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The Value of Domestic Subsidy Rules in Trade Agreements

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The Value of Domestic Subsidy Rules in Trade Agreements[•]

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Abstract

This paper investigates the efficient design of rules on domestic subsidies in a trade agreement. A clear trade-off emerges from the economic literature. Weak rules may lead Member governments to inefficiently use domestic subsidies for redistributive purposes or to lower market access granted to trading partners once tariffs are bound. On the other hand, excessive rigidity may inhibit tariff negotiations or induce governments to set inefficiently high tariffs, as strict regulations would reduce policy makers' ability to use subsidies to offset domestic market distortions. Efficient subsidy rules are, therefore, the ones that strike the right balance between policy flexibility and rigidity. This economic approach provides a framework to interpret the provisions on domestic subsidies in the WTO.

JEL: F13, F55, H25, D72

Keywords: WTO/GATT, Subsidy Rules, Trade Agreements, Trade Policy Credibility

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Introduction

What is the purpose of domestic subsidy regulation within the multilateral trading system? And how should subsidy rules be designed? This chapter addresses these basic questions from an economic perspective and revisits the current GATT/WTO rules on domestic subsidies in light of this theory.

We first discuss the argument in favour of using subsidies in the presence of domestic market distortions, such as production externalities (Bhagwati and Ramaswami, 1963, and Johnson, 1965). This argument calls for leaving substantial flexibility to national governments in their choice of domestic subsidies. If governments lacked this flexibility, market failures may not be addressed or they would be addressed with other -possibly less efficient- policy tools. Under both scenarios, the economy would be condemned to remain in an inefficient equilibrium.

While this is a powerful argument in favour of discretion, it misses an important point. International trade agreements are signed by governments in the attempt to offset some other form of inefficiency. Subsidy rules, therefore, need to be designed in a way that is consistent with the main purpose of a trade agreement. It could be the case, for instance, that leaving complete flexibility to national governments in setting domestic subsidies undermines the stability of the trade agreement and disrupts international trade cooperation. In this scenario, the laudable objective of allowing governments to respond with subsidies to domestic market distortions would result in the creation of an international inefficiency.

More concretely, economic theory has identified two main rationales for trade agreements. These are generally referred to as the *standard approach* and the *commitment approach*. The first argument suggests that the purpose of the GATT/WTO system is to induce national governments to internalize an important cross-border externality, the terms-of-trade externality (Bagwell and Staiger, 2002). The latter approach shows that a trade agreement solves a credibility problem in trade policy as it allows governments to distance themselves from the political pressures of domestic interest groups (Maggi and Rodriguez-Clare, 1998).

While these theories are quite different, their implications for the efficient design of subsidy rules are surprisingly similar. In order to highlight the main intuition, it is useful to focus on a simple economy where governments only dispose of two policy instruments –a trade tariff and a domestic subsidy. It is essential to realize that governments and domestic constituencies perceive these two instruments as substitutes – though possibly imperfect ones. If a trade agreement imposes restrictions to the use of the tariff (for instance, it require the country to maintain free trade), but

leaves complete discretion on the use of subsidies, we may expect that the government will make an inefficient use of the latter policy tool. Bagwell and Staiger (2006) argue that governments may use domestic subsidies to alter the terms-of-trade to their advantage, while Brou and Ruta (2009) show that the policy maker employs the subsidy to redistribute resources to politically organized sectors. In both cases, a trade agreement with no subsidy rules, by constraining only one of the two policy instruments, generally induces an inefficient use of the measure that is left out of the agreement. The converse is also possible. If an agreement imposes excessively strict rules on domestic subsidies, policy makers might choose to use tariffs, rather than subsidies, to address market distortions, redistribute income towards organized groups or manipulate the terms-of-trade.

The upshot is that the efficient design of trade agreements requires the proper balance between the benefits and the costs of domestic subsidy flexibility. The last question is, therefore, whether current rules in the GATT/WTO system, as embodied in the Agreement on Subsidies and Countervailing Measures (SCM), achieve such a balance. Theory helps us by identifying the useful role played by the agreement, as well as some potentially challenging aspects. First, rules that bind the subsidy at the level existing before a tariff commitment was signed, such as *nullification or impairment*, effectively remove the problems associated to the policy substitutability between tariffs and subsidies. Second, rules that allow Members to dispute subsidies that are in place independently of a tariff commitment (i.e. that were present before the commitment was signed or in a sector where no commitment exists), such as *serious prejudice*, are more problematic from the point of view of this theory. If no tariff commitment exists, governments may be induced not to agree to tariff cuts in a trade negotiation in order to maintain flexibility in at least a policy tool. If a tariff commitment exists, such rules risk inhibiting the use of legitimate subsidies.

The rest of the chapter is organized as follows. Section 1 introduces the argument in favour of subsidy flexibility. The role of subsidy rules in trade agreements is discussed in Section 2, while Section 3 focuses on the GATT/WTO system in light of these theories. Concluding remarks follow.

1. Production subsidies in presence of domestic market distortions

In this section, we analyze the role of production subsidies in the presence of market distortions. We first revisit the pioneering contributions on this topic by Bhagwati and Ramaswami (1963) and Johnson (1965). In their analysis, a subsidy may be a first-best policy tool that government can use to address market failures –such as production externalities- bringing the production to the efficient level. An import tariff is only a second-best tool, since it can boost production in the same way as a subsidy, but distorts consumption choices. Finally, we will consider

the case of distortionary taxation, showing that the advantage of the subsidy is lessened. In this case, either a combination of subsidy and tariff or a tariff only could efficiently address the market failure. The efficient policy mix depends on the extent of tax and tariff distortions.

