Cooperative S&D Regimes in the Transition to Trade Liberalization*

Paola Conconi†  Carlo Perroni
Université Libre de Bruxelles  University of Warwick
University of Warwick  and CEPR

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Abstract

Under existing WTO rules developing countries are granted Special and Differential (S&D) treatment, i.e. special rights and privileges not extended to developed countries. This paper provides a theoretical rationale for the simultaneous presence of protection based and market-access based S&D rules, as well as for their temporary nature. We show that seemingly non-reciprocal S&D rules can be rationalized as a transitional equilibrium feature of a self-enforcing international agreement between a large developed and a small developing country, where both sides have a joint interest in helping the developing country to overcome a commitment problem.

KEYWORDS: Policy Commitment, Self-Enforcing International Agreements, Special and Differential Treatment.

JEL Classification: D72, D78, F13.

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†Correspondence to Paola Conconi, European Centre for Advanced Research in Economics and Statistics (ECARES), Université Libre de Bruxelles, Avenue F. D. Roosevelt 50, CP 114, 1050 Brussels, Belgium; Tel: +32 (0)2 650 2945; Fax: +32 (0)2 650 4475; E-mail: pconconi@ulb.ac.be
1 Introduction

The WTO agreements contain a number of provisions for the Special and Differential (S&D) treatment of developing countries, which grant them special rights and privileges and allow developed countries to give them preferential concessions. S&D provisions include a protection component, in the form of longer time periods for implementing their tariff commitments, and an access component, in the form of preferential access to developed countries’ markets under the Generalized System of Preferences (GSP).\(^1\)

Both components are intended to be temporary: tariff bindings must be complied with at the end of the implementation period; and GSP status is revoked once the granting country determines, on the basis of certain stated criteria, that the beneficiary developing country has no longer any need for it.

The wording of the relevant WTO articles suggests that S&D rules reflect a recognition of the transitional problems that developing countries face. But these rules are not only meant as a passive acknowledgement of special needs: one of the stated objectives of existing S&D rules is to enable developing countries to “ensure that developing countries, and especially the least-developed among them, secure a share in the growth of world trade commensurate with the needs,”\(^2\) and to help them “secure beneficial and meaningful integration into the multilateral trading system and the global economy.”\(^3\) S&D provisions thus appear to be meant as an integral part of a deliberate strategy for encouraging trade liberalization in developing countries.

However, S&D rules have been criticized for not producing appropriate trade liberalization incentives for developing countries. In particular, it has been argued that GSP violates the principle of reciprocity, according to which WTO members should reduce their own trade barriers in exchange for comparable steps by their negotiating partners. Notice that this interpretation of reciprocity\(^4\) contains an element of conditionality: member countries should grant trade concessions only in return for

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\(^{1}\)GSP is legitimized under the 1979 Enabling Clause, which allows GATT/WTO members to suspend the granting of most-favored-nation (MFN) treatment in cases where they are offering better-than-MFN tariffs to developing countries.

\(^{2}\)Preamble of Marrakesh Agreement establishing the WTO.

\(^{3}\)WTO, 2001 (Declarations of the WTO Ministerial Conference in Doha).

\(^{4}\)Although the articles of WTO do not provide a precise definition of reciprocity, the preamble of GATT refers to “entering reciprocal and mutually advantageous arrangements directed to the substantial reduction of tariffs and other barriers to trade.” The general principle of mutual concessions has prevailed since the first days of the GATT, although the methods for interpreting and implementing reciprocity and assessing the balance of concessions have changed over time (see Finger and Winters, 2002).
“substantially equivalent concessions”. Seemingly unilateral GSP preferences seem to “release developing countries from their GATT obligations” and do not encourage them to reduce their own tariffs (Roessler, 1998). At first sight, empirical evidence would seem to lend support to this view, since developing countries withdrawn from GSP appear to become less protectionist. For example, Korea cut average nominal tariffs by six percent after being dropped from the US GSP program; Similarly Samoa announced a drastic liberalization program, aimed eliminating all tariffs by 2010, after being graduated. These trade patterns have been interpreted as evidence that S&D rules *delay* liberalization in developing countries.\(^5\)

In contrast with the above criticisms, in this paper we argue that existing S&D rules can be reconciled with the principle of reciprocity and can actually help to *speed up* trade liberalization in developing countries. The argument we put forward is that temporary S&D treatment, both in the form of higher protection by the developing country and in the form of lower protection by the developed country, can be rationalized as being part of a cooperative agreement between developed and developing countries, where trade concessions are linked, explicitly or implicitly, by *conditional-ity*.\(^6\) However, due to institutional constraints in the developing countries, concessions are exchanged *through time*, rather than simultaneously.

In our analysis, observed S&D provisions can thus be reconciled with their stated objectives, since *temporary* S&D treatment—both on the protection side and on the


\(^6\)Indeed GSP preferences are often subject to conditions, since beneficiary countries must show that they are making liberalization efforts. In particular, for many years there have been “elements of reciprocity” in US GSP law (UNCTAD, 1985). For example, the United States Trade Representative sets *clear conditions* for a country to be eligible to such preferences, including “the extent to which the country has assured the United States it will provide equitable and reasonable access to its markets” (see Section 502(c)(6) of the US Trade Act of 1974). Also, under the US African Growth and Opportunity Act (AGOA), GSP is extended for Sub-Saharan African beneficiary countries for seven years longer than in the rest of the world and qualify for an expanded list of GSP products beyond that available for other geographic areas. However, one of the conditions placed on AGOA recipients is that they eliminate their “barriers to US trade and investment”. Also several seemingly non-reciprocal preferential trade schemes are negotiated and agreed upon *jointly* by the preference-giving and preference-receiving countries. These include the four successive Lomé Conventions between the 15 EU countries and 71 countries in the African, Caribbean and Pacific (ACP) Group. The Lomé Convention and its agreed preferences become contractual obligations that cannot be unilaterally modified by one of the parties. Another is the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA) between Australia and New Zealand and 13 island country members of the South Pacific Forum.
access side—can help to encourage permanent liberalization by developing countries. This argument is built on the premise that, in the absence of a supranational agency with direct power to punish violators, trade policy cooperation must be self-enforcing, i.e. sustained by mutual and continuously renewed threats of credible punishment against defections (Bagwell and Staiger [1997], Maggi [1999], Ederington [2001]). Once enforcement constraints are accounted for, it becomes possible to explain S&D treatment as a transitional equilibrium feature of cooperation under repeated strategic interaction.

Focusing on the bilateral relationship between a large developed country and a small developing country, we show that a transitional equilibrium exhibiting features consistent with temporary S&D treatment can arise as part of a bilaterally self-enforcing deal between the two countries, if policymakers in the small country are under the influence of import-competing lobbies and suffer from a commitment problem, and if capacity in the import-competing sector does not depreciate instantaneously. Specifically, we show that a self-enforcing cooperative equilibrium path will necessarily feature higher protection in the small country during the transition to trade liberalization in comparison with its long-run equilibrium tariffs (i.e. delayed implementation); and, under certain conditions, it may also require lower protection by the large country during the transition in comparison with its long-run equilibrium tariffs (i.e. temporary GSP concessions).

In such an equilibrium, both transitional and long-run policy choices can be sustained by each party because of the policy path followed by the other. Thus, when viewed in the context of self-enforcing cooperation, the two components of S&D, even though they are not formally tied, become linked by conditionality both within and across periods: in each period, cooperative policies are sustained by the threat of future punishment; at the same time, concessions are exchanged across different time periods—with the large country offering temporary preferences in exchange for future

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7Existing work by Coates and Ludema (2001) and Mitra and Krishna (2003) shows that permanent unilateral concession by a large developed country can be part of a system of incentives designed by the large country to induce liberalization in a small developing country. Their analysis can thus explain how permanent unilateral liberalization by a large developed country (“trade policy leadership,” in the words of Coates and Ludema, 2001) can encourage liberalization by a small developing country, but cannot provide a rationale for both components of S&D treatment and their temporary nature.

8The idea that policy discretion might provide governments with an incentive to renego on earlier promises and that this incentive could undermine the sustainability of optimal government policies was introduced in the seminal paper by Kydland and Prescott (1977). Time inconsistency problems can arise in international trade policy, as shown by Staiger and Tabellini (1987), Matsuyama (1990), and Tornell (1991) and Maggi and Rodriguez-Clare (1998).
market access, and the small country’s determination to disentangle itself from its commit-
ment problem being shored up by the prospect of facing future punishment by the large country for failing to succeed. Notice that feasibility constraints and incentive e-
effects must both be accounted for. Therefore, in our interpretation, S&D rules result
both from a passive acknowledgement of development-related needs and constraints,
and as part of an system of active trade liberalization incentives.

