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**CONDITIONAL VERSUS
UNCONDITIONAL TRADE
CONCESSIONS FOR DEVELOPING
COUNTRIES**

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ABSTRACT

Conditional versus Unconditional Trade Concessions for Developing Countries*

We consider a small open economy that faces a commitment problem in trade liberalization. We examine how the relationship with a large trading partner affects the ability of the small country's government to sustain free trade through a reputational mechanism. If the small country's government is patient enough, it can overcome its domestic commitment without the help of the large country. Unconditional liberalization by the large trading partner has an ambiguous effect on the small country's dynamic incentives. Liberalization through a reciprocal trade agreement, in which the large country lowers its tariffs conditionally on the small country doing the same, unambiguously dominates unconditional liberalization by the large country as a way of boosting trade reforms and reinforcing policy credibility in the small country. However, if capacity in the import-competing sector can only be reduced gradually, a conditional, reciprocal agreement may require an asynchronous exchange of concessions, with the large country liberalizing before the small country.

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1 Introduction

This paper examines how the relationship with a large trading partner can affect a small country's ability to overcome a commitment problem in trade liberalization. The question we address is the following: should developing countries, or at least the least developed of them, be granted broader market access by developed countries *unconditionally* or only *conditionally* on them making efforts to liberalize their own economies? Put it differently, the issue is whether developed countries should “(a) set a good example and reduce ... [their] own barriers, while giving poor countries ‘policy space’ to cut their trade barriers at their own speed, or (b) put pressure on them to open up by making access to ... [the developed countries’] market conditional on opening up theirs.”¹

This question is at the heart of ongoing policy debates on bilateral and multilateral trade relations. At the bilateral level, the issue is whether developed countries should continue to pursue the unilateral policy of granting developing countries unconditional, preferential market access – as they have done for many years – or whether a move toward reciprocal trade preferences through free trade agreements – as we have witnessed more recently² – can be more effective. At the multilateral level, the question is whether developing countries should be asked to liberalize in the Doha Round GATT/WTO negotiations, or whether they should instead get a “free ride” (see Cline, 2007).

The role of conditionality in promoting trade liberalization and growth has also been emphasized in recent empirical work. Subramanian and Wei (2007) examine the impact of GATT/WTO membership on trade flows. They show that industrial countries, which participated actively in reciprocal trade negotiations, have witnessed a larger increase in trade than developing countries, which had few obligations to reduce their own trade barriers. Moreover, post-Uruguay Round developing country members, which face comparatively more stringent accession requirements, are systematically more open than old developing country members. Tang and Wei (2009) find that countries that became WTO members

¹See www.openeurope.org.uk.

²In recent years, the United States has negotiated free trade agreements with various developing countries and has introduced elements of reciprocity in its GSP programs. For example, under the US African Growth and Opportunity Act (AGOA), eligible beneficiary countries are expected to eliminate their “barriers to US trade and investment”. The European Union has also recently started negotiating reciprocal Economic Partnership Agreements (EPAs) with the African, Caribbean and Pacific (ACP) countries, to replace the system of unilateral trade preferences that had been granted to its former colonies.

have generally grown faster, but that these growth effects can only be observed in those countries that underwent rigorous accession procedures.

This paper contributes to this ongoing debate by examining how unilateral trade concessions and reciprocal trade agreements can affect developing countries' ability to undertake trade liberalization reforms.³ In terms of the broad policy question it addresses, our paper is related to the work of Coates and Ludema (2001), which shows that unilateral liberalization by a large country ("trade policy leadership") can trigger trade liberalization in a small country. Our methodology and focus, however, are quite different.

Our analysis builds on the idea that developing countries can enter trade agreements in order to enhance the credibility of their own domestic policies.⁴ In the case of NAFTA, for example, it has been argued that Mexico's negotiators were mostly driven by the desire to "tie their own hands", so as to boost the credibility of domestic reforms, rather than by market access considerations (Whalley, 1998). This argument has been formalized by Maggi and Rodríguez-Clare (1998), who show that a time-inconsistency problem in trade policy may arise in a small economy when capital is fixed in the short run but mobile in the long run. They suggest that entering into a binding trade agreements can be a solution to this problem.⁵ This argument, however, forgets that, absent a supranational authority with autonomous powers of enforcement, a country's international commitments are not directly binding on that country, but rather they must be sustainable in light of the dynamic incentives that the country faces vis-à-vis its trading partners as well as its domestic agents. These dynamic incentives, and the effect that reciprocal and unilateral

³When considering only two countries, as we do here, the term "trade preferences" only identifies concessions with respect to market access to exports from the developing country. When more than two countries are involved, the term "trade preferences" also refers to the preferential treatment a country receives in market access in comparison with a third country that is not receiving it.

⁴The available empirical evidence suggests that developing countries face serious domestic credibility problems. For example, Brunetti *et al.* (1998) construct an index of institutional credibility based on a World Bank survey, in which more than 3,600 firms in seventy-four countries were asked questions aimed at capturing the reliability of the institutional framework and the credibility of governments' policy announcements. Their analysis shows that many developing countries are characterized by extremely low credibility indexes.

⁵In a subsequent paper, Maggi and Rodríguez-Clare (2007) extend their analysis to a setting with two large countries, in which both governments would like to commit vis-à-vis domestic industrial lobbies. The idea that undertaking binding international commitments may help to achieve time-consistent trade policy was first put forward by Staiger and Tabellini (1987).

trade concessions have on them,⁶ are the central focus of our analysis.

We describe a model of bilateral trade between a small open economy and a large trading partner, where the small country suffers from a domestic commitment problem in trade policy formation. This problem arises because of the presence of sunk investments in the import-competing sector, which leads to ex-post pressure on governments to enact and maintain protectionist policies.⁷ In this setting, although free trade is optimal from an ex-ante, long-run perspective, it is not ex-post optimal in the short run – a time-consistency problem which traps the small country in a vicious circle of inefficient protection and inefficient investment allocation.

In this framework we examine the small country’s ability to sustain free trade through a reputational mechanism under three alternative scenarios. The first scenario is one in which the small country’s government must sustain free trade on its own, i.e., without relying on trade concessions by the large trading partner. In this case, trade liberalization can be achieved through repeated interaction with the private sector: if reneging on a policy promise – even only once – entails a permanent loss of credibility, the prospect of future losses can be sufficient to prevent a forward-looking government from going back on its promises.

We then examine how unilateral (unconditional) trade concessions by the large country affect the small country’s ability to overcome its commitment problem. We show that unconditional liberalization has an ambiguous effect on the ability of the small country’s government to sustain free trade. Thus, if the government is unable to credibly pre-commit before investment decisions are made, “trade policy leadership” by the large country may be of no help to the small country in its effort to sustain low tariffs.

The implications of unconditional concessions are contrasted with those of a reciprocal trade agreement, in which the large country reduces its tariff conditionally on the small country doing the same. We show that, when compared to a situation in which the large country does not intervene or in which it unilaterally liberalizes, such an agreement always makes it easier for the small country to overcome its commitment problem. This is because conditional tariff concessions by the large country can reduce the gains from defecting

⁶Maggi and Rodríguez-Clare (1998) only consider the case in which the small country enters a trade agreement. Coates and Ludema (2001) only consider the case in which the large country makes unilateral concessions (and also abstract from policy credibility constraints). In our analysis we consider both cases and compare the implications of reciprocal and non-reciprocal trade concessions.

