

Conditional versus unconditional trade concessions for developing countries

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Abstract. We examine how trade liberalization by a large trading partner affects the ability of a small country's government to sustain free trade through a reputational mechanism. 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 be reduced only gradually, a conditional, reciprocal agreement may require an asynchronous exchange of concessions, where the large country liberalizes before the small country does. JEL classification: D72, D78, F13

Concessions commerciales conditionnelles et inconditionnelles pour les pays en développement. On examine comment la relation avec un important partenaire commercial affecte l'habileté du gouvernement d'un petit pays à soutenir le libre échange à l'aide d'un mécanisme de réputation. La libéralisation inconditionnelle par le grand partenaire a un effet ambigu sur les incitations dynamiques du petit pays. La libéralisation via un accord réciproque par lequel le grand pays réduit ses tarifs à condition que le petit pays fasse de même est un arrangement qui est supérieur à la libéralisation inconditionnelle comme façon de promouvoir des réformes commerciales et de renforcer la crédibilité du petit pays. Cependant, si la capacité dans le secteur qui concurrence les importations ne peut être réduite que graduellement, un accord conditionnel réciproque peut requérir un échange de concessions asynchroniques, où le grand pays se libéralise avant le petit.

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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 be granted broader market access by developed countries *unconditionally* or only *conditionally* on their undertaking policies to liberalize their own economies?

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 recently,¹ 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 have generally grown faster, but that these growth effects can be observed only 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.² 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.

- 1 In recent years, the United States has negotiated free trade agreements with various developing countries and 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 'barriers to US trade and investment.' The European Union has also recently started negotiating reciprocal Economic Partnership Agreements (EPAs) with African, Caribbean, and Pacific (ACP) countries, to replace the system of unilateral trade preferences that had been granted to its former colonies.
- 2 When 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.

Our analysis builds on the idea that developing countries can enter into trade agreements in order to enhance the credibility of their own domestic policies.³ 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 binding trade agreements can be a solution to this problem.⁴ 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 trade concessions have on them, 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 which leads to post pressure on governments to enact and maintain protectionist policies.⁵ 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 that 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, that is, 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

3 The available empirical evidence suggests that developing countries face serious domestic credibility problems. For example, Brunetti, Kisunko, and Weder (1998) construct an index of institutional credibility based on a World Bank survey, in which more than 3,600 firms in 74 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.

4 In 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).

5 Evidence of the relevance of interest groups in trade policy determination in developing countries is provided by De Melo, Grether, and Olarreaga (2001), among others. There 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).

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 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, conditional on the small country doing the same. We show that, when compared with 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 from free trade, without reducing the severity of the punishment.

Our results suggest that the desire to achieve domestic policy credibility may explain why many developing countries have joined the WTO or entered into trade agreements with large developed countries, as the conditionality element contained in such agreements can make trade liberalization easier to sustain.⁶ 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

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-

⁶ Small 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).

competing sector – a setting that 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 an asterisk ‘*’) each producing an exportable good and an import-competing good. As mentioned above, the home country is assumed to be small, that is, 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 economy of the large country.

Two goods, X and Y , are produced and traded, 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 $1 + t^*$.⁷

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 $\rho = \delta$.

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

We assume that investors in the home country are individually small and forward-looking; that is, 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 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. 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.

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

$$W + \lambda(p - p_E)S(p_E) \equiv \Pi, \quad (3)$$

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.⁸ The payoff for 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 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.

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).

⁸ Here, 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.

If policy commitment is not feasible, trade policy choices will have to be made after private investment choices are made, that is, 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 $t_E^* = t^*$ and the equilibrium tariff $t_{PF} > 0$ will be identified by the condition $t_{PF}(1 + t^*)D'((1 + t_{PF})(1 + t^*)) + \lambda S((1 + t_{PF})(1 + t^*)) = 0$. 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 ; that is, 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.'⁹ On the other hand, if $S(1) = 0$, that is, if import-competing supply vanishes under free trade, then an equilibrium with $t_{PF} = 0$ will always exist, possibly alongside other equilibria with $t > 0$.

9 In 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 $-1/(1 + t^*) \partial(\lambda S(p)/D'(p))/\partial t = -\partial(\lambda S(p)/D'(p))/\partial p < 1$.

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 that traps the small country in a vicious circle of inefficient protection and inefficient investment allocation.