The remainder of the paper is organized as follows. Section 2 describes the evolution
of S&D provisions in more detail. Section 3 presents the main features of our model,
describing first a single round of strategic interaction (the stage game). Section 4
looks at trade agreements that can be sustained under infinite repetition of the stage
game under Nash-reversion punishment strategies. Section 5 discusses existing S&D
rules and examines the sustainability of transitional tariffs, when capacity constraints
make it impossible to immediately reach a low-tariff agreement. Section 6 examines
competing explanations. Section 7 concludes.

2 A Brief History of S&D Rules

The current S&D regime reflects a long history of calls by developing countries for special
treatment in global trade arrangements. Since the early years of the GATT, both
developed and developing countries have long accepted the concept of S&D treatment,
but its interpretation has evolved over time (see Michalopoulos, 2000, and Whalley,
1999).

Until the early 1980s,9 S&D treatment was primarily meant to meet the special
problems of development faced by developing countries, by according them special
rights to nurture infant industries, and obtain preferential access to developed countries’
markets. The principle of non-reciprocity for developing countries (Article XXXVI) in-
dicated recognition of unequal playing fields between developed and developing. Prefer-
erential treatment took many forms: better market access for exports by developing
countries in accordance with GSP, so that they could boost economic development

9The important milestones in this period are: (i) the modification of Article XVIII of GATT in
1954-55 to allow developing countries to use trade restrictions for balance-of-payments purposes and
infant industry protection; (ii) the establishment of UNCTAD and the creation of the Committee on
Trade and Development in the GATT in 1964; (iii) the addition of Part IV on Trade and Development
to the GATT in 1965; and (iv) the adoption of the Enabling Clause in 1979, which, by allowing GATT
members to grant tariff preferences to developing countries and LDCs without having to grant the same
treatment to industrialized countries, basically shelters these sorts of preferences from the GATT’s
most-favored-nation (MFN) obligations.
through exports; a lesser level of obligations for developing countries which provided them necessary flexibility to pursue policies for industrialization and economic development; and no requirement for developing countries to sign and adhere to all the agreements in GATT.

From the early 1980s, the situation changed rather dramatically. There was a broad consensus that the past approach to S&D treatment based on non-reciprocity had been disappointing on the ground that it had provided little incentive for developing countries to participate more fully in the multilateral trading system (see Whalley, 1999). There was also a growing disenchantment with the developed strategy based on import substitution (see Kreuger, 1997, and Bora et al., 2000). This led to a change of focus in the use of S&D treatment from problems of development to problems of implementation. Such change of focus meant that: (a) it was assumed that the level of development had no relationship with the level of rights and obligations under the multilateral trading system; (b) the same policies could be applicable for countries at various levels of development: all that was required was grant of short transition periods and technical assistance, and (c) developing countries did not have the option to sign or not on the various agreements: all the agreements were part of the Single Undertaking of the Uruguay Round.

As described earlier, existing S&D provisions consists mainly of longer implementation periods and GSP preferences. Both types of provisions have a temporary nature: implementation periods are transitory by definition, while GSP preferences are temporary in the sense that a beneficiary developing country will be “graduated” once it is deemed to have attained a sufficient level of progress. Also, there is a strong emphasis on meeting the special needs of the least developed countries (LDCs), which are

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10 The length of the transition periods for developing countries varies considerably: from two years (SPS and Import Licensing), five years (TRIMs, Custom Valuation, and TRIPS), ten years (agriculture) and even up to an undetermined time (GATS).

11 Forty-nine countries are currently designated by the United Nations and the World Bank as LDCs. The current criteria are: low national income (per capita GDP under $900 for countries now joining the list), weak human assets (a composite index based on health, nutrition and education indicators) and high economic vulnerability (a composite index based on indicators of instability of agricultural production and exports, inadequate diversification and economic smallness). Different thresholds are used for addition to, and graduation from, the list of LDCs. A country qualifies for addition to the list if it meets inclusion thresholds on all three criteria, and if its population does not exceed 75 million.
In the last few years, development policy has moved near the top of the international agenda. In particular, the WTO Ministerial Declaration that launched the Doha “Development” Round in November 2001 recognizes the vulnerability of the least developed countries and committed the global trading system to “addressing the marginalization of least-developed countries in international trade and to improving their effective participation.” Paragraph 44 of the Doha declaration states that “all special and differential treatment provisions shall be reviewed with a view to strengthening them and making them more precise, effective and operational.” A total of 88 proposals on special and differential treatment have been put forward, but no agreement has been reached yet.

One of the main criticisms of the status quo is the fact that most S&D provisions are non-binding, either because they are not explicitly included in the WTO agreements or because they are simply expressed as “best endeavor” clauses. For this reason, the Trade and Development Committee has been mandated to consider the legal and practical implications of turning them into mandatory obligations. Our analysis suggests that, in the absence of an international authority with direct enforcement power, including all S&D provisions in the WTO agreements in the form of explicit commitments would not affect the enforceability of S&D provisions, which ultimately rests in the hands of the parties involved. Another recurrent criticism of existing S&D provisions is the fact that they are “eroding assets” (Stevens, 2003) due to their transitory nature. Our analysis points out that only temporary S&D treatment can help developing countries to liberalize their economies while at the same time be sustainable by the large country.

\[12\] For example, while the Agreement on TRIPs required industrialized countries to implement its provisions within one year and granted developing countries a transition period of five years (extendable to ten years for technology sectors where no previous intellectual property protection was accorded), for LDCs the allowed delay was eleven years.

\[13\] For example, LDCs may receive duty-free benefits under the US GSP program for some products otherwise exempted from the program. Granting GSP preferences to developing countries other than LDCs have become less attractive as a policy option for the granting countries, due to the tightening of the WTO rules and procedures on waivers. New rules and procedures on waivers are specified by the Understanding in Respect of Waivers and Obligations under GATT 1994 (Article IX).
3 The Model

The starting point of our analysis is the following set of observations: (i) S&D preferences are granted on a temporary basis; it would thus seem that the obstacles that these countries face are viewed by all parties as being transitory; (ii) much broader preferences are granted to LDCs; (iii) being small market players, LDCs should find it in their interest to liberalize unilaterally, but seem unable to do so;¹⁴ (iv) special interests exert significant influence on trade policy formation, both in developed and developing countries. Our analysis aims to provide a theoretical explanation of existing S&D provisions that is consistent with these premises.

A possible explanation is that policymakers in developing countries suffer from a commitment problem and are subject to protectionist pressures from the owners of variable inputs.¹⁵ Investment decisions in the import-competing sector are based on expected tariffs; ex post, investors exercise pressure for protection so as to maximize the quasi-rents generated by unanticipated deviations of actual tariffs from expected tariffs. With policy commitment, tariffs are fully anticipated and quasi-rents disappear. Absent 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 developing country will thus be higher than that which is ex ante desirable—even when evaluated from the point of view of a non fully benevolent policymaker. This implies that such a policymaker would have an active interest in pursuing liberalization, even if she may be unable to do so. Then, S&D rules can be interpreted as a feature of an equilibrium agreement between a developed and a developing country where both sides have a joint interest in helping the developing country to overcome its commitment problem and liberalize trade. The idea that a fully binding international agreement could be used to “tie policymakers’ hands”, enhancing the credibility of trade liberalization, has been suggested in the aforementioned literature on time-consistent trade policy. For example, Staiger and Tabellini (1987), Matsuyama (1990) and Maggi and Rodriguez-Clare (1998) have

¹⁴The simple average MFN tariff of LDCs in 2000 was eighteen percent, which was higher than that of other developing countries (fifteen percent) and well above that of industrial countries (five percent). See IMF information Database (TIPID).

¹⁵As we shall show later, lobbying from specific-factor owners should not be expected to give rise to a policy commitment problem of this kind, since the influence of these groups vanishes ex-post, given that ex-post rents are constant.
suggested that time inconsistency problems in trade policy could be overcome if governments could undertake binding commitments through the GATT/WTO. However, this argument neglects that, absent a supranational authority with autonomous powers of enforcement, international trade agreements are not directly enforceable, but need to be sustained by the threat of credible punishments between the parties involved. As we shall show, it is only when we look at the problem in this way—characterizing the agreement as being self-enforcing—that we can account for the S&O provisions we observe under WTO rules.

We show that, if capacity in the import-competing sector cannot immediately adjust to the long-run equilibrium level (see also Brainard and Verdier, 1997), the developing country faces transitional constraints and cannot immediately “jump” to the long-term deal. This allows us to focus on the transitional process through which the developing country can move from a distorted trade regime towards a more liberal one. A self-enforcing agreement must accommodate both transitional and long-run deviation incentives: a stronger transitional temptation for the developing country to break the agreement and a correspondingly weaker transitional temptation for the developed country translate into the transitional asymmetries we observe under S&O rules; such rules emerge as part of a deal where concessions are exchanged across time periods, with the large country offering temporary preferences in exchange for future market access, and the small country’s determination to disentangle itself from its commitment problem being shored up by the prospect of facing future punishment by the large country for failing to succeed. Our analysis shows that, in order to achieve maximum liberalization as quickly as possible, it might be necessary to temporarily allow the small (large) country to have higher (lower) tariffs relative to the long run.