⁷Evidence of the relevance of interest groups in trade policy determination in developing countries is provided by De Melo *et al.* (2001), among others.

from free trade, without reducing the severity of the punishment.⁸ Therefore conditional reciprocity in trade agreements may not only help member countries to internalize terms-of-trade externalities, as suggested by Bagwell and Staiger (1999), but also to overcome their domestic credibility problems.

Our results suggest that the desire to achieve domestic policy credibility may explain why many developing countries have joined the WTO or entered trade agreements with large developed countries, as the conditionality element contained in such agreements can make trade liberalization easier to sustain.⁹ We also show that conditionality is not inconsistent with the presence of transitionally asymmetric concessions, such as the longer transition periods granted to developing countries in the WTO agreements or in their bilateral agreements with the EU. Thus, provisions for the Special and Differential (S&D) treatment of developing countries in the WTO agreements need not be interpreted as implying weakened conditionality.

The remainder of the paper is organized as follows. Section 2 presents the main features of our model, focusing on a single round of strategic interaction (the stage game). Section 3 looks at the policies that the small country can sustain under repeated interaction. Section 4 focuses on transitional cooperative regimes, when capacity constraints slow down the liberalization process. Section 5 concludes.

2 Lobbying pressure and time-consistent trade policy

In what follows, we will focus on the interaction between a small open economy – which cannot affect its terms of trade – and a large trading partner. The question we wish to examine is how a reduction in the large country’s tariff – resulting from a unilateral choice or as part of a trade agreement – affects the small country’s ability to move to trade liberalization and sustain low tariffs. We explicitly model the choice of tariffs in the small developing country, without modeling its partner’s economic and political structure. Our analysis and conclusions are nevertheless consistent with different interpretations of the large country’s motives for helping the small country liberalize (we elaborate further on this point in the next section).

⁸Ornelas (2005) shows that trade agreements may lead member countries to liberalize by inducing “rent destruction”, lowering the incentives of import-competing industries to lobby for higher tariffs.

⁹Small countries may also have insurance motives (Perroni and Whalley, 1996, 2000), or may seek to obtain trade concessions in exchange for concessions on non-trade issues (Limão, 2007).

As in Maggi and Rodríguez-Clare (1998), we will assume that the small country suffers from a commitment problem in trade policy, which arises as a result of lobbying by special interests.¹⁰ In particular, policymakers are subject to protectionist lobbying pressure from capital owners. Investment decisions in the import-competing sector are based on expected tariffs; ex post, investors exert pressure for protection so as to maximize the quasi-rents generated by unanticipated deviations of actual tariffs from expected tariffs.¹¹ With policy commitment, tariffs are fully anticipated and quasi-rents disappear. In the absence of policy commitment, however, forward-looking investment results in ex-post protection pressure for policymakers, which in turn supports high levels of investment in the first place. Therefore trade liberalization – although optimal from a long-run perspective – may not be credible in the short run.

The unilaterally sustainable level of protection in the small country will thus be higher than that which is ex-ante desirable – even when evaluated from the point of view of a not-fully-benevolent policymaker. This implies that the policymaker would have an active interest in pursuing liberalization, but may be unable to do so.

2.1 The economic structure

We develop our arguments by using a large-country/small-country model of trade with quasilinear preferences and increasing marginal costs in the import-competing sector – a setting which amounts to a Ricardo-Viner specification with sector-specific factors in the import-competing sectors.

There are two countries, a home country and a foreign country (represented by a “*”), each producing an exportable good and an import-competing good. As mentioned above, the home country is assumed to be small, i.e., to be unable to affect its terms of trade through its own trade policies, while the foreign country is assumed to be large, implying that the terms of trade facing the small country are determined by domestic prices in the

¹⁰In the model by Maggi and Rodríguez-Clare (1998), lobbying by specific-factor owners implies that the ex-ante optimal trade policy of the small country – the one its government would like to commit to – is not free trade. In the model presented below, we focus instead on lobbying by investors. This specification allows us to focus exclusively on time inconsistency as the cause of trade restrictions, since the ex-ante optimal tariff of the small country is zero. Our setup can be easily augmented to include lobbying for sector-specific rents, without affecting the qualitative results of our analysis.

¹¹The effects of lobbying for quasi-rents by investors has also been examined by Grossman and Helpman (1996), and by Baldwin and Robert-Nicoud (2007).

economy of the large country.

Two goods, X and Y , are produced and traded – with X being exported and Y being imported by the home country (the reverse being the case for the large country). Countries levy ad valorem import tariffs, t and t^* , which drive a wedge between prices in the exporting and importing countries. The domestic prices of importables in the home and foreign countries are thus $p_Y = p_Y^*(1 + t)$ and $p_X^* = p_X(1 + t^*)$, respectively. Without loss of generality, we choose units for Y so that $p_Y^*/p_X^* = 1$ and let $p_X^* = 1$. This implies that the small country's domestic price ratio is given by $p_Y/p_X = (1 + t)(1 + t^*) \equiv p$. The small country faces fixed terms of trade (the ratio of untaxed prices) equal to $1 + t^*$.¹²

Consumer preferences in the home country are represented by the following quasilinear utility function, $u(D_X, D_Y) = D_X + v(D_Y)$, where D_X and D_Y are respectively domestic consumption of exportables and importables, and where $v'(D_Y) > 0$, $v''(D_Y) < 0$. Demand for importables in the home country can thus be written as $D_Y(p)$, $D_Y'(p) < 0$. For notational simplicity, we drop the Y subscript, and simply express the demand for importables in the home country as $D(p)$. In the rest of our analysis, we shall assume $D'' \geq 0$ – a condition that is satisfied by linear demand as well as by constant-elasticity demand. Intertemporal preferences are additively separable, with future payoffs discounted by a constant factor $\delta < 1$.

Production of exportables in the home country uses labour and exhibits constant-returns-to-scale. The import-competing good is produced using capital alone. In turn, capital (capacity) is produced using labour and a specific factor present in fixed supply (e.g., land), which implies an increasing marginal cost in terms of labour inputs. Capital is assumed to fully depreciate at the end of each period.

Thus, if at any given period j a certain amount of labour must be devoted to generate capital to be employed in the production of import-competing goods in the subsequent period $j + 1$, the opportunity cost at time j , expressed in terms of exportables, of obtaining an amount S of import-competing goods in period $j + 1$ is given by $\rho C(S)$, where ρ is a scalar, and where $C'(S) > 0$, $C''(S) < 0$ – with convexity implicitly reflecting the presence of the sector-specific factor. Without loss of generality, we shall assume $\rho = \delta$.

We assume that investors in the home country are individually small and forward-looking, i.e., they make their choices on the basis of expected prices $p_E = (1 + t_E)(1 + t_E^*)$, where the subscript E denotes expected values. Then, through the profit-maximizing condition $\rho C'(S)/\delta = C'(S) = p_E$, we can obtain ex-ante planned import-competing

¹²An analogous small-large country setup is employed by Park (2004).

supply as a function of the expected price, $S(p_E)$, $S'(p_E) > 0$. Once investment decisions have been made, the ex-post domestic supply of importables is fixed at $S = S(p_E)$. This implies that any divergence between expected prices and realized prices will give rise to positive or negative quasi-rents accruing to domestic investors (and entering aggregate ex-post domestic welfare), which are equal to the difference between the actual and the expected value of the investment:

$$(p - p_E)S(p_E). \quad (1)$$

These represent gap between the actual value of import-competing supply – which becomes fixed ex post – and the value that was anticipated by investors. In an intertemporal equilibrium where all policies (and therefore prices) are fully anticipated, quasi-rents are always zero. However, off the equilibrium path, unanticipated policy changes can generate positive or negative quasi-rents.