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.¹⁰ 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.¹¹

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 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 $t_L = 0$.

10 A 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.

11 Such frictions are often alluded to in the debate on trade liberalization and development, and are 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).

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 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 installed capacity, and lobbying for higher tariffs so as to maximize their quasi-rents.¹²

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 $\Pi(0, \bar{t}^*, 0, \bar{t}^*)$, 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:

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

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, where $p_L = 1 + \bar{t}^*$ and $p_{PF} = (1 + t_{PF})(1 + \bar{t}^*)$. Condition (5) can be solved to derive the minimum degree of patience required for the small country to sustain free trade on its own:

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

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

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

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

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

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

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

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

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

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

In a perfect foresight equilibrium, expected prices must coincide with realized prices; that is, $p_E = p_L = 1 + t^*$.

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

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

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.¹³ 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 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 equilibrium is t_{PF} , which must satisfy $t_{PF} = -\lambda S(p_{PF}) / ((1 + t^*)D'(p_{PF}))$. The deviation tariff is given by $t_D = -\lambda S(p_L) / ((1 + t^*)D'(p_D))$. With $D' < 0, D' \geq 0, S' > 0, p_D > p_L$, we can conclude that $t_{PF} > t_D$; that is, 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

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

this can be shown to be decreasing in t^* ,¹⁴ 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 an ambiguous sign, reflecting the presence of second-order effects associated with the curvature of D and S .

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

14 We have

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

where

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

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

Expression (15) is negative for $D' \geq 0$, and the denominator of (14) must be positive for local stability (see fn9). We can thus conclude that $\partial \Pi_{PF} / \partial t^* < 0$.

Nevertheless, it is easy to point to simple scenarios where it is positive, that is, 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 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^* .¹⁵ 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 tariff reduction from \bar{t}^* to \underline{t}^* is conditional on the small country's 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

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

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:

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

¹⁵ $\delta_A = \delta_U = (\beta - \gamma\lambda)^2 / (2\beta^2 + \gamma^2\lambda^2 + \beta(\gamma - 2\gamma\lambda))$.

When 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 fn14), 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 case of unilateral liberalization, on the other hand, it is as if a bigger carrot always comes at the expense of a weaker stick.¹⁶

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 $\partial\Delta/\partial t^* > 0$, 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

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

which yields

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

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

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

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

16 This 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.

the minimum discount factor that allows the small country to sustain free trade; that is, $\delta_C < \delta_A$.

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 help member countries not only to internalize terms-of-trade externalities, as suggested by Bagwell and Staiger (1999), but also to overcome their domestic commitment problems.

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.¹⁷ 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.¹⁸ It is also possible to provide a theoretical rationalization for the large country's involvement that invokes only 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).¹⁹

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

17 This 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 23 October, 2007). Market access concessions by developed countries have long been interpreted as an alternative form of development aid (see McCulloch and Pinera 1977).

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

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

System of Preferences (GSP), and a protection component, in the form of longer time periods for developing countries to implement their tariff commitments.

One of the stated objectives 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 be reduced only gradually, then it can be shown that a transitional trade agreement, involving conditionality, may require an *asynchronous* exchange of concessions, where the large country liberalizes before the small country does, consistent with the structure of S&D provisions.²⁰ A formalization of this argument for a scenario where transition lasts for two periods is presented in Conconi and Perroni (2011).

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 a pattern, however, need not imply lack of conditionality; on the contrary, it is consistent with the presence of an (explicit or implicit) agreement in which conditional reciprocity the threat of a long-run reversion to $\bar{\tau}^*$ 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.

20 The 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, owing to irreversible investments in the export sector. What we are addressing here is not gradualism per se, but the compatibility of transitional asymmetries with long-run conditionality.