When an open-economy is affected by distortions, the free market alone can not lead to the optimal solution, and the general equilibrium equality among the marginal rate of substitution (MRS), the domestic and foreign marginal rate of transformation (DMT and FMT) does not hold. Several questions arise. Are the distortions domestic or due to the market power of the country in international trade? Can government intervention be beneficial? Which kind of policy tool is more effective? Is protectionism always bad?

The first question is the key point: once identified the source of distortion, the other questions can be addressed. A domestic distortion is a market failure, such as a production externality, that is disjoint from the trade position of the country. On the other hand, the international market power is, by definition, related to the trade activity of the economy. The remainder of this section will focus on domestic distortions and on how to deal with them. We will come back to governments' incentives to exploit their power in international markets in the next section.

Technically, a domestic distortion, implies a divergence of the commodity price ratios from the corresponding marginal rates of substitution (MRS=FMT≠ DMT). Broadly speaking, agents do not realize that their actions are positively (negatively) affecting the welfare of the community, leading to an under(over)-production with respect to the social optimum. In this situation only government intervention can restore equilibrium conditions. Infant industry, labour market distortions, or product market distortions in the form of production externalities are all examples of domestic distortions[1].

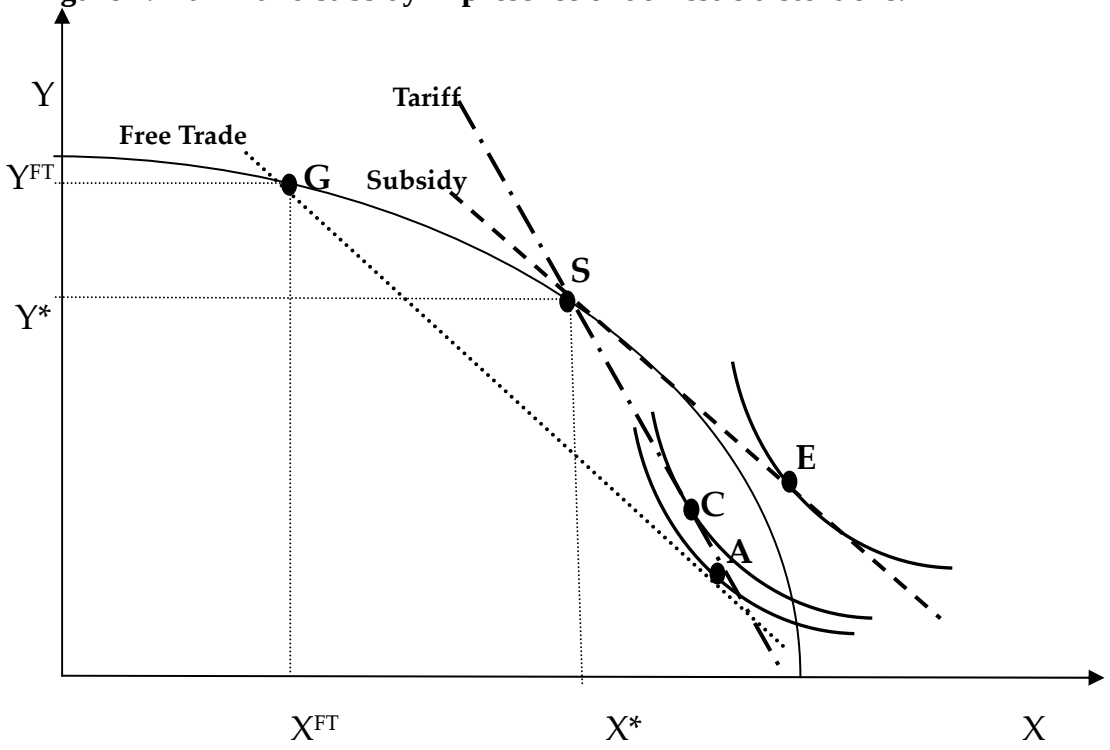
Before going through the technical analysis, it is essential to get the economic intuition behind the optimality of the general equilibrium condition. Let's consider first the basic framework of a small open economy with perfectly competitive markets and no externalities. In that situation, prices are determined in the world market. Therefore, even allowing for different technologies in the two economies, national and foreign firms will produce where DMT=P^w=FMT, with P^w equal to the world price level. In other words, at the margin it would not be profitable to change the production mix. On the consumer side, something similar happens: since P^w=FMT, then in equilibrium MRS=P^w=FMT and no other allocation can make the consumers better off. Therefore,

[1] For a complete review of all the possible domestic distortion see Johnson (1965).

if MRS=DMT =FMT is fulfilled, then the allocation is Pareto efficient: there is no other allocation that makes someone better off without making anyone else worse off.

If the economy is affected by domestic distortions, say a positive production externality, the story is different and the market alone can only reach MRS=FMT≠ DMT. Why so? Prices are still determined internationally, as the country does not have market power and MRS=P^w . Since we are assuming that the rest of the world is not affected by distortions, then P^w=FMT holds; it follows that MRS=P^w=FMT. On the firm side, the situation is different: producers do not fully internalize the social benefits derived from their production, which results in underproduction of the good relative to the social optimum. So from a community point of view, P^w≠ DMT. In this situation how can the policy maker induce domestic producers to increase the supply of the good and, thus, restore efficiency? The answer depends on the policy tools available to the government; this is the second part of the story.

Figure 1. Tariff and subsidy in presence of domestic distortions.