We focus on the interaction between a small developing country, which cannot affect its terms of trade, and a large developed country, which has monopoly power in trade. Crucially, we also assume that the developing country has comparatively less dependable political institutions, in the sense that its policymakers cannot credibly pre-commit to certain trade policy choices, whereas policymakers in the large country can do so (by relying on certain institutionally available commitment devices). This assumed institutional difference between developing and developed countries, which drives our analysis of the transition to long-run cooperation, seems to be supported by available evidence. For example, if we rely on the World Bank indicator of institutional credibility,\textsuperscript{16} industrialized countries are characterized by much more credible

\textsuperscript{16}This index—ranging from a minimum of one to a maximum of six—is meant to measure the credibility of governments’ policy announcements. It was constructed by the World Bank and the
institutions than developing countries.\footnote{For example, the World Bank credibility index is 2.37 for Tanzania and 3.87 for the United States.}

Our analysis deals exclusively with the trade-related incentives associated with S&D rules. Any economic gains a large country may experience from gaining access to a small country market will, by definition, be perceived by the large country as being small, and could therefore be overshadowed by other considerations (e.g. relating to defense or security concerns, or even to altruistic motives) in shaping the large country’s trade policies. While we do not deny that this may the case, we show that it is possible to rationalize S&D provisions solely on the basis of trade-related incentives. Trade-related incentives do play an important role in determining the existing structure of S&D preferences.

3.1 The Economic Structure

There are two countries, a home country (no “*”) and foreign country (denoted with a “*”), each producing an exportable good and an import-competing good. As mentioned above, we assume that these two countries differ in two ways. The first difference is with respect to their size: the home country is assumed to be small, i.e. to be unable to affect its term-of-trade, while the foreign country is assumed to be large, i.e. to have monopoly power in trade. The second difference relates to the their domestic institutions: policymakers in the home country are assumed to be unable to precommit to trade policy vis-à-vis their private sector, while in the foreign country there are credible commitment mechanisms. In what follows, we will sometimes refer to the home country as the small country or developing country and to the foreign country as the large or developed country.

In the home country, exportables (domestically produced) and importables (imported and domestically produced import-competing goods) are respectively denoted by $X$ and $Y$, which correspond to importables ($Y^*$) and exportables ($Y^*$) in the foreign country. Each country levies specific trade taxes, $t$ and $t^*$, which drives a wedge between the consumer price in the home country and the producer price in the foreign country. For the purpose of our analysis, it is notationally convenient to represent the small country’s trade tax as an import tariff and the large country’s trade tax as an export tax (relying on a well-known equivalence). The domestic prices of importables are then $p_Y = p_X^* + t^* + t$ and $p_Y^* = p_X^*$. We normalize the fixed terms

\footnote{International Finance Corporation on the basis of a private sector survey conducted during 1996-1998 in seventy-four countries. More than 3,600 firms were asked questions aimed at capturing the reliability of the institutional framework as perceived by the private sector (see Brunetti et al. [1998]).}
of trade faced by the small country (net of any taxes levied by the two countries) to \( p_X/p_X = p_Y/p_Y = 1 \). The domestic relative price of importables in the small country is then \( p_Y/p_X = 1 + t^* + t \equiv p \).

Consumer preferences in the home country are represented by the following quasi-linear 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 and importables can thus be written as \( D_Y(p), D_Y(p) < 0 \). Intertemporal preferences are additively separable, with future payoffs discounted by a constant factor \( \delta < 1 \).

Production of exportables uses labor and exhibits constant-returns-to-scale. Without loss of generality, the constant marginal product of labor is assumed to be unity. The import-competing good is produced using capital alone. In turn, capital (capacity) is produced using labor and a specific factor present in fixed supply (e.g. land). We assume that investors are individually small and forward looking, i.e. they make their choices on the basis of expected prices \( p_E = 1 + t_E + t^*_E \), where the \( E \) subscript denotes expected values. At any given period \( j \) a certain amount of labor must be devoted to generate capital to be employed in the production of import-competing goods in the subsequent period \( j+1 \). The cost at \( j \) of obtaining a certain amount \( S \) of import-competing goods in period \( j+1 \) is given by \( \rho C(S), C'(S) > 0, C''(S) < 0 \)—with convexity implicitly reflecting the presence of the sector-specific factor. Without loss of generality, we shall assume that \( \rho \) is equal to the inverse of the subjective discount factor of investors, \( \delta \), i.e. \( \rho = 1/\delta \). 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 a divergence between expected prices and realized prices will give rise to quasi-rents accruing to domestic investor and equal to the difference between the actual and the expected value of the investment:

\[
(p - p_E)S(p_E).
\]

3.2 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 their quasi-rents. This means that, prior to investment taking place, investors would be unable to commit with respect to 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 incumbent policymakers are semi-benevolent, i.e. their objective function is weighted sum of aggregate welfare and lobbies' surplus:

\[ \Pi \equiv \int_{p}^{\infty} D(z)dz + \int_{0}^{p_E} S(z)dz + t(D(p) - S(p_E)) + (1 + \lambda)(p - p_E)S(p_E), \]  

where \( \lambda \) is a parameter that represents the extent to which the policymaker is “captive” to lobbies. The payoff of the small country’s government is thus a function, \( \Pi(t, t^*, t_E, t^*_E) \), of both expected and actual tariffs.

### 3.3 Unilateral Trade Policy Choices

Suppose that the small country is facing a given large country export tax \( t^* \). The unilaterally optimal import tariff for the policymaker in the small country is than that which maximizes (2), given \( t^* \). If the policymaker could commit to a tariff level before capacity is installed, \( p_E \) would coincide with \( p \), and there would be no quasi-rents to lobby for. Unilateral liberalization would then maximize welfare in the small country as well as the objective of the policymaker, independently of whether or not the policymaker is benevolent. Thus, in this setup lobbying owes its very existence to the inability of policymakers to credibly precommit to trade policy before investment decisions are made, and policy commitment fully removes any effect of lobbying on

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18The arguments we develop here would also apply if investors are sufficiently large that changes in their individual level of investment have a sizable effect on ex-post policies (e.g. the case of a monopoly investor). In this case, investment decisions will not be made on the basis of expected prices, and it will no longer be possible to identify quasi-rents separately from rents. Nevertheless, even in this case lobbying would generate a commitment problem (as in Maggi and Rodriguez-Clare, 1998) resulting in protection bias in comparison with a commitment outcome: the policymaker would like to commit to lower level of protection than those to which the monopolistic investor forces him to by strategically increasing its investment. Whether this scenario or the one described in the paper will apply to a particular sector will depend on its degree of concentration in that sector.

19As 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.
trade policy.\textsuperscript{20}

If policy commitment is infeasible, trade policy choices will have to be made after investment. Then, for a given level of installed capacity, and for $\lambda > 0$, the optimal tariff for the policymaker will be above zero. Given that potential quasi-rents—and hence lobbying pressure—increase with $S(p_E)$, the tariff will be increasing in the level of installed capacity, and hence will be an increasing function, $t(t^*, t_E, t_E^*)$, of the expected tariffs.

Investors, however, will correctly anticipate future tariffs and prices and select their level of investment accordingly, i.e. $S(p_E) = S(p) = S(1 + t + t^*)$. Provided certain monotonicity conditions are met,\textsuperscript{21} this identifies, for a given constant $t^*$, a rational-expectation unilateral equilibrium tariff $t = t(t^*, t, t^*) = t_R(t^*)$. Since investors rationally anticipate actual prices, the level of quasi-rents is zero in such an equilibrium; nevertheless, tariff changes produce a non-zero effect on quasi-rents, which translates into ex-post lobbying pressure and a positive equilibrium tariff.

Given that equilibrium quasi-rents are zero, the term associated with lobbying pressure in policymaker’s objective function vanishes in equilibrium. Thus, for a given $t^*$, the policymaker in the small country will always be strictly worse off in an equilibrium with $t_R(t^*) > 0$ than under unilateral liberalization, and therefore the latter would always be the preferred outcome for the policymaker even if the inability to precommit may prevent the policymaker from achieving it. That is, trade liberalization in small country is optimal from a long-run perspective but not be credible in the short run—a time consistency problem which traps the small country in a vicious circle of inefficient

\textsuperscript{20}This contrasts with the analysis of Maggi and Rodriguez-Clare (1998), who focus on a small country whose policymakers suffer from a commitment problem but are under the influence of lobbying by specific factor owners, implying that their optimal policy is not free trade.