In this setting, aggregate welfare is given by

$$\int_0^{p_E} S(z)dz + (p - p_E)S(p_E) + \int_p^\infty D(z)dz + t(1 + t^*)(D(p) - S(p_E)) \equiv W. \quad (2)$$

The first two terms capture producer surplus associated with the installed capacity and with the quasi-rents obtained if realized prices diverge from expected ones. The last two terms represents, respectively, consumer surplus and tariff revenues.

If the policymaker can commit to trade policy choices before capacity is installed, p cannot not depart from p_E , and quasi-rents can never arise; in this case, when considered from the point of view of a benevolent policymaker making choices before capacity is installed, the second term becomes zero, producer surplus is given by $\int_0^p S(z)dz$, and aggregate welfare is maximized for a choice $t = 0$.

If the policymaker cannot commit to trade policy choices before capacity is installed, and can, out of equilibrium, select policies that are not the same as those expected in equilibrium, then p can depart from p_E , and out-of-equilibrium quasi-rents can arise; in this case, when considered from the point of view of a benevolent policymaker who makes choices after capacity is installed, the first term is constant, and differential effects of price changes on producer surplus are given by $(p - p_E)S(p_E)$ (the change in producer surplus associated with a perfectly inelastic supply curve); even in this case, however, aggregate welfare is maximized for a choice $t = 0$.

2.2 The political structure

We assume that, after investment has taken place, investors successfully manage to form a lobby – solving the free-riding problem described by Olson (1965) – whose objective is to affect trade policies so as to maximize quasi-rents.¹³ Note that before investment takes place there is no identifiable interest group associated with quasi-rents in the small country’s import-competing sector, since entry into investment is free and expected rents from investment are zero. It is only ex post that one can identify a closed group of investors who share a common interest in increasing (or maintaining) their quasi-rents. This means that, prior to investment taking place, investors would be unable to commit with respect to the lobbying pressure to be applied on the policymaker – just as the policymaker is unable to commit to policies at that stage.

Consistently with the political contributions model developed by Grossman and Helpman (1994), we assume that the incumbent policymaker is semi-benevolent, i.e., his objective function is a weighted sum of aggregate welfare and lobbies’ surplus:

$$W + \lambda(p - p_E)S(p_E) \equiv \Pi, \tag{3}$$

where $\lambda > 0$ is an additional weight that the policymaker attaches to quasi-rents – it measures the extent to which the policymaker is “captive” to lobbying by investors.¹⁴ The payoff of the small country’s government is thus a function, $\Pi(t, t^*, t_E, t_E^*)$, of both actual and expected tariffs.

Our analysis focuses on perfect-foresight equilibria with forward-looking investors; in such equilibria, we have $p_E = p$, and so there are no quasi-rents in equilibrium – the equilibrium value of the objective always amounting to the the sum of consumer surplus, producer surplus, and tariff revenues. Nevertheless, as we show below, the presence for lobbying for quasi-rents off the equilibrium path will cause the ex-post optimal trade policies to depart from the corresponding ex-ante optimal policies, even if $p = p_E$ in equilibrium.

¹³There seems to be a general consensus that the influence of import-competing lobbies on trade policy formation is particularly pronounced in developing countries (ITC, 2002).

¹⁴Here, ex-post lobbying by quasi-rent recipients amounts to a premium on quasi-rents. As discussed in Grossman and Helpman (1994), this specification can be derived from an agency model where a semi-benevolent policymaker faces lobbies’ truthful contribution schedules.

2.3 The commitment problem

Suppose that the small country is facing a given import tariff by the large country, t^* . The unilaterally optimal import tariff for the policymaker in the small country is that which maximizes (3), given t^* . If the policymaker could commit to a tariff level before capacity is installed, p could not depart from p_E , and there would be no quasi-rents to lobby for. Unilateral liberalization ($t = 0$) would then maximize welfare in the small country as well as the objective of the policymaker for any level of t^* , independently of whether or not the policymaker is benevolent (i.e., independently of the value of λ).

If policy commitment is not feasible, trade policy choices will have to be made after private investment choices are made, i.e. taking $S(p_E)$ as given. For a given foreign tariff t^* , the first-order condition for the maximization of (3) can then be written as

$$t(1 + t^*)D'(p) + \lambda S(P_E) = 0, \quad (4)$$

For a given level of installed capacity, and for $\lambda > 0$, the optimal tariff for the policymaker will be above zero. Potential quasi-rents – and hence lobbying pressure – increase with installed capacity, which is an increasing function of expected tariffs, $S(p_E) = S((1 + t_E)(1 + t_E^*))$. Hence, the unilaterally optimal tariff in the home country, for a given tariff in the foreign country, is an increasing function, $t(t^*, t_E, t_E^*)$, of expected tariffs. In a perfect-foresight equilibrium, we will have $t_E = t$, and the equilibrium tariff $t_{PF} > 0$ will be identified by the condition $t_{PF}(1 + t^*)D'((1 + t_{PF})(1 + t_E^*)) + \lambda S((1 + t_{PF})(1 + t_E^*)) = 0$. Such an equilibrium is the outcome of a positive feedback mechanism whereby the presence of installed import-competing capacity drives the ex-post optimal tariff above zero; in turn, the expectation of above-zero tariffs encourages the formation of import-competing capacity. Notice that, given that equilibrium quasi-rents are zero, the term associated with lobbying pressure in the policymaker's objective function vanishes in equilibrium. The equilibrium tariff choice, however, hinges on the the marginal effect of tariffs changes on quasi-rents – the term $\lambda S(P_E)$ in (4) – which does *not* vanish.

Since the level of capacity installed is an increasing function of expected tariffs, and since tariffs are increasing in the installed capacity, restrictions need to be imposed on the supply function in order for an equilibrium to exist and be stable. Twice totally differentiating the first-order condition for an optimum, gives $\partial t / \partial S(p_E) > 0$, $\partial^2 t / \partial S(p_E)^2 < 0$. Assume monotonicity of the first derivative of $S(p)$ and suppose that $S(p) > 0$, $p \geq 1$ (i.e. that there is a positive level of import-competing supply when there is free trade). Condition (4) implies $t_{PF} = t(t^*) > 0$, $t^* \geq 0$, and therefore $t = 0$ is not an equilibrium outcome. Then, a sufficient condition for a pure-strategy perfect-foresight equilibrium with $t > 0$

to exist is $S''(p) < 0$ for all p , i.e. the responsiveness of import-competing supply must be decreasing with price. This ensures that the feedback loop from supply level back to ex-post optimal tariff levels is not “explosive”.¹⁵ On the other hand, if $S(1) = 0$, i.e., if import-competing supply vanishes under free trade, then an equilibrium with $t_{PF} = 0$ will always exist, possibly alongside other equilibria with $t > 0$.