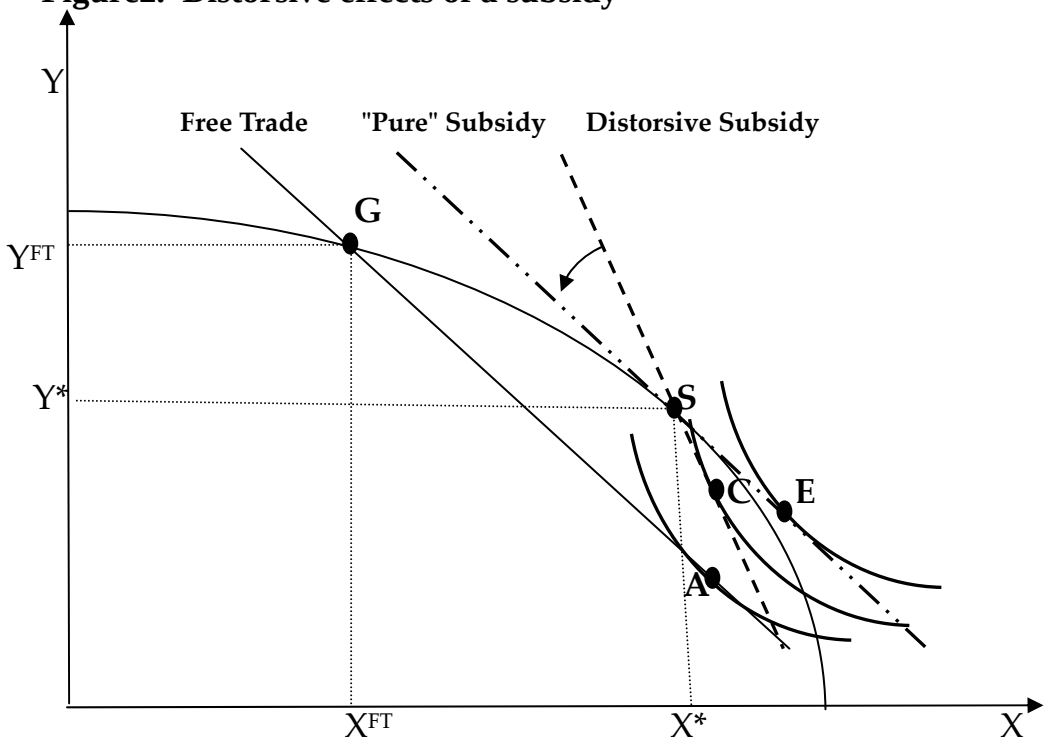
The standard trade framework shows graphically the different effects of a tariff and a subsidy in presence of domestic distortions (Bhagwati and Ramaswami, 1963). Figure 1 considers the case of a positive externality in the production of good X, the imported good. Because of this market failure, under free trade, there is under-production of the good, compared to the social optimum. At the given international price, the market alone leads to consumption at point A and

production at point G, which is not an optimum since MRS=FMT≠ DMT. Two alternative policies are taken into account.

If the efficient production is at point S, then this point can be reached through a tax-cum-subsidy or a tariff. Under the assumption of (non-distorsive) lump-sum taxation, a subsidy to sector X boosts production in the sector, but does not modify the relative prices. In Figure 1 this results in a shift upwards of the price ratio line. Production is moved to the efficient level S and consumption to point E. As usual, since E is outside the Production Possibility Frontier (PPF), this higher consumption and welfare can be reached through trade in the international market.

A tariff can make the country better off with respect to the free trade situation, increasing both consumption (point C) and production of good X (point S).[2] However, the welfare of the country will be lower compared to the subsidy situation, since point E lies on a higher indifference curve than point C. The reason is that a tariff, by altering the domestic price ratio, distorts consumption decision. So a tariff is equivalent to a subsidy plus a consumption-tax. Therefore, a tariff would internalize the positive externality, but create another distortion: domestic consumption would be shifted away from commodity X towards commodity Y, decreasing national welfare.

Figure2. Distorsive effects of a subsidy



[2] Hereafter, without loss of generality, we assume that the tariff proceeds will not be redistributed to increase the aggregate consumption: so the graph will be more readable and clearer.

The above results are based on a strong assumption: lump-sum taxes are levied to finance a subsidy. In other words, the government intervention is a costless operation. Introducing distortionary taxation would make things more complicated and a subsidy policy alone may not necessarily be optimal. The idea is that taxes generally create their own distortions in the economy: for example a progressive taxation on income could affect the labour supply, changing the relative prices of factors. Alternately, indirect taxes on commodities could change the price-ratio in the same way of a tariff. In this situation, a combination of tariff and subsidies may more efficiently address market failures than a tariff or a subsidy alone.

In Figure 2 we show the effects of a subsidy financed through costly taxation. The starting point is as above: the free market leads to underproduction of good X (point G) compared to the social optimum. A subsidy without distortionary effects (what we called a "pure" subsidy in Figure 2) allows the socially optimal production at point S and consumption at point E. A subsidy financed through a distortionary taxation, by contrast, leads to a different result. Assume for a moment that the tax affects in some way the price ratio: in particular, assume an increase of the price ratio. This assumption is realistic whenever the prices of the two goods are affected by the taxes in different ways or, simply, when different tax-rates can be imposed on different goods to reach specific policy-targets.[3] The result is similar to the effects of a tariff: it is still possible to produce at point S, but consumption occurs on a lower indifference curve (point C).