\textsuperscript{21}Since the capacity installed is an increasing function of expected tariffs and tariffs are increasing in the installed capacity, the solution could be exploding. We thus need to determine the conditions for a rational-expectation equilibrium to exist and to be unique. 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 $S(p)$. Suppose $S(1 + t^*) > 0$, implying that $t(t^*, t, t^*) > 0$ for $t \geq 0$, and that therefore $t = 0$ is not an equilibrium outcome. Then, a sufficient condition for a pure-strategy rational-expectations equilibrium with $t > 0$ to exist is $S''(p) < 0$ for all $p$ (this ensures that there is there exists a level $S'$ such that for $S > S'$ the difference $1 + t^* + t(S) - S^{-1}(S)$—where $S^{-1}(S)$ denotes the inverse function of $S(.)$—is monotonically decreasing in $S$ at a non-decreasing rate and that it will therefore reach 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.) Suppose $S(1) = 0$, implying $t(t^*, t, t^*) = 0$. Then an equilibrium with $t = 0$ will always exist, possibly alongside other pure-strategy equilibria with $t > 0$. 

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protection and inefficient investment allocation.\textsuperscript{22}

Consider now the large country’s trade policy choice. The policymaker in the large country will simply choose an export tax which maximizes its surplus, given the tariff chosen by the small country.\textsuperscript{23} Neglecting domestic surplus—which can be taken as constant—the surplus the large country derives from trading with the small country (the value of market access) is simply equal to the revenue from export taxation:

$$\Pi^* \equiv t^*(D(p) - S(p_E));$$  \hspace{1cm} (3)

this is a function, $\Pi^*(t, t^*, t^*_E)$, of tariffs as well as of the capacity installed in the small country—which is in turn a function of expected tariffs. The large country’s optimal export tax choice can be summarized by a reaction function $t^*(t, t^*, t^*_E)$.\textsuperscript{24} The equilibrium conditions $t = t(t^*, t, t^*_E)$ and $t^* = t^*(t, t, t^*_E)$ together identify Nash equilibrium trade taxes

$$t_N \geq 0, \quad t^*_N > 0.$$  \hspace{1cm} (4)

As we noted earlier, for any given level of $t^*$, a zero import tariff would be an optimal response for the small country, both in terms of maximizing the objective of its policymaker and its aggregate welfare. When we account for the large country’s response in a retaliation equilibrium, however, the presence of the commitment problem in the small country, if it is not too severe ($\lambda$ small), may be beneficial to the small country, as it serves as a credible commitment to set high tariffs, which the large country may find it optimal to accommodate.\textsuperscript{25} Nevertheless, if the commitment problem is sufficiently severe ($\lambda$ sufficiently large), it will still hurt the small country in comparison with an outcome where $\lambda = 0$—e.g. if the resulting $t^*_N$ is large enough to result in a shutdown of trade. In this case, even accounting for accommodation by the large country, the policymaker in the small country would have an interest to achieve unilateral liberalization but would be unable to do so.

\textsuperscript{22}Since we do 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. Explicitly modelling growth, however, would not alter the structure of the problem, nor fundamentally affect conclusions.

\textsuperscript{23}We could equivalently think of a scenario where large country exporters are oligopolists charging a mark-up which falls short of the (surplus-maximizing) monopolistic markup, and where the gap between the oligopoly and monopoly mark-up is bridged by an export-tax. Then $t^*$ would represent a combination of private sector markup and export tax.

\textsuperscript{24}Notice that tariffs could be strategic complements or substitutes, depending on the import demand elasticity, but this does not affect our analysis.

\textsuperscript{25}In other words, the Stackelberg equilibrium tariff for a small country may be positive.
4 Long-run Trade Liberalization

In this section we examine the possibility of sustaining trade liberalization in the small country under infinite repetition of the stage-game.

Let us first consider a scenario where the small country is facing a constant \( t^* \). A tariff \( t_L < t_R(t^*) \) could then be sustained unilaterally by the small country in a “reputation” equilibrium where a deviation from \( t_L \) in any given period results in investors indefinitely reverting to the expectation of a tariff \( t = t_R(t^*) \). Then \( t_L \) is sustainable as long as the small country’s temptation to deviate is less than or equal to the discounted cost of the reversion to \( t_R(t^*) \):

\[
\Pi(t(t^*, t_L, t^*), t^*, t_L, t^*) - \Pi(t_L, t^*, t_L, t^*) \leq \frac{\delta}{1-\delta} (\Pi(t_L, t^*, t_L, t^*) - \Pi(t_R(t^*), t^*, t_R(t^*), t^*)),
\]

where \( \delta \) is the discount factor by which the government discount future payoffs, which for simplicity we will assume to be the same as for investors.

Consider now a scenario where there is a trade agreement between the two countries sustained by Nash-reversion punishment strategies, i.e. any deviation from agreed-upon policies \((t_L, t^*_L)\) triggers indefinite reversion to \((t_N, t^*_N)\). Then the agreement is sustainable for the small country as long as its temptation to deviate is less than or equal to the discounted cost of Nash reversion:

\[
\Pi(t(t^*_L, t_L, t^*_L), t^*, t_L, t^*_L) - \Pi(t_L, t^*_L, t_L, t^*_L) \leq \frac{\delta}{1-\delta} (\Pi(t_L, t^*_L, t_L, t^*_L) - \Pi(t_N, t^*_N, t_N, t^*_N)).
\]

If we compare this condition with the unilateral reputation condition (5), we can note that, for \( t^* = t^*_L \), the only difference is in the reversion payoffs, which are respectively \( \Pi(t_R(t^*_L), t^*_L, t_R(t^*_L), t^*_L) \) (in the unilateral reputation case) and \( \Pi(t_N, t^*_N, t_N, t^*_N) = \)

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\(^{26}\)Nash reversion punishment strategies have been criticized by Farrell and Maskin (1989) on the basis that they are not renegotiation proof. When only lobbying for quasi-rents is present, there can be no scope for trade cooperation under renegotiation proofness. This is because, if the optimal tariff with commitment in the small country is zero in the punishment phase, any Pareto efficient tariff combination would involve \( t = 0 \) and in turn this means that the large country would have to “punish itself”. Long-run cooperation between a large and a small country under renegotiation proofness may only be possible if there is some non-vanishing lobbying pressure in the small country (e.g. lobbying by owners of specific factor in the import-competing sector). As we mentioned already, setup can be readily augmented by allowing for lobbying by the owners of specific factors, without altering the structure of our argument.
Π(t_R(t^*_N), t^*_N, t_R(t^*_N), t^*_N) (in the trade agreement case). A sufficient condition for the latter to be smaller than the former is that \( t^*_L < t^*_N \), i.e. that the trade agreement involves bilateral liberalization in comparison with the Nash retaliation outcome. Then, a trade agreement involving conditional reciprocity may make it easier for the small country to overcome its commitment problem as it introduces an additional carrot-and-stick mechanism that would not otherwise be present.

**Proposition 1** The degree of patience (the minimum discount factor, \( \delta \)) required for the small country to sustain \( t_L \) unilaterally for a given \( t^*_L < t^*_N \) (i.e. through a unilateral reputation mechanism) is greater than that required to sustain liberalization in a relationship of conditional reciprocity with the large country.

Thus, reciprocal concessions by the large country, while not a necessarily condition for trade liberalization to benefit the small country, may nevertheless be a necessary condition for trade liberalization to be sustainable by the small country.\(^{27}\)

The agreement must also be sustainable for the large country:

\[
\Pi^*(t_L, t^*(t_L, t_L, t^*_L), t_L, t^*_L) - \Pi^*(t_L, t^*_L, t_L, t^*_L) \\
\leq \frac{\delta^*}{1-\delta^*}(\Pi^*(t_L, t^*_L, t_L, t^*_L) - \Pi^*(t_N, t^*_N, t_N, t^*_N)).
\]

(7)

For a combination \( (t_L, t^*_L) \neq (t_N, t^*_N) \) to be sustainable in this way, the right-hand sides of conditions (6) and (7) must both be positive, i.e. \( (t_L, t^*_L) \) must Pareto dominate \( (t_N, t^*_N) \).