Given that quasi-rents are zero in equilibrium, for a given t^* , the policymaker in the small country will always be strictly worse off in an equilibrium with positive tariffs than under unilateral liberalization; however, the inability to pre-commit may prevent the policymaker from achieving unilateral trade liberalization. That is, trade liberalization in the small country is optimal from a long-run perspective but not credible in the short run – a time-consistency problem which traps the small country in a vicious circle of inefficient protection and inefficient investment allocation.¹⁶

In this setup, lobbying owes its very existence to the inability of policymakers to credibly pre-commit to trade policy before investment decisions are made. Although investors are fully forward-looking and quasi-rents vanish in equilibrium, when investment precedes policy choices, the potential for quasi-rents to arise off the equilibrium path, because of the lobbying pressure associated with them, produces policies that are ex ante suboptimal. Policy commitment, on the other hand, fully removes the potential for quasi-rents and thus any effect of lobbying on trade policy.¹⁷ This is different from, but related to, the mechanism described Maggi and Rodríguez-Clare (1998), in which lobbying comes from owners of factors that are intersectorally mobile in the long run, but immobile in the short run. Both mechanisms result in ex-post, short-term frictions to trade liberalization.¹⁸

¹⁵In formal terms, if $S''(p) < 0$, there exists a level S' such that, for $S > S'$, the difference $(1+t(S))(1+t^*) - S^{-1}(S)$ – where $S^{-1}(S)$ denotes the inverse function of $S(\cdot)$ – is monotonically decreasing in S at a non-decreasing rate, and therefore it reaches a point where it is zero. If $S''(p) > 0$, such an equilibrium may or may not exist (but an equilibrium either in pure or in mixed strategies will always exist by general principles. Local stability requires $-1/(1+t^*) \partial(\lambda S(p)/D'(p))/\partial t = -\partial(\lambda S(p)/D'(p))/\partial p < 1$.

¹⁶Since we do not model growth, allocative efficiency – which determines the level of real income – is the only dimension that can be interpreted in this model as relating to economic development, albeit only in a very broad sense. Modeling growth explicitly, however, would not alter the structure of the problem, nor would it fundamentally affect conclusions.

¹⁷A similar policy commitment problem that hinges on off-the-equilibrium-path incentives is the investment hold-up problem with respect to capital taxes (Kehoe, 1989). In that case, the problem arises because of the off-the-equilibrium-path incentives government faces to tax capital income – even if investment, and thus capital income, fully vanish in equilibrium.

¹⁸Such frictions are often alluded to in the debate on trade liberalization and development, and are

3 Long-run trade liberalization

As noted earlier, for any given level of t^* , a zero import tariff would be optimal for the small country, both in terms of maximizing the objective of its policymaker and its aggregate welfare.

In this section, we examine the conditions under which, when the stage game described above is repeated indefinitely, the small country can sustain free trade under alternative assumptions about the trade policy relationship with the large country. In particular, we will consider three alternative scenarios: (i) the large country keeps its import tariff at an exogenously given level \bar{t}^* ; (ii) when the large country unconditionally lowers its tariff to a level $\underline{t}^* < \bar{t}^*$; and (iii) the two countries are in a reciprocal trade agreement, in which the large country lowers its tariff to $\underline{t}^* < \bar{t}^*$ *conditionally* on the small country lowering its own tariff to $t_L = 0$.

3.1 No liberalization by the large country

The literature on policy credibility has appealed to the well-known idea that repeated interaction with the private sector creates incentives to maintain “reputation”, and can therefore help overcome credibility problems, or at least mitigate them. As described in Stokey (1989), when the interaction between each government and its domestic investors is repeated indefinitely, time-consistency policy problems can be solved by punishment strategies that involve a permanent reversion by the private sector to the expectation of future inefficient policies: the idea is simply that, if renegeing on a policy promise – even only once – entails a permanent loss of credibility, the prospect of future losses can be sufficient to prevent a forward-looking government from going back on its promises. In our model, along the equilibrium path in which the small country’s government keeps its tariff at zero, investors anticipate that free trade will be sustained, so they install little capacity and do not lobby the government for protection. Any deviation from this path would result in investors losing credibility in the government’s free trade stance, increasing

typically described in terms of short-run adjustment costs (negative quasi-rents in our terminology) being a key obstacle to liberalization in developing countries. These costs may be associated with capital as well as with labour inputs – e.g., the job dislocation costs experienced by workers in import-competing sectors, who had invested in sector-specific skills in anticipation of continued protection.

installed capacity, and lobbying for higher tariffs so as to maximize their quasi-rents.¹⁹

Consider the incentives of the small country's government that faces a fixed tariff \bar{t}^* by the large country. In this scenario, free trade can be sustained by the small country in a reputation equilibrium where a deviation from $t_L = 0$ in any given period results in investors indefinitely reverting to the expectation of a tariff $t_{PF} = t(\bar{t}^*)$. Along an equilibrium path where $t = 0$, investors anticipate zero tariffs and the equilibrium payoff is thus $\Pi(0, \bar{t}^*, 0, \bar{t}^*)$ – with the last two argument representing the tariff levels anticipated by investors. If the small country deviates to a tariff $t_D > 0$, the deviation is not anticipated by investors, and the deviation payoff is $\Pi(t_D, \bar{t}^*, 0, \bar{t}^*)$. Free trade is then sustainable as long as the gain that the small country would experience from deviating from free trade in a given period does not exceed the reduction in the future discounted payoff that would ensue:

$$\Pi(t_D, \bar{t}^*, 0, \bar{t}^*) - \Pi(0, \bar{t}^*, 0, \bar{t}^*) \leq \frac{\delta}{1 - \delta} \left(\Pi(0, \bar{t}^*, 0, \bar{t}^*) - \Pi(t_{PF}, \bar{t}^*, t_{PF}, \bar{t}^*) \right), \quad (5)$$

where $t_D \equiv t(\bar{t}^*, S(p_L))$, is the optimal deviation from free trade, $t_{PF} \equiv t(\bar{t}^*, S(p_{PF}))$ is the tariff in a no-reputation, perfect-foresight protection equilibrium, with $p_L = 1 + t^*$ and $p_{PF} = (1 + t_{PF})(1 + t^*)$. Condition (5) can be solved to derive the minimum degree of patience required for the small country to sustain free trade on its own:

$$\delta_A = \frac{\Pi(t_D, \bar{t}^*, 0, \bar{t}^*) - \Pi(0, \bar{t}^*, 0, \bar{t}^*)}{\Pi(t_D, \bar{t}^*, 0, \bar{t}^*) - \Pi(t_{PF}, \bar{t}^*, t_{PF}, \bar{t}^*)}. \quad (6)$$

We thus obtain our first result: if the small country's government is patient enough, it can achieve trade liberalization without the help of large country.

3.2 Unconditional liberalization by the large country

Now suppose that the small country's liberalization is accompanied by the large country unconditionally reducing its tariff to $\underline{t}^* < \bar{t}^*$.