When both a tariff and a subsidy (through taxation) generate their own distortionary effects, an appropriate policy mix of subsidy and tariff could be more efficient than a subsidy only; an import-tariff could compensate the distortions due to the subsidy, counteracting any effect on the price ratio. In some sense we can think that the tariff compensates part of the distortions generated by the tax, leading to a second best result, since the first best policy-tool -a subsidy financed by a lump sum taxation- is simply not available.

In presence of domestic distortions, protectionism may be beneficial from a social welfare perspective, and governments should be granted some flexibility to address these distortions. If taxation is not distortionary, a tax-cum-subsidy is a first-best policy intervention. If taxes generate their own distortions, then a policy mix of tariffs and subsidies is the best way to internalize the externality.

[3] For instance, in many developed countries indirect taxes, like VAT, impose different tax-rates on different goods for redistributive reasons, that is, the lowest the rate the higher the importance of that good for daily life.

2. The role of domestic subsidy rules in a trade agreement

In the previous section we isolated the analysis of subsidies from the context of trade agreements. We considered a government free to unilaterally choose the best policy tool to internalize domestic market failures. Within the multilateral trading system the story is a bit more complicated, since a subsidy could erode the market access commitments made in previous tariff negotiations. In this case a trade-off emerges. On the one hand a domestic subsidy may be a first-best policy tool in presence of domestic distortions, on the other hand it could nullify or impair market access commitments agreed upon in a trade agreement. Two obvious questions arise: should a trade treaty allow the use of domestic subsidies? If so, to what extent? Before answering these questions, it is important to understand the reason why governments decide to sign a trade agreement in the first place. The two common explanations are the terms-of-trade approach to trade agreements and the commitment role of trade agreements. In the remainder of this section we briefly explain each approach and consider the role of subsidies in the context of the two theories.

2.1 The economic rationale for trade agreements

The terms-of-trade approach is based on the idea that trade policy decisions of one government affect the welfare of another through a terms-of-trade externality.[4] Consider two large open economies able to affect global demand and supply and, hence, world prices. Imagine that one government sets import tariffs in order to maximize national welfare; this policy boosts the national production of the imported good, and reduces domestic consumption, leading to a fall in world demand and, consequently, of the world price. Foreign exporters will be negatively affected because of a lower export price. This is the terms-of-trade effect: without a counter reaction by the other government, the price of the good exported by the domestic economy is unchanged[5] and the one of the imported good is decreased. If the other government is concerned with the terms of trade of its own country, then it will react imposing a tariff on its imported good, also affecting the world price, and improving again its terms of trade to the detriment of the other economy.

In game theory this is a typical case of Prisoners' Dilemma: cooperation –a low tariff on both sides- would allow to get the most efficient result but it is not a stable equilibrium. The temptation of cheating is high: a government could agree on a tariff cut and later decide to unilaterally impose a higher tariff in order to exploit the terms of trade effect. In a perfect knowledge environment, the other government, anticipating such behaviour, would do the same.

[4] For a complete review of the topic see Bagwell and Staiger (2002) and Bagwell (2008).
[5] Keep in mind that the standard model considers inter-industry trade and not intra-industry; therefore a reduction of the world price of the imported good would not affect the export sector concentrated in the production of the other good.

Eventually the economy ends up in an equilibrium with inefficiently high tariffs and low trade volumes. A trade agreement, such as the GATT/WTO system, contains a set of principles and rules –e.g., non-discrimination, reciprocity- that facilitate trade cooperation and allow members to escape a terms-of-trade driven Prisoners' Dilemma and achieve higher welfare.

Terms-of-trade considerations are not the only reason why countries sign a trade treaty. The commitment role of trade agreements is a separate and complementary approach that is based on a credibility problem in setting trade policies. The basic framework isolates the commitment role considering small open economies that are unable to affect world prices and, consequently, to exploit the terms-of-trade effect. The literature can be divided in two strands: the first mainly focuses on problems of time inconsistency of trade policy, while the second studies the effects of political pressures on the government. In both cases policy makers want to sign a trade agreement to credibly commit the future course of actions to an efficient policy. The difference in the two branches of the literature is on the origin of the problem. In the former the sources of credibility problem have a purely economic nature (time inconsistency); in the latter, interest groups lobby for protection, forcing the government to adopt a policy different form its initial promises.

Maggi and Rodriguez-Clare (1998) stress how trade agreements can free the government from the political pressure of interest groups. When import competing producers are politically organized, they are able to affect trade policy, for instance, by paying political contributions to the government and distorting its policy choice. In the presence of irreversible long run investments, tariffs distort the efficient allocation of resources between different sectors of the economy and have negative effects on social and government welfare. For this reason, politicians value a tariff agreement which allows the government to commit its policy vis à vis domestic special interests.