Note that an equilibrium with \( t_N = 0 \) would result in the highest possible payoff for the large country. This implies that, if \( \lambda = 0 \) and therefore the small country does not face a commitment problem, no alternative feasible combination of tariffs can Pareto dominate the Nash tariffs, and therefore there is no scope for international trade cooperation. But if \( \lambda > 0 \), there will exist alternative trade policy combinations which Pareto dominate the one-shot Nash outcome. For example, holding the large country’s export tax at \( t^*_N > 0 \), lowering the small country’s tariff from \( t = t_N > 0 \) to \( t = 0 \) will benefit both the small country—as it raises its policymaker’s payoff—and

\(^{27}\) Lack of reciprocal concessions could alternatively be characterized as the case where \( t^* \) is not exogenously fixed but is always a one-shot best response to \( t \), i.e. where \( t^* = t^*(t, t_E, t^*_E) \). If we look at this scenario, however, we reach the same conclusions as with \( t^* \) is fixed: the Nash reversion payoff is the same as that which follows from a break-down of an agreement with \( t^*_L < t^*(t_L, t_L, t^*_L) \), but the cooperative payoff is higher in the latter case, implying that the punishment to the small country for deviations is greater; moreover, the one-shot gain to the small country of deviating from a given \( t_L \) is decreasing in \( t^* \) and is therefore less for \( t^*_L < t^*(t_L, t_L, t^*_L) \) than for \( t^* = t^*(t_L, t_L, t^*) > t^*_L \).
the large country—because it increases access to the small country’s market. Helping the small country to overcome its policy commitment problem may thus also be in the large country’s best interest. This can be summarized as follows:

**Proposition 2** If the small country’s policymaker can credibly commit to trade policies (or, equivalently, if $\lambda = 0$) there is no scope for trade cooperation between the large and the small country. If the small country’s policymaker cannot credibly commit, for $\lambda$ sufficiently large there always exist an agreement with tariffs $(t_L^*, t_L)$ that Pareto dominates the one-shot Nash tariffs, $(t_N^*, t_N^*)$.

In this limit large/small country case, the presence of lobbying together with the inability to commit are thus necessary conditions for the small country to be able to engage the large country in a trade deal.28

Thus, the small country’s inability to liberalize unilaterally may be instrumental for securing conditional and reciprocal concessions by the large country: not only can the small country rely on reciprocity vis-à-vis a large partner to overcome its commitment problem, but it can also leverage on its inability to precommit to engage a large partner that would otherwise have no interest in trade policy cooperation. In this sense, the commitment problem can be beneficial to the small country even when it makes the one-shot tariff retaliation outcome worse for the small country, because it enables the small country to “credibly commit” to high tariffs were cooperation to break down.

## 5 S&D Rules and the Transition to the Long-run Agreement

Our analysis so far has produced predictions that are in line with the idea that the small country faces a liberalization problem for which it needs outside help—help which the large country has an interest in offering (consistently with the stated function of S&D rules). What it does not do is explain the temporary nature of S&D treatment. However, as we shall show in this section, it can do so if stock effects are introduced into the previous modeling framework.

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28The thrust of our argument would also apply to a scenario where the developing country has some market power. In that case the presence of a commitment problem, while not essential for engaging the large country in an agreement, would nevertheless broaden the scope for cooperation. We choose to focus on the small country case as this best illustrate the commitment mechanism upon which our argument is based (by isolating it from terms-of-trade effects), but all the results that we derive below for the small country case can be extended to the general case.
When capacity in the import-competing sector depreciates in a single period—as it has been assumed in our analysis so far—transition to a long-run cooperative arrangement, if sustainable, can take place in a single step. Hence, there would be no role here for transitional S&D provisions. In the analysis that follows, however, we shall show that, if capacity depreciates more slowly, the two countries face an additional transitional constraint. Then, under certain conditions, a cooperative equilibrium path will exhibit features consistent with S&D provisions.

Suppose that capacity in the small country’s import-competing sector depreciates slowly, but there is no lobbying by recipients of quasi-rents. Given that the cost of the installed capacity is sunk, the optimal trade policy for the small country is the same—a zero tariff—in the transition as it is in the long run, and so are cooperation incentives. Thus, stock adjustments cannot by themselves justify the need for a transitional trade policy regime. As we shall show, however, S&D rules can be rationalized as a transitional equilibrium phenomenon in the presence of both slowly depreciating stocks and lobbying by recipients of quasi-rents in the small country’s import-competing sector.

In what follows, we will focus on an agreement \((t_L, t_L^*)\) which, for given discount factors \(\delta\) and \(\delta^*\) can “just be sustained” in the long run, i.e. for which both (6) and (7) are met with equality.\(^{29}\)

Let \(S_L \equiv S(1 + t_L + t_L^*)\) be the equilibrium capacity of the small country’s import-competing in such a trade deal. If, starting from a higher level, capacity can immediately be adjusted downwards, it would be possible at any point in time to “jump” to the agreement \((t_L, t_L^*)\). If, however, capacity cannot immediately be adjusted to its long-run equilibrium level (as argued by Brainard and Verdier, 1997), the small country might face transitional constraints, i.e. might not be able to reach the long-run low-tariff agreement instantaneously. To develop our argument, we shall simply 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 \(S_{j+1} = (S_j + N_j)(1 - \phi)\).

Also assume 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)) -

\(^{29}\)Notice that this is not necessarily the agreement characterized by lowest overall barriers or the highest volume of trade; nor is it necessarily a constrained efficient agreement. However, all Pareto efficient deals characterized by positive tariffs will have the characteristic of being “just sustainable”.

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\[ C(S_j(1 - \phi)) \] where, without loss of generality, \( \Gamma \equiv \delta/(1 - \delta(1 - \phi)) \). If the expected domestic price of importables from \( j + 1 \) onward 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 \( p_E = C'(S_{j+1}) \) as before. If, the path of future prices is not stationary, however, the optimal investment condition will be different, as will be detailed below for the case of a two-period transition.

For simplicity, in our analysis we will focus on the situation described by Figure 1, in which the long-run agreement \((t_L, t^*_L)\) can be reached in two periods: at period \( j - 2 \) countries agree about their transitory and long-run tariffs; at period \( j - 1 \) they implement transitory tariffs \((t_T, t^*_T)\); from period \( j \) onwards, they select long-run tariffs \((t_L, t^*_L)\). Notice that, starting from a certain level of installed capacity, \( S_0 \), at \( j - 2 \)—inherited from earlier periods—and given the rate of depreciation, \( \phi \), it may conceivably be possible to reach the long-run equilibrium in two periods—given the rate of depreciation \( \phi \)—but it is not possible to do so in one period, i.e.

\[
\frac{S_L}{(1 - \phi)^2} \geq S_0 \geq \frac{S_L}{1 - \phi}.
\]

(9)

This can be thought of a scenario where the transition to long-run tariffs lasts for two periods, or, alternatively, as the final two periods of a longer process of transition to a long-run equilibrium.

We can then focus on the one-period transition agreement, \((t_T, t^*_T)\), at \( j - 1 \), which might be needed to get to the long-run deal, \((t_L, t^*_L)\), at \( j \). The long-run agreement 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 \( S_L/(1 - \phi) \equiv S_T \). Thus, convergence to the long-run agreement at \( j \) requires, at \( j - 1 \), sufficiently low transitional tariffs, which must also be part of an overall self-enforcing agreement between the two countries, i.e. both transitional and long-run tariffs must be sustainable given the two countries’ deviation incentives and the punishment that accompanies deviations.

Note that the punishment for deviating from the transition agreement is the same as the punishment for deviating from the long-run agreement: if a country deviates from transitional tariffs at \( j - 1 \), from \( j \) onwards it will face Nash tariffs \((t_N, t^*_N)\) rather than the cooperative tariffs \((t_L, t^*_L)\). In contrast, transitional deviation incentives differ from long-run deviation incentives due to the fact that the small country’s import-competing

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\(^{30}\)As discussed earlier, when they signed the Uruguay Round Agreements in 1994, WTO members agreed on implementation periods of different length. Our analysis could easily adjusted to the case of longer transition periods.
capacity is larger at \( j - 1 \) than at \( j \). It follows that during the transition there are larger quasi-rents to be earned in the small country, and its import demand is also more elastic. In turn, this implies that the small country faces a stronger temptation to deviate from the agreement and the large country faces a weaker temptation to deviate from the agreement in comparison with the long run.