In this case, the incentive constraint for the small country's government to be able to sustain free trade is

$$\Pi(t_D, \underline{t}^*, 0, \underline{t}^*) - \Pi(0, \underline{t}^*, 0, \underline{t}^*) \leq \frac{\delta}{1 - \delta} \left(\Pi(0, \underline{t}^*, 0, \underline{t}^*) - \Pi(t_{PF}, \underline{t}^*, t_{PF}, \underline{t}^*) \right), \quad (7)$$

¹⁹For an extensive institutional discussion of credibility and reputational in developing countries' trade policy reforms, see Rodrik (1992).

from which we can derive the minimum discount factor that allows the small country's government to sustain free trade when the large country unconditionally lowers its tariff:

$$\delta_U = \frac{\Pi(t_D, \underline{t}^*, 0, \underline{t}^*) - \Pi(0, \underline{t}^*, 0, \underline{t}^*)}{\Pi(t_D, \underline{t}^*, 0, \underline{t}^*) - \Pi(t_{PF}, \underline{t}^*, t_{PF}, \underline{t}^*)}. \quad (8)$$

The gains experienced by the small country when deviating from free trade can be written as

$$\begin{aligned} & \Pi(t_D, \underline{t}^*, 0, \underline{t}^*) - \Pi(0, \underline{t}^*, 0, \underline{t}^*) \\ &= \int_{p_D}^{p_L} D(z) dz + (1 + t^*) t_D (D(p_D) - S(p_E)) + (1 + \lambda)(p_D - p_L) S(p_E) \equiv \Delta, \end{aligned} \quad (9)$$

where $p_L = 1 + t^*$ and $p_D = (1 + t_D)(1 + t^*)$. The effect of an increase in t^* on the deviation gains is given

$$\frac{\partial \Delta}{\partial t^*} = D(p_L) - D(p_D) + t_D(1 + t^*) D'(p_D) + \lambda t_D(1 + t^*) S'(p_E). \quad (10)$$

In a rational foresight equilibrium, expected prices must coincide with realized prices, i.e., $p_E = p_L = 1 + t^*$.

It is straightforward to verify that expression (10) is positive as long as

$$\epsilon > \frac{1}{t_D} \left(\frac{D(p_D) - D(p_L)}{t_D(1 + t^*) D'(p_D)} - 1 \right), \quad (11)$$

where ϵ is the price elasticity of supply. For $D'' \geq 0$, the ratio in brackets is less than unity, and thus the deviation gain will be increasing in the foreign tariff as long as ϵ is positive.²⁰ The intuition for (11) is simple: an increase in t^* leads to an increase in the capacity installed in the import-competing sector; in turn, this raises the stakes of the investors' lobby and the protectionist pressure on the government, which increases the size of the ex-post optimal protection level, $t_D(1 + t^*)$, as well as the temptation to defect from free trade. The more responsive supply is to a price increase, the bigger this effect will be.

A reduction in the large country's tariff lowers the gains from defecting from free trade. Unilateral liberalization by the large country can reduce the temptation to defect from free trade, a conclusion that is consistent with the "trade policy leadership" arguments that have been put forward in the literature. However, if free trade must be sustained by the

²⁰With $D'' < 0$, the deviation gain will still be increasing in the foreign tariff as long as ϵ is sufficiently large.

small country through a reputation mechanism, it is not just the effect on the temptation to deviate from free trade that matters; it is also how unconditional liberalization by the large country affects the cost of a loss of reputation.

The optimal tariff in a no-reputation perfect foresight is t_{PF} , which must satisfy $t_{PF} = -\lambda S(p_{PF})/((1+t^*)D'(p_{PF}))$. The deviation tariff is given by $t_D = -\lambda S(p_L)/((1+t^*)D'(p_L))$. With $D' < 0$, $D'' \geq 0$, $S' > 0$, we can conclude that $t_{PF} > t_D$, i.e., the long-run responsiveness of import-competing supply amplifies the effects of a loss of reputation in a perfect-foresight equilibrium relative to the initial temptation. Thus, if an increase in t^* increases the temptation to deviate from free trade, we can also expect it to increase the cost of reverting to a no-reputation equilibrium. If the small country's government defects from free trade at time t , from the next period onwards it receives a payoff equal to

$$\Pi(t_{PF}, \underline{t}^*, t_{PF}, \underline{t}^*) = \int_{p_{PF}}^{\infty} D(z)dz + \int_0^{p_{PF}} S(z)dz + t_{PF}(1+t^*)(D(p_{PF}) - S(p_{PF})) \equiv \Pi_{PF}; \quad (12)$$

this can be shown to be decreasing in t^* ,²¹ which implies that a higher foreign tariff makes the consequences of a defection more severe. The derivative of the difference $\Pi_D - \Pi_{PF}$ (the denominator of (8)) has ambiguous sign, reflecting the presence of second-order effects associated with the curvature of D and S . Nevertheless, it is easy to point to simple scenarios where it is positive, i.e., where the cost of the reversion to a no-reputation equilibrium decreases with a decrease in t^* . For example, in a linear specification where $D'' = 0$ and $S'' = 0$, it can be shown that $\partial(\Pi_D - \Pi_{PF})/\partial t^* = (\Pi_D - \Pi_{PF})/\Delta (\partial\Delta/\partial t^*) > 0$.

The above analysis implies that the overall effect of a unilateral reduction in t^* on the ability of the small country's government to sustain free trade is generally ambiguous. The intuition for this ambiguity is that, when foreign tariffs are lower, less capacity is installed in the small country's import-competing sector; this reduces lobbying pressure by investors – leading to a reduction in the gains from defecting from free trade – but also reduces the

²¹ We have

$$\frac{\partial \Pi_{PF}}{\partial t^*} = -(D(p_{PF}) - S(p_{PF})) - t_{PF}(1+t^*)(S'(p_{PF}) - D'(p_{PF})) \left(1 + \frac{\partial(t_{PF}(1+t^*))}{\partial t^*}\right), \quad (13)$$

where

$$\frac{\partial(t_{PF}(1+t^*))}{\partial t^*} = t_{PF} + (1+t^*)\frac{dt_{PF}}{dt^*} = -\frac{\partial(\lambda S(p_{PF})/D'(p_{PF}))/\partial p_{PF}}{1 + \partial(\lambda S(p_{PF})/D'(p_{PF}))/\partial p_{PF}}; \quad (14)$$

$$\partial(\lambda S(p_{PF})/D'(p_{PF}))/\partial p_{PF} = \lambda(S'(p_{PF})/D'(p_{PF}) - S(p_{PF})D''(p_{PF})/D'(p_{PF})^2). \quad (15)$$

Expression (15) is negative for $D'' \geq 0$, and the denominator of (14) must be positive for local stability (see Footnote 15). We can thus conclude that $\partial \Pi_{PF}/\partial t^* < 0$.

Nash reversion tariff and hence the adverse consequences of a loss of reputation – leading to a reduction in the long-run cost of defections; the overall impact on defection incentives is therefore ambiguous.

One can easily point to cases where these two effects exactly cancel each other. For example, in a scenario with linear demand, $D(p) = \alpha - \beta p$, and linear supply, $S(p) = k + \gamma p$, it can be shown that the critical discount factor is unaffected by t^* .²² Thus, when the small country suffers from a commitment problem, which it must overcome through a reputation mechanism, “trade policy leadership” by the large country may be ineffective as a way to induce the small country to liberalize.