At this point, we need to understand the role of subsidy rules in the context of multilateral trade agreements, that solve the terms-of-trade externality problem or the credibility problem. In particular we want to answer the following question: what is the efficient treatment of domestic subsidies in the multilateral trading system?[6]

2.2 Subsidy rules and the terms-of-trade approach

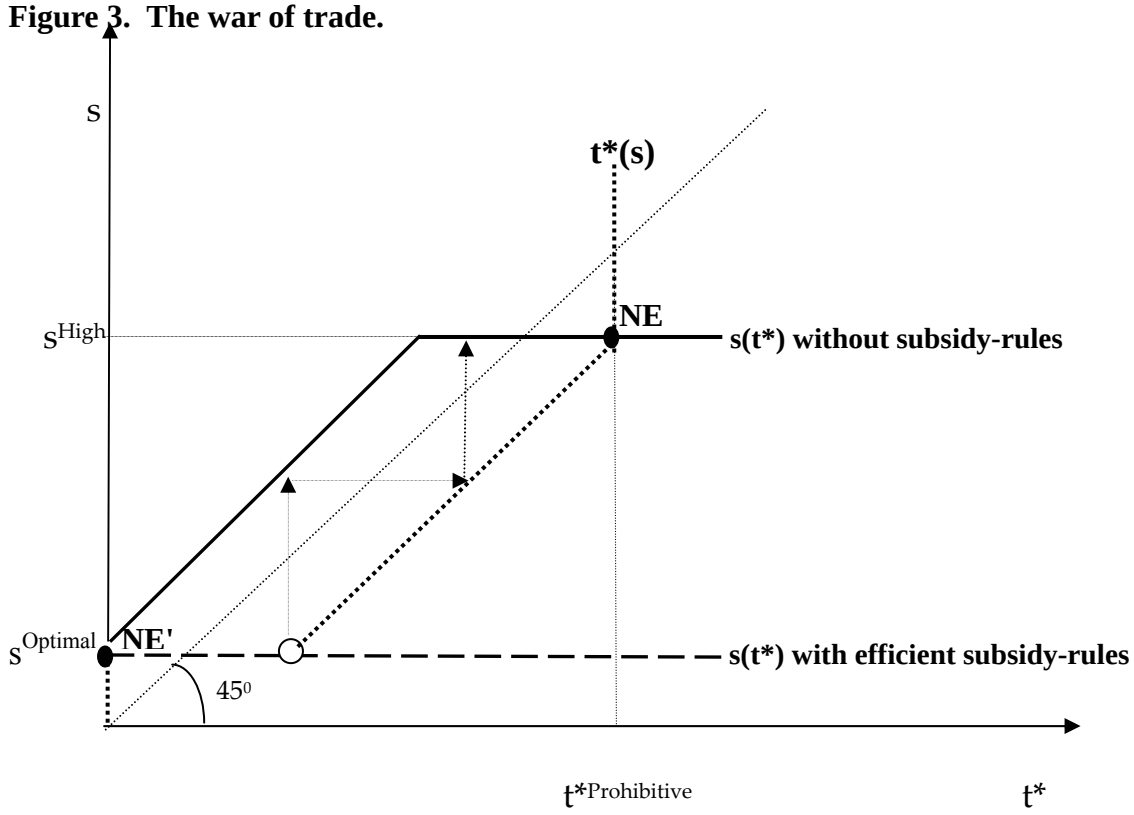
As we explained in the section 1, subsidies can be used to address domestic market failures (Bhagwati and Ramaswami, 1963; Johnson, 1965). However, discretion in the choice of domestic subsidies could erode market access commitments. The reason is that a subsidy can be used to

[6]In the reminder of the paper we will discuss domestic subsidies only. See Bagwell (2008) for an economic analysis of rules on export subsidies.

obtain a terms-of-trade gain. After a tariff negotiation, the domestic government could increase the subsidy to the import competing sector, which would lead to an increase of the world supply of the imported good and to a fall of its world price -a terms-of-trade effect. The foreign government anticipates this behaviour and does not concede the tariff reduction at the negotiating table. Therefore trade agreements should regulate subsidy choices, in order to make more attractive and safer reciprocal tariff liberalization.

We try to formalize the main intuition in a very stylized fashion. Consider two countries, Home and Foreign, and assume that only Home is affected by domestic distortions.[7] They negotiate a reciprocal tariff reduction; for simplicity, but without loss of generality, we assume $t = t^* = 0$, where t denotes the tariff rate. The agreement allows Home to use a subsidy in order to address a domestic market failure. We denote the optimal level of the subsidy as $s^{Optimal}$. Foreign, by contrast, has only a tariff at its disposal and no domestic distortions. Both the tariff and the subsidy are *ad valorem* and we assume that for $s > s^{Optimal}$ the subsidy affects the terms of trade in proportion to its value.

Figure 3. The war of trade.



[7] As is standard in the literature, an asterisk denotes the foreign country.

We first consider an agreement without subsidy rules. In a perfect knowledge environment, the reaction function of Foreign (depicted in Figure 3) is denoted with t*(s), since it is a function of the subsidy choice of Home. For a level of subsidy less or equal to $s^{Optimal}$, Foreign will set a tariff equal to zero, since its terms-of-trade is not affected, and the subsidy just corrects domestic distortions. For s> $s^{Optimal}$, Foreign will react setting t*>s. This is captured by the foreign reaction function being below the 45 degrees line. The empty hole is a discontinuity point, denoting the fact that, for s = $s^{Optimal}$, t* = 0. When t* starts to be prohibitive, there is no reason to rise it again and the Foreign reaction function will be vertical. The reaction function of Home is denoted by s(t*). Knowing that t* = 0, the government could choose s> $s^{Optimal}$, getting a terms-of trade gain. This reaction function is depicted in Figure 3 as the straight line, with intercept s> $s^{Optimal}$, which lies above the 45 degrees line. Notice that in this situation the only Nash-Equilibrium will be in correspondence of $t^{Prohibitive}$ and s^{high}. With no rules on domestic subsidies, the only equilibrium is a tariff/subsidy war. Each country understands that the other has an incentive in cheating and using its policy tool (a subsidy for the Home government and a tariff for the Foreign government) to obtain a terms-of-trade gain.