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, that is, 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 continually 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 thus may 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 that 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 a carrot and stick mechanism that can help it to achieve

domestic policy credibility and sustain efficient policies. This conclusion can be extended to other policy settings that have an analogous structure, that is, where the domestic commitment problem and the international coordination problem affect policy formation in the same direction.²¹

References

- Bagwell, K., and R. Staiger (1999) 'An economic theory of GATT,' *American Economic Review* 89, 215–48
- Bond, E., and J.-H. Park (2004) 'Gradualism in trade agreements with asymmetric countries,' *Review of Economic Studies* 69, 379–406
- Brunetti, A., G. Kisunko, and B. Weder (1998) 'Credibility of rules and economic growth: evidence from a worldwide survey of the private sector,' *World Bank Economic Review* 12, 353–84
- Chisik, R. (2003) 'Gradualism in free trade agreements: a theoretical justification,' *Journal of International Economics* 59, 367–97
- Cline, W. (2007) 'The Doha Round, agriculture, and the developing countries,' mimeo
- Coates, D., and R. Ludema (2001) 'A theory of trade policy leadership,' *Journal of Development Economics* 65, 1–29
- Conconi, P., and C. Perroni (2004) 'The economics of special and differential trade regimes,' CEPR Discussion Paper No. 4408
- (2009) 'Do credible domestic institutions promote credible international agreements?' *Journal of International Economics* 79, 160–70
- (2011) 'Conditional versus unconditional trade concessions for developing countries,' CEPR Discussion Paper No. 8253
- De Melo, J., J. Grether, and M. Olarreaga (2001) 'Who determines Mexican trade policy?' *Journal of Development Economics* 64, 343–70
- Furusawa, T., and E. Lai (1997) 'Adjustment costs and gradual trade liberalization,' *Journal of International Economics* 49, 333–61
- Green, E., and R. Porter (1984) 'Noncooperative collusion under imperfect price information,' *Econometrica* 52, 87–100
- Grossman, G., and E. Helpman (1994) 'Protection for sale,' *American Economic Review* 84, 833–50
- Horn, H., P. Mavroidis, and A. Sapir (2008) 'Beyond the WTO? An anatomy of EU and US preferential trade agreements,' Bruegel Blueprint Series
- ITC (International Trade Centre) (2002) *Business Advocacy and Trade Policy Making: How the Business Community in Developing Countries Can Benefit from the Doha Development Round*, ITC technical paper (Geneva: UNCTAD/WTO)
- Kehoe, P. (1989) 'Policy cooperation among benevolent governments may be undesirable,' *Review of Economic Studies* 56, 289–96
- Limão, N. (2007) 'Are preferential trade agreements with non-trade objectives a stumbling block for multilateral liberalization?' *Review of Economic Studies* 74, 821–55
- Maggi, G., and A. Rodriguez-Clare (1998) 'The value of trade agreements in the presence of political pressures,' *Journal of Political Economy* 106, 574–601
- (2007) 'A political-economy theory of trade agreements,' *American Economic Review* 97, 1374–406

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

- McCulloch, R., and J. Pinera (1977) 'Trade as aid: the political economy of tariff preferences for developing countries,' *American Economic Review* 67, 959–67
- Olson, M. (1965) *The Logic of Collective Action* (Cambridge, MA: Harvard University Press)
- Ornelas, E. (2005) 'Rent destruction and the political viability of free trade agreements,' *Quarterly Journal of Economics* 120, 1475–506
- Park, J.-H. (2004) 'International trade agreements between countries of asymmetric size,' *Journal of International Economics* 50, 473–95
- Perroni, C., and J. Whalley (1996) 'How severe is global retaliation risk under increasing regionalism?' *American Economic Review, Papers and Proceedings* 86, 57–61
- (2000) 'The new regionalism: trade liberalization or insurance?' *Canadian Journal of Economics* 33, 1–24
- Rodrik, D. (1992) 'The limits of trade policy reform in developing countries,' *Journal of Economic Perspectives* 6, 87–105
- Staiger, R., and G. Tabellini (1987) 'Discretionary trade policy and excessive protection,' *American Economic Review* 77, 823–37
- Stokey, N. (1989) 'Reputation and time consistency,' *American Economic Review, Papers and Proceedings* 79, 134–9
- Subramanian, A., and S.-J. Wei (2007) 'The WTO promotes trade, strongly but unevenly,' *Journal of International Economics* 72, 151–75
- Tang, M.-K., and S.-J. Wei (2009) 'The value of making commitments externally: evidence from WTO accessions,' *Journal of International Economics* 78, 216–29
- Van Damme, E. (1989) 'Renegotiation-proof equilibria in repeated Prisoners' Dilemma,' *Journal of Economic Theory* 47, 206–17
- Whalley, J. (1998) 'Why do countries seek regional trade agreements?' In *The Regionalization of the World Economy*, ed. J. Frankel (Chicago: University of Chicago Press)