3.3 Conditional liberalization by the large country

Consider now a scenario in which the two countries enter a reciprocal trade agreement, whereby the large country’s tariff reduction from \bar{t}^* to \underline{t}^* is conditional on the small country reducing its own tariffs from $t_{PF} = t(\bar{t}^*)$ to $t_L = 0$. We assume that the large country indefinitely reverts to \bar{t}^* following a deviation from free trade by the small country – leaving aside for the moment the question of whether such threat would be credible. Then the agreement is sustainable for the small country as long as

$$\Pi(t_D, \underline{t}^*, 0, \underline{t}^*) - \Pi(0, \underline{t}^*, 0, \underline{t}^*) \leq \frac{\delta}{1 - \delta} \left(\Pi(0, \underline{t}^*, 0, \underline{t}^*) - \Pi(t_{PF}, \bar{t}^*, t_{PF}, \bar{t}^*) \right). \quad (16)$$

The above can be solved for the minimum discount factor that allows the small country’s government to sustain free trade under conditional liberalization by the large country:

$$\delta_C = \frac{\Pi(t_D, \underline{t}^*, 0, \underline{t}^*) - \Pi(0, \underline{t}^*, 0, \underline{t}^*)}{\Pi(t_D, \underline{t}^*, 0, \underline{t}^*) - \Pi(t_{PF}, \bar{t}^*, t_{PF}, \bar{t}^*)}. \quad (17)$$

Comparing the cases of conditional and unconditional liberalization, notice that (17) and (8) have the same numerator. Also, since Π_{PF} is decreasing in t^* (see Footnote 21), the denominator of (17) must be greater than that of (8).

It follows that conditional trade liberalization by the large country always makes it easier for the small country to sustain free trade than unconditional liberalization does. The reason behind this result is that conditional liberalization by the large country provides both a “carrot” that decreases the temptation to deviate from free trade for the small country’s government and a “stick” that increases the punishment for defecting. In the

²² $\delta_A = \delta_U = (\beta - \gamma\lambda)^2 / (2\beta^2 + \gamma^2\lambda^2 + \beta(\gamma - 2\gamma\lambda))$.

case of unilateral liberalization, on the other hand, it is as if a bigger carrot always comes at the expense of a weaker stick.²³

Let us then turn to the comparison of the scenarios in which the small country tries to sustain free trade on its own, or by being in a reciprocal trade agreement with the large country. We have shown earlier that $\frac{\partial \Delta}{\partial t^*} > 0$, which implies that the numerator of (17) is smaller than the numerator of (6). It can also be shown that the denominator of (17) is larger than that of (6). To verify this, notice that the no-reputation equilibrium payoff $\Pi(t_{PF}, \bar{t}^*, t_{PF}, \bar{t}^*)$ is the same in the two scenarios of no liberalization and conditional liberalization by the large country. Then the difference between the denominators of δ_A and δ_C depends only on the deviation payoff, which can be written as

$$\begin{aligned} & \Pi(t_D, t^*, 0, t^*) \\ = & \int_{p_D}^{\infty} D(z) dz + \int_0^{p_E} S(z) dz + t_D(1+t^*)(D(p_D) - S(p_E)) + (1+\lambda)(p_D - p_E)S(p_E) \equiv \Pi_D, \end{aligned} \quad (18)$$

which yields

$$\frac{\partial \Pi_D}{\partial t^*} = -D(p_D) + S(p_E) - \lambda S(p_E) + \lambda t_D(1+t^*)S'(p_E). \quad (19)$$

Comparing (19) and (10), it can be easily verified that

$$\frac{\partial \Pi_D}{\partial t^*} = \frac{\partial \Delta}{\partial t^*} - D(p_L) + S(p_E). \quad (20)$$

Since $D(p_L) > S(p_E)$, $\partial \Pi_D / \partial t^*$ is smaller than $\partial \Delta / \partial t^*$. It follows that an increase in t^* leads the numerator of δ_A to increase by more than the denominator. In turn, this implies that conditional liberalization by the large country decreases the minimum discount factor that allows the small country to sustain free trade, i.e., $\delta_C < \delta_A$.

Thus conditional liberalization by the large country makes it easier for the small country to overcome its commitment problem than no liberalization does. This result shows that conditional reciprocity in trade agreements may not only help member countries to internalize terms-of-trade externalities, as suggested by Bagwell and Staiger (1999), but also to overcome their domestic commitment problems.

²³This conclusion does not hinge on the assumption that deviation triggers indefinite reversion to t^* . The ability to condition the large country's policy on defections will generally enlarge the set of sustainable feasible subgame-perfect continuation equilibria, and so for any kind of continuation equilibrium that one could wish to invoke, it can be concluded that conditionality will increase the punishment (at least weakly) and thus make free trade easier to sustain. For example, if we were to focus on limited-length punishment – as in Green and Porter (1984) or Van Damme (1989) – the same conclusion would apply.

Why should the large country be willing to engage in a reciprocal, conditional trade agreement with the small country? Our analysis and conclusion are consistent with alternative interpretations of the large country's motives. The large country may simply be driven by an altruistic desire to help the small country to liberalize, by bolstering the credibility of its trade reforms.²⁴ Alternatively, the developed country may be selfishly motivated by the desire to obtain concessions on non-trade issues (e.g., improvements in labour and environmental standards) from the small country, in exchange for helping it to solve its domestic commitment problem.²⁵ It is also possible to provide a theoretical rationalization for the large country's involvement that only invokes trade-related objectives: the large country could exploit its size to extract surplus from the small country, in the form of terms-of-trade gains supported by aggressive trade barriers and/or in the form of monopolistic profits accruing to its exporters; since trade barriers in the small country limit these gains, the large country could use a carrot-and-stick mechanism in order to induce liberalization by the small country, conditionally lowering its own barriers while credibly threatening to raise them if the small country reneges from its liberalization commitments (since high tariffs are unilaterally optimal for the large country in the short run).²⁶

4 Transitional tariffs and conditionality

Multilateral trade rules contain a number of provisions for the Special and Differential (S&D) treatment of developing countries, granting them specific rights and privileges. S&D provisions include an access component – in the form of preferential access to the markets of developed countries under the Generalized System of Preferences (GSP) – and

²⁴This is often the stated objectives of trade agreements between developed and developing countries. For example, according to the European Commission, trade agreements with ACP countries are meant to “foster the smooth and gradual integration of the ACP states into the world economy” (see communication of the Commission to the Council and the European Parliament on October 23, 2007). Market access concessions by developed countries have long been interpreted as an alternative form of development aid (see McCulloch and Pinera, 1977). This paper shows that trade concessions may better help developing countries when they are granted on a reciprocal basis.

²⁵See Limão (2007) for an analysis of agreements on trade and non-trade issues and Horn *et al.* (2008) for a description of the policy areas covered in preferential trade agreements involving the United States and the European Union.

²⁶See Conconi and Perroni (2004) for a full formalization of this idea.

a protection component – in the form of longer time periods for developing countries to implement their tariff commitments.

One of stated objective of S&D rules is to encourage trade liberalization in developing countries, but their very structure seems at odds with the notion of conditional reciprocity – as some of their critics have pointed out – and with our previous conclusion that conditional reciprocity is the best mechanism for bolstering liberalization efforts by small developing countries. Reading S&D provisions as necessarily involving a relaxation of conditionality, however, means misreading what conditionality is: simultaneous bilateral liberalization need not imply conditionality, and, conversely, conditionality may be present even when trade concessions do not take place simultaneously.

When capacity in the import-competing sector depreciates in a single period – as it has been assumed in the preceding analysis – transition to a long-run trade liberalization agreement can take place in a single step, during which both countries reduce their tariffs. If instead capacity can only be reduced gradually, then it can be shown that a transitional trade agreement – involving conditionality – may require an *asynchronous* exchange of concessions, with the large country liberalizing before the small country does, consistently with the structure of S&D provisions.²⁷ A formalization of this argument for a scenario where transition lasts two periods is presented in the Appendix.

