0.68	..	0.74	0.64	..	0.77	0.64	..
	Central	High		0.68	0.66	..	0.67	0.62	..	0.73	0.62	..
	Central	Central		0.70	0.66	..	0.69	0.62	..	0.75	0.63	..
	Central	Low		0.71	0.67	..	0.71	0.63	..	0.76	0.63	..
	Low	High		0.64	0.64	..	0.63	0.60	..	0.70	0.60	..
	Low	Central		0.66	0.65	..	0.65	0.60	..	0.72	0.61	..
	Low	Low		0.68	0.65	..	0.67	0.61	..	0.73	0.61	..
S=0, Q>0	0	50	High	High		0.67	0.64	..	0.57	0.58	..	0.46	0.52	..
	High	Central		0.65	0.63	..	0.55	0.56	..	0.46	0.50	..
	High	Low		0.62	0.61	..	0.53	0.54	..	0.45	0.48	..
	Central	High		0.66	0.64	..	0.55	0.56	..	0.45	0.48	..
	Central	Central		0.63	0.62	..	0.53	0.54	..	0.45	0.46	..
	Central	Low		0.61	0.61	..	0.51	0.52	..	0.45	0.45	..
	Low	High		0.65	0.63	..	0.53	0.54	..	0.45	0.45	..
	Low	Central		0.62	0.61	..	0.51	0.52	..	0.45	0.45	..
	Low	Low		0.60	0.60	..	0.51	0.51	..	0.44	0.45	..
S>0, Q>0	0.1	50	High	High		0.90	0.66	..	0.60	0.59	..	0.45	0.52	..
	High	Central		0.81	0.64	..	0.56	0.56	..	0.45	0.49	..
	High	Low		0.72	0.62	..	0.53	0.54	..	0.44	0.47	..
	Central	High		na	0.68	..	na	0.57	..	na	0.47	..
	Central	Central		na	0.65	..	na	0.55	..	na	0.46	..
	Central	Low		na	0.62	..	na	0.53	..	na	0.45	..
	Low	High		na	0.79	..	na	0.55	..	na	0.45	..
	Low	Central		na	0.71	..	na	0.53	..	na	0.45	..
	Low	Low		na	0.65	..	na	0.52	..	na	0.44	..
S<0, Q>0	-0.1	50	High	High		0.63	0.63	..	0.55	0.57	..	0.47	0.52	..
	High	Central		0.62	0.62	..	0.54	0.55	..	0.46	0.50	..
	High	Low		0.61	0.61	..	0.52	0.54	..	0.45	0.48	..
	Central	High		0.61	0.62	..	0.53	0.55	..	0.46	0.48	..
	Central	Central		0.60	0.61	..	0.52	0.53	..	0.45	0.47	..
	Central	Low		0.60	0.60	..	0.51	0.52	..	0.45	0.46	..
	Low	High		0.60	0.61	..	0.52	0.53	..	0.45	0.46	..
	Low	Central		0.59	0.60	..	0.51	0.52	..	0.45	0.45	..
	Low	Low		0.59	0.59	..	0.51	0.51	..	0.45	0.45	..

Notes. The table presents the results of simulations for B^c , the value of B at which (A9) takes the same value as (A4) with q_b and q , determined by simulation of (A8) and (A5) respectively. Values for the parameters α , β , Q and S are as shown in the table. The "central" values of the constants a and b were derived by assuming that $q_b=100$ and $s(q_b)=0.2$ when $\alpha=0.75$, $\beta=0.5$ and $Q=S=0$ which gives $a=0.843$, $b=223.6$. High and low values for a and b are double and half the central values. Parameter combinations where there is no investment because the marginal benefit is always lower than the supply curve are marked "na".

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