With an efficient subsidy rule, the result will be different.[8] If the agreement were to set s just equal to the optimal level, then Home reaction function will be a straight line starting from $s^{optimal}$, because it would be excessively costly to start a trade war with Foreign: Home should take into account not only t* but also the punishment associated to breaching subsidy rules The reaction function of Foreign is not affected, and the Equilibrium corresponds to t* = 0 and s = $s^{optimal}$.

In brief subsidy rules should strike a balance between flexibility –to offset domestic distortions- and rigidity –to limit the temptation to exploit terms-of-trade externalities. How can such a balance be found? The easiest and most obvious solution is to allow the government to freely alter its domestic policies, provided that the adjustments do not impose a negative terms-of-trade externality to trading partners (Bagwell, 2008). With a rich availability of domestic policy instruments even strict rules on subsidies can be used to adjust production efficiently; however, if the government does not dispose of a large set of instruments, strict rules on subsidies could have a "chilling effect" on tariff negotiations. The reason is that, if a trade agreement bans the use of subsidies and binds import tariffs, then policy makers cannot reach the Pareto optimum in presence of domestic distortions. Consequently the only choice a government has is to leave unbound its tariff (or to negotiate a smaller tariff cut), even when this tool is only a second-best instrument. Excessive severity on domestic subsidies would undermine mutual gains deriving by reciprocal

[8] Of course the rules should be self-enforcing, otherwise they would not be effective. Self-enforcement guarantees the credibility of the agreement; therefore retaliatory measures against any country that deviates from the agreement and

tariff liberalization (Bagwell and Staiger, 2006). We will come back to this point in the third section with reference to the WTO/GATT system.

The answer to the question posed at the end of the previous section –what are efficient rules on subsidies?- is therefore uncertain. Subsidies can threaten tariff negotiations if they are left to full discretion, as they can be used to achieve terms-of-trade gains; however, an excessive regulation on their use limits governments' ability to achieve legitimate domestic objectives, which may lead to a chill in tariff negotiations ("chilling effect"). Subsidy rules have to strike a balance between flexibility –to offset domestic distortions- and rigidity –to limit the temptation to exploit terms of trade externalities.

2.3 Subsidy rules and the commitment approach

As we discussed earlier, the presence of domestic political pressures may induce a government to unilaterally sign a trade agreement. What is the efficient design of rules on domestic subsidies when the problem addressed by the agreement is one of policy credibility? Broadly speaking, when a government reduces import tariffs, organized interest groups could make pressures to receive other kinds of protection. Subsidies would be an obvious alternative to import tariffs. In other words, there is a *policy-substitution problem*: under political pressures, the government could opt for an inefficiently high level of subsidies, undoing the welfare effects of trade liberalization (Brou and Ruta, 2009). Subsidies, just like tariffs, lead to over-investment in the protected sector. Therefore, trade agreements that leave complete flexibility on domestic subsidies do not solve the trade policy credibility problem.

We begin by addressing the issue of whether, if subsidies are an available policy tool and interest groups can influence the government, it is enough to bind only import tariffs. Consider a two-sector small open economy, where the government has at its disposal an import tariff and a production subsidy. As discussed previously, in the presence of domestic externalities and distortionary taxation, a combination of tariffs and subsidies is the first-best option. Assume that only one the import-competing sector can coalesce into a lobby, exerting political pressures on the government to obtain some form of protection. The main result is that a *tariff-only agreement* suffers of a policy-substitution problem: under political pressures, governments will turn to subsidies when their ability to impose tariffs is curtailed. In this context, a country achieves higher social welfare under a *tariff and subsidy agreement* relative to a tariff-only agreement.

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places additional restrictions on trade are essential (See Bagwell and Staiger (2002)).

Figure 4. Subsidy rules and commitment.

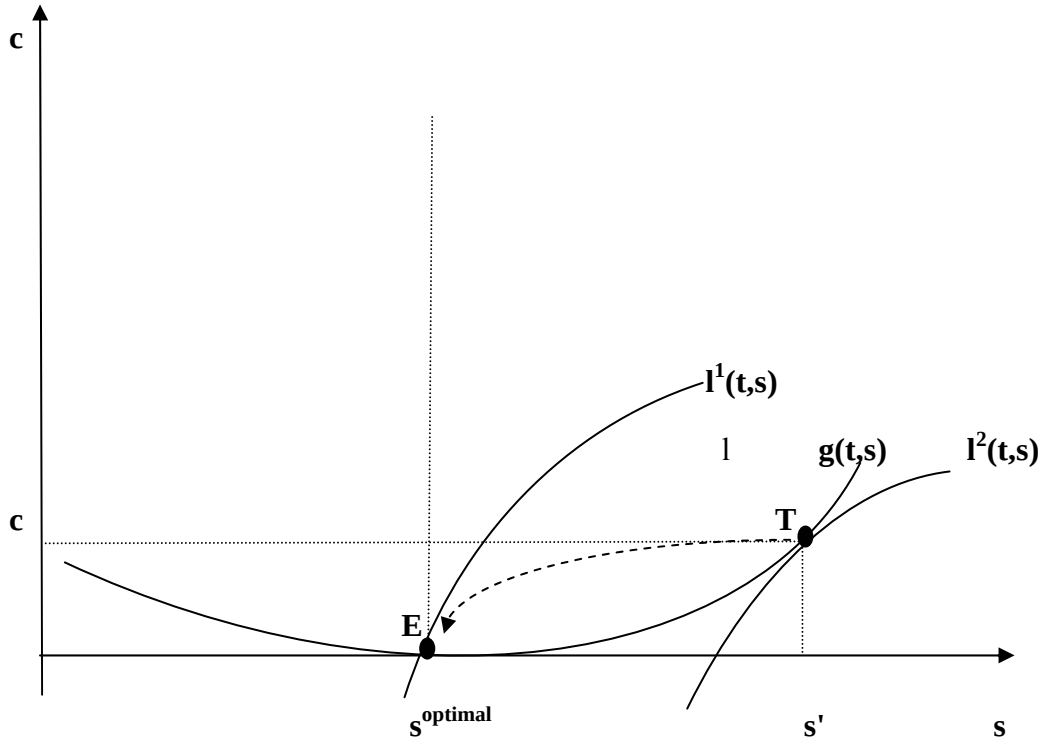
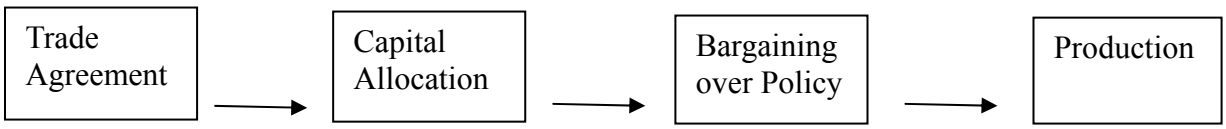