The intuition for this result is that, since the ability of the small country to lower its tariffs depends on the level of installed import-competing capacity, it may be impossible to sustain lower tariffs until its capacity has depreciated sufficiently. An immediate reduction in tariffs by its large partner may ease the transition, by encouraging trade and preventing the build up of new import-competing capacity in the small country. In other words, higher tariffs in the small country may be required in the transition phase even if the large country already liberalizes during the transition. Such pattern, however, need not imply lack of conditionality; on the contrary, it is consistent with the presence of an (explicit or

²⁷The importance of adjustment costs is stressed by Brainard and Verdier (1994), who show in a political economy model of lobbying that capacity constraints can explain the persistence of protection. The literature on self-enforcing trade agreements has put forward alternative explanations for gradualism. For example, in Furusawa and Lai (1999) gradualism arises because of adjustment costs incurred when labour moves between sectors, while in Bond and Park (2002) it is the result of an asymmetry in country size; in Chisik (2003), gradualism arises instead from increasing interdependence between the trading partners, due to irreversible investments in the export sector. The purpose of the analysis carried out in this section is not to rationalize gradualism; it is to rationalize the co-existence of transitional asymmetries and long-run conditionality.

implicit) agreement in which conditional reciprocity – the threat of a long-run reversion to \bar{t}^* by the large country if the small country fails to complete its transition to liberalization – acts as an essential inducement for the small country to liberalize (as shown in our earlier discussion). Nevertheless, conditionality may not be apparent, as the exchange of reciprocal concessions may be not simultaneous.

5 Conclusion

We have presented a two-country model of trade relations between a small developing country and a large developed country. The small country’s government faces a commitment problem that arises because investors, after having installed sunk capacity in the import-competing sector, put pressure on the government to raise tariffs so as to increase their quasi-rents. In this setting, free trade is optimal from a long-run perspective, but it is not credible in the short-run, i.e., if the government cannot commit to tariff choices before investment decisions are made. We have shown that the desire to achieve domestic policy credibility can motivate small developing countries to enter trade agreements with large developed countries.

Previous studies have assumed that international agreements are automatically binding, as if a simple signature allowed policymakers to “tie their own hands”. Our analysis focuses instead on the dynamic incentives that the small country continuously faces when trying to sustain free trade, and the effect that a trade policy relationship with the large country has on these incentives. Reciprocal trade agreements, in which tariff concessions by the large country are conditional on concessions by the small country, provide a carrot and stick mechanism that can help the small country to liberalize. Unconditional tariff reductions by the large country, on the other hand, decrease both the gains and the punishment associated with a deviation from free trade, and may thus not help the small country to solve its commitment problem.

Our results have implications for bilateral trade relations between developed and developing countries, and suggest that the recent shift of the United States and the European Union – from a unilateral policy of granting developing countries unconditional preferential market access toward reciprocal trade preferences through free trade agreements – may help these countries to boost the credibility of trade reforms and to integrate in the world economy. At the multilateral level, the Doha Declaration states that WTO agreements should afford the opportunity for developing countries to undertake “less than full reciprocity in reduction commitments.” This statement could be read to mean that

developing countries, or at least the smaller ones, do not need to undertake substantial trade liberalization commitments, and they should be allowed to have a “free ride” on the negotiations. Our analysis suggests that this may hinder the ability of developing countries to overcome their policy credibility problems. It may instead be in the best interest of these countries to interpret the statement as implying that they are expected to pursue market access reforms, but that they may be accorded longer transition periods to implement them.

More generally, this paper shows that the presence of conditionality in relationships *between* countries can help to overcome domestic commitment problems arising from the interaction between government and private sector *within* countries. In the case of trade policy, being in a relationship with a large trading partner can provide the carrot and stick mechanism that can help to achieve domestic policy credibility and sustain efficient policies. This conclusion can be extended to other policy settings that have an analogous structure, i.e., where the domestic commitment problem and the international coordination problem affect policy formation in the same direction.²⁸

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²⁸For a discussion of the interaction between domestic policy credibility international coordination in the context of environmental policy, see Conconi and Perroni (2009).

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Appendix: transitional liberalization agreements

If capacity in the small country’s import-competing sector cannot immediately adjust to its long-run level, a reciprocal liberalization agreement may require an asynchronous exchange of concessions. To illustrate this point, we will focus on an example based on a specific scenario, though our arguments apply to a broader class of cases.

Consider a situation in which free trade can “just be sustained” in the long run by the small country when being in a reciprocal trade agreement which the large country, i.e., in which (16) is met with equality. Let us denote with $S_L \equiv S(1 + \underline{t}^*)$ the equilibrium capacity of the small country’s import-competing sector in the long-run trade deal ($t_L = 0, \underline{t}^*$). Assume that there is an upper bound on capital depreciation, and denote with $\phi \in (0, 1)$ the rate at which capacity in the import-competing sector can be reduced from one period to the next. Then, if S_j is capacity at period j and N_j is the level of new capacity investment at j , the level of capacity at $j + 1$ is $S_{j+1} = (S_j + N_j)(1 - \phi)$.

Suppose first that the large country sets the same tariff \underline{t}^* in transition phase as in the long-run agreement, implying $p_T = (1 + t_T)(1 + \underline{t}^*)$. Specifically, consider the scenario depicted in Figure 1, where it is conceivable to reach the long-run agreement $(0, \underline{t}^*)$ in two periods, at j , but

Period:	$j - 2$	$j - 1$	j	$j + 1$	\dots
Tariff:	t_{j-2}	t_T	0	0	\dots
Capacity:	S_0	$S_0(1 - \phi) \leq S_T \leq S_L/(1 - \phi)$	S_L	S_L	\dots

Figure 1: Transitional and Long-run Tariffs and Capacity

it is not possible to do so in one period. This happens if, starting from a certain level of installed capacity, S_0 , at $j - 2$ (inherited from earlier periods) the rate of depreciation is such that

$$\frac{S_L}{(1 - \phi)^2} \geq S_0 \geq \frac{S_L}{1 - \phi}. \quad (21)$$

Notice that the long-run agreement ($t_L = 0, \underline{t}^*$) can only be achieved at period j if the capacity for period $j - 1$, planned at $j - 2$ on the basis of the tariffs expected at $j - 1$, does not exceed $S_L/(1 - \phi)$. This implies that convergence to the long-run agreement at j is only possible for sufficiently low transitional tariffs at $j - 1$.

We will show that the small country may need to liberalize gradually, setting a tariff t_T in period $j - 1$ that exceeds its long-term tariff $t_L = 0$. Notice that, under the assumption of Nash-reversion punishment strategies, the punishment that the small country faces for defecting from t_T during the transition is the same as that faced from defecting from $t_L = 0$ in the long run: a deviation from t_T at $j - 1$, is followed by a reversion to tariffs (t_{PF}, t_N^*) from j onwards rather than tariffs $(0, \bar{t}^*)$, where $t_N^* = \bar{t}^*$, and $t_{PF} = t(\bar{t}^*)$; the same punishment applies if the small country deviates from the long-run tariff $t_L = 0$ from j onwards. In contrast, transitional deviation incentives differ from long-run deviation incentives, since the small country's import-competing capacity is larger at $j - 1$ than at j , so that its investors can earn larger quasi-rents. In turn, this implies that the small country faces a stronger temptation to deviate from the agreement.