Let us first examine the transitional deviation incentives for the small country. The capacity at \( j - 1 \) installed at \( j - 2 \) on the basis of the tariffs expected at \( j - 2 \) can be determined as follows. If transition is completed in two periods, prices will remain constant from period \( j \) onwards. Then, we can identify a function \( \tilde{S}_T \) relating capacity to the transitional gross-of-tariff price of importables, i.e. \( \tilde{S}_T(t_T, t_T^* + t_T) \) with \( \tilde{S}_T(\cdot) > 0 \).\(^{31} \) This represents the optimal level of capacity when there is positive Investment in capacity at \( j - 2 \), otherwise, capacity will be \( S_0(1 - \phi) \). So, capacity during the transition can be expressed as

\[
S_T(t_T, t_T^*) \equiv \max\{S_0(1 - \phi), \tilde{S}_T(1 + t_T^* + t_T)\}. \quad (10)
\]

The small country’s cooperative payoff during the transition is given by

\[
\Pi_T \equiv \int_{p_T}^{\infty} D(p)dp + PS + t_T(D(p_T) - S_T(t_T, t_T^*)) \quad (11)
\]

where \( PS \) denotes producer surplus and \( p_T = 1 + t_T + t_T^* \) is the domestic price associated with the transitional tariffs. The payoff of the small country if it deviates during the

\(^{31}\)The present value, at \( j - 2 \), of the revenue flow from a level of investment \( N_{j-2} \) can be expressed as \( \delta(1 - \phi)N_{j-2}p_T + [\delta^2(1 - \phi)^2/(1 - \delta(1 - \phi))]N_{j-2}p_L \). Then, letting \( S_T = (1 - \phi)(S_{j-2} + N_{j-2}) \) and equating marginal revenue with the marginal cost of investment gives \( C'(\tilde{S}_T) = (1 - \delta(1 - \phi))p_T + \delta(1 - \phi)p_L \).
deviation tariff from transition is

\[
\Pi_D^T ≡ \int_{p_D}^{\infty} D(p)dp + PS + t_D(D(p_D) - S_T(t_T, t^*_T)) \\
+ (1 + \lambda)(p_D - p_T)S_T(t_T, t^*_T),
\]

where \( p_D = 1 + t_D + t^*_T \) is the price of importables when the small country unilaterally deviates from the transition agreement. Subtracting (11) from (12) we obtain an expression for the transitional deviation gain for the small country:

\[
Δ_T ≡ \int_{p_D}^{p_T} D(p)dp + t_D D(p_D) - t_T D(p_T) + \lambda(T - t_T)S_T(t_T, t^*_T)).
\]

It can be easily verified that \( \partial Δ_T / \partial S_T > 0, \partial Δ_T / \partial t_T < 0 \) and \( \partial Δ_T / \partial t^*_T = 0 \). Proceeding in the same way for the large country, we obtain:

\[
Δ^*_T ≡ t_D^*(D(1 + t_D^* + t_T) - S_T(t^*_T, t_T)) - t_T^*(D(1 + t^*_T + t_T) - S_T(t^*_T, t_T)).
\]

Again, one can verify that \( \partial Δ^*_T / \partial S_T < 0, \partial Δ^*_T / \partial t_T^* < 0 \) and \( \partial Δ^*_T / \partial t_T = 0 \).

Thus, during the transition (at \( j - 1 \)), the small country faces a stronger temptation to deviate from the agreement in comparison with the long-run (from \( j \) onwards), while the opposite is true for the large country. It then follows that

**Proposition 3** In the transition period, the minimum \( t \) that can be supported in the small country for a given \( t^* \) and the minimum \( t^*_T \) that can be supported in the large country for a given \( t \) are respectively smaller and larger than the corresponding minimum tariffs that can be supported after the transition.

This, however, does not imply that transitional tariffs must exhibit this pattern in comparison with long-run tariffs. In order to characterize the set of sustainable transitional tariffs we need to consider both unilateral policy deviation incentives and investment incentives in the small country’s import-competing sector. Specifically, given “just sustainable” long-term tariffs \( (t_L, t^*_L) \), sustainable transitional tariffs \( (t_T, t^*_T) \) are identified by the following set of conditions:

1. For each country, transitional deviation gains are less than or equal to long-run deviation gains:

\[
Δ_T(t_T, t^*_T, S_0) ≤ Δ_L(t_L, t^*_L, S_L),
\]

\[
Δ^*_T(t_T, t^*_T, S_0) ≤ Δ^*_L(t_L, t^*_L, S_L).
\]
2. For given expected tariffs \((t_T, t_T^*)\), capacity at \(j - 1\) is less than or equal to \(\overline{S}_T \equiv S_L/(1 - \phi)\):

\[
S_T(t_T, t_T^*) \leq \overline{S}_T. \tag{17}
\]

These conditions identify a (possibly empty) set of feasible transitional tariff combinations, whose characteristics depend on the parameters of the problem. In order 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 two period transition is feasible, i.e. where \(S_0(1 - \phi)^2 = S_L\). In such borderline scenarios, if we take \(S_0\) as exogenous and make it progressively closer to \(S_L\), the sustainable transitional tariffs will approach \((t_L, t_L^*)\). Let

\[
\left( \frac{\partial t_T}{\partial S_0} \right)_{S_0=S_L} \equiv \theta, \tag{18}
\]

and

\[
\left( \frac{\partial t_T^*}{\partial S_0} \right)_{S_0=S_L} \equiv \theta^*; \tag{19}
\]

i.e. \(\theta\) and \(\theta^*\) are the marginal differences between transitional and long-run tariffs in the neighbourhood of a limit scenario with \(S_0 = S_L\). Then, for \(S_0\) approaching \(S_L\) and \(\phi = 1 - (S_0/S_L)^{1/2}\), transition to \((t_L, t_L^*)\) is feasible from \(j\) onwards, passing through a single transitional period with tariffs \((t_T, t_T^*)\)—i.e. conditions (15) - (17) are met—if there exist a combination \((\theta, \theta^*)\) that satisfies the following system of linear inequalities:

\[
\frac{\partial \Delta}{\partial t} \theta + \frac{\partial \Delta}{\partial S} \leq 0, \tag{20}
\]

\[
\frac{\partial \Delta^*}{\partial t^*} \theta^* + \frac{\partial \Delta^*}{\partial S} \leq 0, \tag{21}
\]

\[
(\theta + \theta^*) S'(p) - 1 \leq 0. \tag{22}
\]

For condition (20) to be satisfied, given that \((\partial \Delta)/(\partial t) < 0\) and \((\partial \Delta)/(\partial S) > 0\), \(\theta\) must be greater than or equal to a critical level \(\hat{\theta} = -(\partial \Delta/\partial S)/(\partial \Delta/\partial t) > 0\). This implies that \(t_T > t_L\), i.e. during the transition the small country’s tariff must always be higher than the following long-run tariff. We can thus state the following result:

**Proposition 4** When capacity in the import-competitive sector of the developing country cannot immediately adjust and the rate of depreciation of capacity is sufficiently small, the developing country must always liberalize gradually. Therefore the temporary protection component of S&ID treatment is a necessary condition for the transition to a low-tariff long-run agreement.

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Consider now the incentive constraints of the large country. Since given \((\partial \Delta^*)/(\partial t^*) < 0\) and \((\partial \Delta^*)/(\partial S) < 0\), \(\theta^*\) can be negative or positive. Let \(\hat{\theta}^*\) be the minimum \(\theta^*\) for which (21) is satisfied, i.e. \(\hat{\theta}^* = - (\partial \Delta^*/\partial S) / (\partial \Delta^*/\partial t^*)\). This value is negative. Plugging then \(\hat{\theta}\) and \(\hat{\theta}^*\) into condition (22), we obtain the following prediction about the access component of S&G treatment (GSP):

**Proposition 5** Under the assumptions of Proposition 4, temporary GSP might or might not be necessary for a fast transition to the long-run agreement:

(i) if \(\tilde{S}'(p) \leq 1/\hat{\theta}\), there is no sign restriction on \(\theta^*\), i.e. the long-run agreement can be reached in two periods with \(t_T^*\) smaller, larger or equal to \(t_L^*\);

(ii) if \(1/(\hat{\theta} + \hat{\theta}^*) > \tilde{S}'(p) > 1/\hat{\theta}\), \(\theta^*\) must be negative, implying that GSP \((t_T^* < t_L^*)\) is necessary to reach the long-run agreement in two periods;

(iii) if \(\tilde{S}'(p) > 1/(\hat{\theta} + \hat{\theta}^*)\), then a two-period transition is not feasible.

Note that the critical values \(\hat{\theta}\) and \(\hat{\theta}^*\) are obtained for a constant given level of capacity, and are therefore independent of investment responses. Intuitively, rapid transition will be easier the less responsive investment in the import-competing sector is to prices.\(^{32}\)

Propositions 4 and 5 imply that the observation that countries dropped from the US GSP program become less protectionist—as stressed, for example, by Özden and Reinhardt (2003)—should not be interpreted as evidence that GSP delays liberalization. On the contrary, our theoretical analysis shows that a temporary reduction in tariffs by the large country may be required to secure rapid transition, even if this must be always be accompanied by transitionally higher tariffs in the small country. Under such an agreement concessions are linked by conditionality, even if only implicitly.