Figure 4 helps to understand the point. Let's consider a government whose utility function is given by the sum of national welfare and a monetary contribution received by a lobby. In general, both the national welfare and the contribution are function of the level of subsidies and tariffs: the higher the protection the lower the national welfare, and vice-versa for the level of contribution. However, assume that the government has signed a trade agreement that binds the tariff at the exogenous level t. In this case, government preferences can be written as $g(s,t)= \alpha w(s,t) + c(s,t)$, where g is the government utility function, w the national welfare, s the subsidy, c the contribution by the lobby, and α is a benevolence parameter (i.e. how much a government values social welfare). The shape of the government function is convex (Figure 4): higher lobbying contributions increase the utility of the policy maker, while policy distortions (i.e. levels of the subsidy different from the first-best) reduce social and, hence, government welfare. We also draw the utility function of the lobby, that depends negatively on the contribution and positively on the level of protection: $l(s,t) = p(s,t) - c(s,t)$, where p(.) is the profit of the protected sector. Its slope is positive: the lobby is indifferent only if to an increase in the contribution corresponds an increase in the subsidy. Finally, it is important to stress that the utility level of the indifference curves increases as you move from top to bottom.

Assume that the trade agreement sets t to the optimal level but imposes no rules on subsidies. Then the import competing sector obtains protection from the government only through

lobbying for high subsidies. The political economy equilibrium will be at point T, at the point where the indifference curve of the lobby is tangent to the indifference curve of the government. Notice that in T the subsidy is high. Therefore, even if the tariff is at its optimal level, the import competing sector is still protected through the use of the other policy instrument. This is the idea of policy substitution. In this environment, to make the trade agreement effective, we need a rule that fixes $s=s^{optimal}$. In that case we will end up with the efficient level of subsidy and tariff (point E). Notice that the lobby will be worse off, since it ends up on the lowest indifference curve I^3, but national welfare is maximized. This is the social value of subsidy rules in trade agreements. Notice also that the government is indifferent between point E and point T (they both are on the same indifference curve of the government). The policy maker is compensated by the lobby through monetary contributions for choosing the inefficient subsidy.

The last extension of the model is to assume that capital is mobile in the long run but investment decisions are irreversible in the short run. Consider the following timing:



Initially the policy maker can choose to sign an agreement, then capital is allocated to a specific sector before subsidies and tariffs are chosen. If the government chooses not to sign the agreement, in the short term political contributions fully compensate the government for the loss of social welfare due to the inefficient policy. However, in the long run, policy-makers are not compensated for the misallocation of capital in the protected sector. On the other hand, if the government signs an agreement that binds both the tariff and the subsidy at the efficient level, no lobbying takes place and capital is efficiently allocated across sectors. The government is better-off under an agreement that imposes rules on the use of domestic subsidies, because policy credibility vis à vis special interests can be restored.

Summing up, the result is similar to the terms-of-trade literature: a subsidy can be a threat to a trade agreement because special interest groups could make pressures to substitute a tariff with a subsidy. Therefore some rules on the use of domestic subsidies are necessary. However, these rules need to leave enough flexibility to government for achieving domestic goals in presence of market distortions.

3. Domestic subsidy rules in the GATT/WTO system

The first two sections were devoted to a theoretical analysis of the efficient design of domestic subsidies rules within multilateral trade agreements. The theory is explicit: a subsidy is a useful policy tool to address domestic market failures. However, in multilateral trade agreements some form of regulation is needed in order to limit either the temptation to exploit terms-of-trade externalities or lobbying activities by special interest groups. In this section we will revisit the domestic subsidy rules in the GATT/WTO system in light of the theoretical framework developed above. We will briefly explain the main rules, pointing out the differences between the pre and post Uruguay Round; then we will interpret them in the context of both the terms-of-trade and the commitment approach.