To characterize transitional incentives for the small county, we then first need to characterize the level of capacity at $j - 1$ – installed at $j - 2$ on the basis of the tariffs expected at $j - 1$. We can identify a function, $\tilde{S}(p_T)$, relating transitional capacity to the transitional gross-of-tariff price of importables, $p_T = (1 + t_T)(1 + \underline{t}^*)$, where $\tilde{S}'(\cdot) > 0$.²⁹ This represents the optimal level of capacity when there is positive investment at $j - 2$. When the depreciated initial capacity

²⁹Assume that the cost of installing new capacity at j is a function of the level of capacity installed, in such a way that the marginal cost depends on the total level of capacity, and suppose that this cost can be expressed as $\Gamma[C((S_j + N_j)(1 - \phi)) - C(S_j(1 - \phi))]$, where, without loss of generality, $\Gamma \equiv \delta/(1 - \delta(1 - \phi))$. If the expected domestic price of importables from $j + 1$ onwards is p_E – as is the case in a long-run agreement with constant tariffs – the expected present value of the revenue flow from the new investment is $\Gamma p_E(1 - \phi)N_j$. Then, the optimal level of new capacity investment at j will be identified by the condition

exceeds planned capacity $\tilde{S}(p_T)$, the size of the import-competing sector will be $S_0(1 - \phi)$. Hence,

$$S_T(t_T, \underline{t}^*) \equiv \max\{S_0(1 - \phi), \tilde{S}(p_T)\} > S_L. \quad (22)$$

The transitional deviation gain for the small country can then be written as

$$\int_{p_D}^{p_T} D(z)dz + (1 + t^*) \left[t_D \left(D(p_D) - S(p_E) \right) - t_T \left(D(p_T) - S(p_E) \right) \right] + (1 + \lambda)(p_D - p_T)S(p_E) \\ \equiv \Delta_T(t_T, \underline{t}^*, S_0), \quad (23)$$

where $p_E = (1 + t_T)(1 - \underline{t}^*)$ is the expected price of importables in the transition agreement and $p_D = (1 + t_D)(1 - \underline{t}^*)$ is the price when the small country optimally deviates from the transition agreement.

Looking at (23), it can be easily verified that $\partial\Delta_T/\partial S_T > 0$. Thus, during the transition (at $j - 1$), the small country faces a stronger temptation to increase its tariff above the agreed-upon level in comparison with the long-run (from j onwards). This, however, does not automatically imply that transitional tariffs in the small country *must* be higher than long-run tariffs. In order to characterize the set of sustainable transitional tariff combinations, we need to consider both unilateral policy deviation incentives and investment incentives in the small country's import-competing sector. Specifically, given a "just sustainable" long-term tariff $t_L = 0$, sustainable transitional tariff t_T are identified by the following conditions:

1. Transitional deviation gains do not exceed long-run deviation gains:

$$\Delta_T(t_T, \underline{t}^*, S_0) \leq \Delta_L(0, \underline{t}^*, S_L), \quad (24)$$

2. Given expected tariffs (t_T, \underline{t}^*) , capacity at $j - 1$ does not exceed $S_L/(1 - \phi)$:

$$S_T(t_T, \underline{t}^*) \leq S_L/(1 - \phi). \quad (25)$$

To obtain a more precise characterization, we employ a differential approach, which we develop as follows. Consider scenarios where capacity depreciates just fast enough that a two-period transition is feasible, i.e., where no investment in capacity takes place during the transition and $S_0(1 - \phi)^2 = S_L$. In such borderline scenario, if we make the initial capacity level S_0 progressively closer to the long-run level S_L , the sustainable transitional tariff will approach $t_L = 0$. Notice that in this limit scenario, a fast transition to $t_L = 0$ from j onwards is only possible if $S_T(t_T, \underline{t}^*) \equiv \max\{S_0(1 - \phi), \tilde{S}(p_T)\} = S_0(1 - \phi)$, i.e., if given the tariffs prevailing in the transition, import-competing are in a situation in which they would like to reduce capacity.

Let

$$\left(\frac{dt_T}{dS_0} \right)_{S_0=S_L} \equiv \theta. \quad (26)$$

$p_E = C'(S_{j+1})$, as before. In the case of a two-period transition, the present value, at $j - 2$, of the revenue flow from a level of investment N_{j-2} can be expressed as $\delta(1 - \phi)N_{j-2}p_T + [\delta^2(1 - \phi)^2/(1 - \delta(1 - \phi))]N_{j-2}p_L$ (where p_L is the long-run price). Then, letting $S_T = (1 - \phi)(S_{j-2} + N_{j-2})$ and equating marginal revenue with the marginal cost of investment gives $C'(\tilde{S}_T) = (1 - \delta(1 - \phi))p_T + \delta(1 - \phi)p_L$.

Here θ captures the marginal differences between transitional and long-run tariffs for the small country, in the neighbourhood of a limit scenario with $S_0 = S_L$: if $\theta > 0$, we have $t_T > 0$, i.e., transitional tariffs in the small country are higher than its long-run tariffs. Then, for S_0 approaching S_L and $\phi = 1 - (S_0/S_L)^{1/2}$, the developing country can reduce its tariff to $t_L = 0$ from j onwards, passing through a single transitional period in which $t = t_T$, if there exists a θ that satisfies the following system of linear inequalities

$$\frac{\partial \Delta_T}{\partial t} \theta + \frac{\partial \Delta_T}{\partial S} \leq 0, \quad (27)$$

$$\theta \tilde{S}'(p) - 1 \leq 0. \quad (28)$$

Condition (27) must be met in order for punishment to deter defections during the transition phase; condition (28) must be met for capacity to depreciate to its long-run level.

It can then be shown that a fast transition to a low-tariff regime may require the small country to adopt *transitional tariffs* that are *higher* than its long-run tariffs. To see this, notice that, when $S_0(1 - \phi)^2 = S_L$, a fast transition to $t_L = 0$ from period j onwards requires the import-competing capacity at $j - 1$ not to exceed the depreciated initial capacity, $S_T(t_T, \underline{t}^*) = S_0(1 - \phi)$. In this regime, the size of the Y sector does not depend on t_T and an increase in the small country's transitional tariff has the following effect on its deviation incentives:³⁰

$$\frac{\partial \Delta_T}{\partial t_T} = (1 + t^*)^2 (t_D D'(p_D) - t_T D'(p_T)) < 0. \quad (29)$$

Starting from $S_0 = S_L$, an increase in capacity has the following effect on deviation incentives:

$$\frac{\partial \Delta_T}{\partial S} = \lambda(1 + t^*)(t_D - t_T) > 0. \quad (30)$$

Condition (28) requires that capacity investment must not be too responsive to prices. Plugging (29) and (30) into condition (27), it is straightforward to verify that a two-period transition to the long run agreement ($t_L = 0, \underline{t}^*$) requires $\theta > 0$, i.e. $t_T > t_L$.

³⁰Equation (29) is derived by differentiating (23), exploiting the first-order condition for a unilaterally optimal deviation by the small country, $t_D(1 + t^*)D'(p_D) + \lambda S(p_T) = 0$, and noting that in a perfect-foresight transitional equilibrium $S(p_E) = S(p_T)$. The second-order condition for an optimal deviation requires $t_D D'(p_D) - t_T D'(p_T) < 0$, implying that (29) must be negative.