\(^{32}\)Quasi-rents in a certain period have been assumed to reflect only the gap between unanticipated prices and the prices that were anticipated in the period that immediately precedes the policy change; i.e., once a change is anticipated any windfall gain or loss associated with undepreciated investment is assumed to become sunk. If we instead took quasi-rents as reflecting the difference between the actual value of the investment and the value that was anticipated at the time investment took place, then there would be some positive quasi-rents arising from the undepreciated portion of installed capacity when reverting to Nash—even if the punishment path is fully anticipated after a deviation occurs. These quasi-rents would be larger in the transition in comparison with the long run. Thus, there would be an additional reason for having comparatively higher transitional tariffs in the small country, and an even stronger need for GSP treatment to facilitate transition, strengthening our conclusions.
Furthermore, concessions are traded intertemporally (i.e. they are not simultaneous).\footnote{Our analysis only focuses on bilateral trade in the absence of third-country trade; accordingly, we characterize preferences in terms of the difference between the tariffs faced by a GSP beneficiary during the transition and the MFN tariffs faced by the same country after graduation. In a setup with more than two countries, preferential market access during the transition is commonly understood as reflecting the difference between GSP tariffs and MFN tariffs faced by non-GSP countries during the transition. Such a difference has been shrinking over time, as a result of continuing trade liberalization on a MFN basis. For example, Amjadi \textit{et al.} (1996) show that pre-Uruguay Round tariff rates in three major OECD markets (the European Union, Japan, and the United States) on the imports of non-oil products from sub-Saharan African countries averaged 4.56 percent and the margin of preferences was estimated at 4.25 percent. After the Uruguay Round, these figures fell to 2.68 and 2.47, respectively. In a multilateral environment, if the pre-transition MFN tariff is higher than the corresponding post-transition value, the effect of a given GSP preferential tariff on bilateral trade during the transition—other things equal—would be larger because of trade diversion.}

Along this transitional equilibrium path, the withdrawal of seemingly unilateral tariff concessions by the large country is accompanied by increased liberalization in the small country.\footnote{Our analysis of the properties of the transition has only relied on comparisons of deviation incentives; therefore it applies independently of the punishment strategies adopted (including strategies that satisfy renegotiation-proofness), as long as the punishment for transitional deviation is the same as the punishment for long-run deviations.} However it is not the withdrawal of tariff concessions that produces liberalization; rather it is the implied threat of Nash reversion that becomes comparatively more effective once transition to a long-run tariff equilibrium has occurred. Thus, GSP graduation does not necessarily mean that the “carrot” is taken away from the small country: a carrot-stick mechanism will still be at work in the long-run agreement.\footnote{Notice, however, that it is also possible for conditionality to disappear in the long-run once transition has taken place: nothing in the preceding analysis rules out the case in which the long run tariff is just the unilaterally sustainable tariff, i.e. $t^*_L = t^*(t_L, t_L, t^*_L)$. But even in such a scenario, transitional cooperation may be present in the form of a transitionally lower tariff by the large country. In this case, the large country would only be engaged transitionally to help the small country reach conditions under which it can sustain liberalization unilaterally (through a reputation mechanism). However, even in this scenario conditionality is present, albeit implicitly, because each country’s effort to facilitate liberalization must be reciprocated by the other during the transition in order to be effective, and each country is able to sustain lower tariffs during the transition only on condition that the other country participates in the effort.}

S&D treatment of developing countries has been criticized for being in violation of the principle of reciprocity, according to which GATT/WTO members should exchange “substantially equivalent concessions.” Our analysis shows that S&D rules can be rationalized as a conditional exchange of trade concessions across different periods, when
simultaneous reciprocal liberalization is not possible. Our interpretation is supported by the explicit trade requirements included in some GSP programs, such as the eligibility criteria for US GSP status. Also, whether or not conditionality is present cannot be determined solely on the basis of the letter of legal documents, since conditions may be implicit (tacit)—as is often the case, for example, when concessions are exchanged across different policy dimensions.  

As stressed by Youssef (2003), “S&D treatment constitutes an integral part of the balance of rights and obligations of the Uruguay Round Agreements as a whole. [Developing countries ... ] accepted the obligations in the expectation that some of their concerns would be addressed and dealt with through S&D provisions.” WTO rules need formally only allow for S&D provisions rather than prescribe them: as higher transitional protection by the small country affects all parties in a multilateral system, it must be formally sanctioned by multilateral rules; on the other hand, a lower transitional tariff by a large country can be legally described as a discretionary concession by the large country, which needs to be sanctioned by multilateral rules (through the Enabling Clause) only to the extent that it violates the MFN principle of non-discrimination.

The preceding analysis has established that the structure of transitional and long-run tariffs can be consistent with observed S&D treatment. It can also be shown that it is consistent with the trade-test graduation criterion applied by many granting countries, whereby GSP status is lost if its exports surpass a given threshold. Given that equilibrium transition that we have described capacity has to be declining ($S_T < S_0$); this implies that the gross-of-tariffs transitional price (at $j−1$) has to be less than the pre-transition price (at $j−2$). Hence the volume of trade will have to increase in the transition.

Furthermore, the equilibrium transition we have described is consistent with income-
based GSP graduation test.\textsuperscript{38} given that $S_T \leq S_0$, and as long as the large country’s export tax is less at $j - 1$ than at $j - 2$, welfare (real income) in the small country will be greater in the transitional period than before.\textsuperscript{39}

Results on welfare comparisons for both countries are summarized by the following proposition:

\textbf{Proposition 6}  \textit{In the regime where both S\&D provisions are present, the following is welfare comparisons hold: both countries gain in a long-run agreement in comparison with a no-agreement situation ($(\Pi_L > \Pi_N)$ and $(\Pi_L^* > \Pi_N^*)$); compared with a no-agreement situation, the developing country will always gain by entering the transition phase of the agreement ($\Pi_T > \Pi_N$), while the large country might gain or lose ($\Pi_T^* \lessgtr \Pi_N^*$); compared to the transition period, the large country will always gain in the long-run agreement ($\Pi_L^* > \Pi_T^*$), while the small country might gain or lose ($\Pi_L \lessgtr \Pi_T$).}

\textbf{Proof:} The comparison between the Nash equilibrium $(t_N, t_N^*)$ and the long-run tariff equilibrium $(t_L, t_L^*)$ is straightforward: unless the two coincide, cooperation yields by construction a higher welfare for both countries than no cooperation. Consider now the small country. Compared with the Nash equilibrium, the transition phase involves a reduction in both tariffs, so the small country unambiguously gains.\textsuperscript{40} The comparison of the small country’s welfare during and after the transition is ambiguous: we can construct scenarios under which the small country will gain by moving from the transition to the long-run agreement\textsuperscript{41} and others under which it will lose.\textsuperscript{42} Finally, consider

\textsuperscript{38}For example, Section 502(c) of US GSP law includes the level of per capita income as one of the criteria to graduate beneficiary countries. In 1998 the United States dropped Aruba, Cayman Islands, Cyprus, Greenland, Macau, and the Netherlands Antilles from its GSP Program, after these countries become “high income” (i.e. per capita income of $8,956 or more) as defined by the World Bank.

\textsuperscript{39}Our model does not explicitly incorporate economic growth, so GDP growth can only be measured here in terms of changes in real income. Nevertheless, our setup could be augmented to incorporate growth mechanisms, including technological growth mechanisms lead by trade, without affecting the nature of our argument.

\textsuperscript{40}Remember that it is assumed that $\lambda$ is large enough that the Nash equilibrium is above the Stackelberg equilibrium, so that we can properly talk of the small country having a commitment problem under no cooperation. Therefore, for any given $t^*$, any reduction from $t_N$ is beneficial for the developing country. Also, for any given $t$, a reduction in the export tax of the large country, $t^*$, will always imply a gain in consumer surplus for the small country.

\textsuperscript{41}Consider a situation in which during the transition the large country grants GSO by a minimum amount $\epsilon$ (i.e. $\theta^*$ is negative but tending to zero). Then in this case, being graduated with have almost no effect, while being able to further liberalize from $j$ onwards will unambiguously benefit the small country.

\textsuperscript{42}Suppose that we are in a regime in which $\theta = \hat{\theta}$ and $\theta^* = \hat{\theta}^*$, a situation in which you need to
the large country. Under the regime in which both components of S&D treatment are positive (i.e. $\theta > 0$ and $\theta^* < 0$), the large country must unambiguously gain from moving from the transition to the post-transition phase, since an increase in its own tariff and a fall in the tariff of the small country both increase its monopoly profits. Instead, the welfare comparison between the Nash and transition equilibrium for the large country is ambiguous: under some scenarios it will gain,$^{43}$ while under others it will lose.$^{44}$

Thus, both countries unambiguously favor the long-run low-tariff deal compared to a situation of no trade agreement. The issue is simply “how to get there ” if, due to institutional constraints in the small country (i.e. the existence of a commitment problem and capacity constraints), it is not possible to simply “jump” to the long-run deal. Our analysis shows that this can be done through exchanges of concessions across time periods: the large country might willingly accept a drop in the surplus it can extract from the small country in the transition in order to secure a long-run surplus gain; one the other hand, the small country knows that, after temporarily receiving S&D treatment aimed at disentangling it from its institutional problems, might have to accept a welfare drop.$^{45}$

Finally, although our analysis has abstracted from growth effects, it is worth noting that the mechanism we have described can be at work whether or not there exist significant growth spillovers from trade liberalization: in this interpretation, S&D rules use GSP at the maximum and temporary protection at the minimum to be able to reach the long-run agreements in two periods. Then, assume that $\theta = \theta^*$; moving the transition to the long-run the small country will experience a loss in consumer surplus (due to the increase in $t^*$), which will be compensated by a gain in consumer surplus (due a reduction in $t$). However, the small country will lose tariff revenues.