When GATT was established in 1947, little attention was devoted to the role of subsidies in trade issues. The original GATT was quite tolerant of subsidies. Sykes (2005) stresses that two mechanisms were in place that allowed governments to react to domestic subsidies. First, if the subsidy offered to exporters had caused *injury* to foreign producers, a trading partner could impose a countervailing duty calibrated to the size of the subsidy.[9] Second, if the subsidy to domestic producers had frustrated (*nullified* or *impaired*) the market access after a tariff negotiation, then the negotiating trading partner could formalize a *non-violation complaint*. For such a complaint to succeed, the government of the affected economy should prove that a new subsidy program was introduced and that it nullified or impaired the market access associated with prior tariff commitments. The subsidizing government, by contrast, would be expected to make a policy adjustment that returned market access to the original level, which generally implied the removal of the new subsidy. Therefore, only "new" subsidy programs that frustrated market access expectations, associated with tariff concessions, constituted a violation of GATT.

The Uruguay Round went beyond GATT rules, introducing the Agreement on Subsidies and Countervailing Measures (SCM). According to Article 5, domestic subsidies should not cause adverse effects to the interests of other WTO members (WTO, 2006). Among the adverse effects, the SCM includes the old GATT provisions -*injury, nullification* and *impairment*- and introduces *serious prejudice* to the interest of another Member as a cause that could legally trigger a reaction by trading partners. Article 6.3 defines the concept of serious prejudice: according to article 6.3 (a) and 6.3 (b) serious prejudice may arise when trade volumes are affected, even if there are no terms-of-trade effects (i.e., small open economy case). Article 6.3 (c) considers a situation in which subsidies change the world price, and not only domestic prices and volumes (e.g., large open

[9] Since the focus here is on domestic subsidies we will not study this point further. For a complete analysis refer to

economy). Finally, Article 6.3 (d) deals with the volume effects of a subsidy in a third export market. Importantly, *serious prejudice* can be invoked in cases when the subsidy was already in place at the time of tariff negotiation (i.e. "old" subsidies), as there is no mention in Article 6.3 of previous tariff commitments. Therefore, under current GATT/WTO rules, both "old" and "new" domestic subsidies can be challenged if they create a certain level of trade distortions. If complaints through the dispute settlement mechanism are successful, WTO rules require the subsidy programme to be removed.

We can analyse the GATT/WTO rules in the context of both the terms-of trade and commitment approach. In the previous section we showed that after a tariff negotiation a government could be tempted to offer a domestic production subsidy to its import competing industry, lowering the world price and enjoying a terms-of-trade gain. According to this literature a government should be free to alter its domestic policies, provided that the adjustments do not impose a negative terms-of-trade externality. Bagwell and Staiger (2006) show that GATT rules followed this direction, implementing efficient outcomes through tariff negotiations alone. The *nullification* or *impairment* approach allows a government to pursue its domestic goals, with the only limitation of not eroding the negotiated market access. Therefore the problem of terms-of-trade temptations was substantially solved.

As we explained above, too restrictive rules on subsidies can have perverse effect on tariff negotiations: indeed, since tariffs are legal, a government could be tempted not to bind them, in order to have a policy tool to pursue domestic goals. From the point of view of the terms-of-trade approach, the SCM Agreements seems to create too strict a legal environment, since it imposes disciplines on subsidies, even when they do not nullify or impair any negotiated market access.

The commitment approach, by contrast, shows that a government under political pressures turns to subsidies when its ability to provide protection is curtailed by a tariff negotiation. This policy substitutability offsets welfare gains from tariff cuts. In this context, Brou and Ruta (2009) show that rules on nullification and impairment, by imposing a ban on new subsidies, bind the subsidy at the level existing before the tariff concession. This eliminates the policy substitution problem between tariffs and subsidies discussed in Section 2. However, non-violation complaints are not enough to solve credibility problems when subsidies were inefficiently high at the time a tariff commitment was signed. The reason is clear: an excessive level of high subsidy would lead to resource misallocation, with over-investment in the preferred industry – a problem that *nullification* and *impairment* rules would not value.

Bagwell (2008).

Things are a bit more problematic for serious prejudice rules. Article 6.3 defines WTO illegal any subsidy that displaces or impedes imports independently of the existence of a tariff binding. Brou and Ruta (2009) show that these rules are efficient only when a tariff commitment is in place and the industry is not subject to market distortions. The idea is simple: if there are no tariff commitments, the removal of a subsidy can lead to a policy substitution towards tariffs –a sort of "chilling effect". Secondly, eliminating a subsidy that addresses domestic market failures in a sector where the tariff is bound can lead to inefficient production.

4. Conclusions

The regulation of domestic subsidies in the GATT/WTO system is a controversial issue and the object of an ongoing policy debate. At the Doha Ministerial Meeting in November 2001, WTO ministers stated that "*In the light of experience and of the increasing application of these instruments by Members, we agree to negotiations aimed at clarifying and improving disciplines under the Agreement on Subsidies and Countervailing Measures*" (paragraph 28 of the Doha Ministerial Declaration).

In this chapter we attempt to contribute to this debate by reviewing the theory on the efficient design of domestic subsidy rules in trade agreements. The terms of trade theory and the commitment approach get the same conclusions: in order to make tariff negotiations effective, subsidy rules are essential. Even if the result is the same, the reasons are different: the former considers subsidies as a means to manipulate terms-of-trade through an increase in the world supply of the imported good. The latter, by contrast, highlights how subsidies can generate domestic income redistributions from consumers to politically organized producers.

Therefore this theory highlights a key trade-off. On the one hand, weak rules on domestic subsidies may lead governments to inefficiently use these measures once tariffs are bound. On the other hand, however, excessive rigidity may inhibit tariff negotiations and induce governments to set tariffs at a level higher than what would be efficient. We believe that this economic approach provides a useful intellectual framework to interpret the current set of regulations embodied in the SCM Agreement and to think about possible directions of reform to the system.

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