$^{43}$Suppose, for example, that the long-run agreement involves a tariff $t^*_L$ very close to $t_N^*$; also suppose $\theta^*$ is negative but close to zero, implying that $t^*_T$ is very close to $t_L$ and $t_N^*$; since the move from the Nash equilibrium to the transition involves some trade liberalization from the small country (i.e. $t_T < t_N$), then it must be that $\Pi_T^*(t^*_T, t_T) > \Pi_N^*(t_N^*, t_N)$.

$^{44}$Imagine a situation in which the payoff of the large country under cooperation is very close to the Nash payoff, so that the punishment of Nash-reversion tends to zero. Also suppose, that the discount factor $\delta$ is close to unity. Then it is always possible to have a regime in which S&D preferences have to be so strong (i.e. $\theta$ and $\theta^*$ high enough) that the move from the Nash equilibrium to the transition becomes welfare reducing for the large country.

$^{45}$Notice, however, this not necessarily the case: as shown in Proposition 6, there exist equilibrium paths under which the developing country will experience a progressive improvement in welfare despite its loss of GSP status. In other words, the small country may favor the post-transition outcome not only relative to the no agreement scenario, but also relative to the transitional outcome.
respond directly to problems of implementation, and only indirectly (if at all) to the presence of trade-related development effects.

6 Competing Explanations

In this section we consider a number of competing theoretical explanations for the structure of S&D rules. We do not claim this discussion to be exhaustive; nevertheless, it should demonstrate that most of the mechanisms that are usually thought of as being responsible for protection bias in developing countries cannot easily explain the structure of S&D treatment and its temporary nature.

6.1 Revenue Constraints

It is well known that revenue requirements are a possible source of tariff protection bias in developing countries. The absence of well-developed formal markets and monitoring mechanisms makes taxation of domestic transactions difficult to administer; trade taxes then become an essential source of public funds—in many developing countries tariff revenues account for 10-20% of total revenues.

However, it is difficult to imagine how a revenue-based bias would, by itself, translate into divergence between transitional and long-run liberalization incentives. On the other hand, if lobbying by quasi-rent recipients is also present, the commitment problem they generate will be compounded by the presence of a tariff revenue premium: a marginal premium on tariff revenues in the objective function of the small country translates into even higher tariffs, which in turn lead to a larger import-competing capacity, higher quasi-rents and therefore even higher tariffs. Therefore, the argument presented in the previous section would only be reinforced by the presence of revenue constraints.

6.2 Technology Spillovers

Another traditional explanation for temporary protection in developing countries is the infant industry argument. This can be sketchily summarized as follows: import-competing production generates positive technology externalities which are uncorrected by direct instruments (e.g. a production subsidy, which may have too high a opportunity cost in terms of forgone revenues) and which are more significant transitionally than they are in the long run. This may justify higher transitional tariffs.

To focus our discussion, imagine that the technological spillover can only be generated in period $j$ and has permanent effects from period $j+1$ onwards. Such a
spillovers could lead to a productivity shift in the import-competing sector alone or in the economy at large. Both cases would result in positive incentives for the small country to engage in temporary protection. Whether the large country has an interest in any spillover materializing, however, depends on whether this directly or indirectly increases the value of access to the small country’s market. For this to be the case, the productivity shift in the small country must translate in increased demand for imports through income effects. But even if this condition was met, the small country would still have unilateral incentives to increase its protection temporarily, and so there should be no need for the large country to facilitate the process. On the contrary, the unilaterally optimal tariff applied by the large country should by itself already contribute to the expansion of the import-competing industry in the developing country. Thus there should be no reason for the large country to have to temporarily reduce its tariff (i.e. to grant GSP status), even if, for some reason, the small country was not able to increase its own tariff. So the infant industry argument seems unable to account for the observed structure of S&D provisions.

The need for temporary trade protection has been traditionally associated with spillovers in the import-competing sector. However, the literature has also stressed related mechanisms that operate in the opposite direction, such as the so called infant-export industry argument first described by Bhagwati (1968) and trade-driven technological spillovers (Grossman and Helpman, 1991).46

Suppose positive spillovers arise from the production of export goods (or from the imports that can be obtained in exchange for those exports) rather than from the production of import-competing goods, which implies that a temporary increase rather than decrease in the volume of trade above the free trade equilibrium level is required. Even this mechanism, if considered in isolation from other distortions, is unable to provide a rationale for S&D provisions. As in the case of infant-industry protection, the large country would only have an interest in the spillover occurring if it increases the value of market access.47 If this is the case, the small country will also have an interest

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46 According to Grossman and Helpman (1991), countries that trade in world markets invariably learn a great deal about the novel methods that are being used to produce goods. They also state that while it is true that agents in an economically isolated country might also acquire some such information by reading professional journals, speaking to foreign experts, or inspecting prototype products, it seems that the contacts that develop through commercial interaction play an important part in the international exchange of information and ideas.

47 This could be the result of either a combination of technological shift plus income effects, as in the case discussed previously. Alternatively, it could have to do with a “market cultivation” mechanism as described by Bhagwati (1968).
in temporarily subsidizing its trade, as long as the long-rung gain exceeds the short-run cost of doing so. If this latter condition is not met, then it is possible for the large country to find it optimal to subsidize trade instead (for example, the small country might discount future gains less than the small country). This could then explain temporary GSP preferences; however, it could not explain the simultaneous application of temporary protection, given that neither country could gain from trade reducing measures. It is only if we invoke this last mechanism in conjunction with some other temporary source of protection bias that we can account for both components of S&D. For example, the small country could have limited flexibility in reducing its trade taxes because of revenue requirements. A permanent expansion of trade due to a permanent increase in import demand, could ease the effects of revenue requirements in the long run. This explanation, which is based on a different institutional mechanism from those present in our previous analysis, would nevertheless lead to similar conclusions with respect to the interpretation of S&D rules as implying conditionality: the small country would be induced to adopt lower levels of taxation—both during in the transition and in the long run—by the credible threat of the large country raising its tariffs; vice-versa, the large country would be induced to grant GSP during the transition phase by the prospect of the small country being permanently locked in a high-tariff equilibrium.

7 Conclusions

In this paper we have shown that S&D treatment under existing WTO rules can be interpreted as a transitional equilibrium feature of a self-enforcing international agreement between a developed and a developing country, where both transitional and post-transitional policy choices can be sustained by each party because of the policy path followed by the other. In our interpretation, the two components of S&D, even though they are not formally tied, become linked by conditionality both within and across periods: in each period, cooperative policies are sustained by the threat of future punishment; at the same time, concessions are exchanged across different time periods—with the large country offering temporary preferences in exchange for future market access, and the small country’s determination to disentangle itself from its commitment problem being shored up by the prospect of facing future punishment by the large country for failing to succeed.

If the developing country cannot immediately shrink the capacity of its import-competing industry and “jump” to a low-tariff agreement, it will face transitional constraints. A self-enforcing agreement must accommodate both transitional and long-run deviation incentives: a stronger transitional temptation for the developing country
to break the agreement and a correspondingly weaker transitional temptation for the
developed country. These incentives translate into the transitional asymmetries we
observe under S&D rules.

Our interpretation of S&D provisions as part of a carrot-and-stick mechanism to
help the developing country to overcome their transitional institutional problems is in
line with the stated objectives of the law. As stressed by Michalopoulos (2000), “the
fundamental justification for the extension of additional time to implement agreed
measures relates to weaknesses in the institutional capacity of developing and least
developed countries. It is assumed that, given additional time (as well as technical
assistance, which is often also expected to be provided in these areas), developing and
least developed countries will strengthen their institutions in ways that would enable
them to implement the agreements” (p. 22). Our analysis shows that, in the presence of
institutional problems, temporary preferences can indeed produce a “ratchet effect” on
liberalization incentives, so that they are no longer required once the initial institutional
hurdles have been overcome.

In the ministerial declaration of the Doha Round countries have “agreed that all
special and all special and differential treatment provisions shall be reviewed with a
view to strengthening them and making them more precise, effective and operational.”
As mentioned earlier, calls for reform in the WTO S&D system have paralleled a shift
towards greater emphasis on problems of implementation. Our analysis suggests that
an effective system of liberalization incentives, based on conditionality, can operate im-
plicitly, without having to be written in a formal agreement. Nevertheless, to the extent
that we expect written agreements to reflect changes in the underlying equilibrium re-
lationships, we would also expect the written law eventually to be more explicit about
the conditionalities involved in S&D. Notice, however, that this would not make S&D
provisions directly binding, as some suggest, since their enforceability rests ultimately
in the hands of the developed and developing countries involved.

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