

Gradualism, the Bicycle Theory, and Perpetual Trade Liberalization¹

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April 2001

ABSTRACT: This paper reviews the economic literature on why trade liberalization has been gradual. Part of the literature under review focuses on *unilateral* incentives to proceed with trade liberalization only gradually, based on market failure within the domestic economy. Another part looks at *multi-lateral* strategic interactions. This takes into account the fact that countries have a terms-of-trade based incentive to set tariffs, and as a result trade agreements must be sustainable by the threat of tariff retaliation. But it might be that no credible punishment exists to allow the maximum level of openness (not necessarily free trade) to be achieved in one step; trade liberalization must be gradual. This encompasses the possibility that if the liberalization process is stopped exogenously, then there may be a collapse back to higher levels of protectionism; dubbed the *bicycle theory* of gradual trade liberalization. Finally, *perpetual* trade liberalization is reviewed. This models the impact of the institutional constraints on breaching agreed tariff bindings, imposed partly by the WTO. As a result of these constraints, trade liberalization has two unique characteristics: (i) No ‘efficient’ tariff level exists at which liberalization stops. (ii) Some liberalization must occur in *every* period. This precludes free trade.

KEYWORDS. Gradualism, Perpetual trade liberalization, Trade agreement, World Trade Organization (WTO).

¹This is a literature overview drawing on background work for a paper titled ‘Perpetual Trade Liberalization’. I would like to thank my co-authors of that paper Ben Lockwood and John Whalley for many in-depth conversations, from which this present paper has benefitted. I would also like to thank Kar-*yi*u Wong for helpful comments and conversations about this area. Any errors, misunderstandings or oversights are my own. Support from the ESRC’s Centre for the Study of Globalisation and Regionalisation, University of Warwick, is gratefully acknowledged.

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1. Introduction

The experience of trade liberalization in the period since World War II has presented economists with two puzzles. First, tariffs have been cut gradually in successive rounds of negotiations under the General Agreement of Tariffs and Trade (GATT), now the World Trade Organization (WTO). Second, even in developed countries, free trade has remained stubbornly elusive, with average trade-weighted tariffs remaining at low but still positive levels.

Neither of these two facts sits well with simple textbook explanations of international trade. Under the conventional neo-classical view of international trade, in which countries are small on world markets and cannot affect their terms of trade, any trade intervention can be replaced by a more efficient alternative domestic policy. It follows that (in the absence of other distortions) trade interventions should be removed as quickly as possible.

Even when countries are large, and consequently take each others' actions into account when determining trade policy, a simple textbook view sees tariff setting between countries that can affect their terms of trade as a simple repeated Prisoner's Dilemma. Here it is individually rational for countries to impose tariffs, but collectively rational to abolish them. In practical terms, under this view we might have expected just one round of trade liberalization under the GATT to get close to global free trade.

Since the late 1970s a literature has developed to explain why world trade liberalization over the post-war period has been phased, requiring no less than eight rounds of trade talks under the GATT, spanning almost half a century. The purpose of this paper is to give an overview of this literature, drawing attention to the different ways of understanding aspects of the process. I will review each of these areas in the order that they were actually developed. The first explanations focused on market failures within the domestic economy to understand why a country might unilaterally have an incentive to liberalize gradually. The literature then moved on to take into account strategic incentives to understand why countries could not credibly commit to full liberalization immediately, but may be able to do so over time. These all focus on economic costs and benefits to liberalization that exist within the domestic economy. Finally, I will talk about a new paper in this area that I have written with Ben Lockwood and John Whalley, that

shows why phased trade liberalization is a direct result of the international institutional constraints imposed on countries' ability to breach tariff bindings, set up initially by the GATT and now adopted by the WTO.

2. Unilateral Gradualism

Early contributions were made from the traditional neo-classical standpoint. They tried to explain why a country would *unilaterally* (i.e. independently of behavior of other countries) wish to gradually reduce its import tariffs, based on various types of market failure within the domestic economy. The first kind of explanation for unilateral gradualism is driven by the assumption that there are costs of adjustment in moving resources out of import-competing industries to other activities (Leamer 1980, Mussa 1986). Mussa explicitly assumes convex costs of adjustment in a multi-period setting, so it follows directly that adjustment should be gradual, and the costs of adjustment are implicitly convex in Leamer.

Focusing on Mussa's explanation of unilateral gradualism, a link is drawn between the rate at which a sector contracts - due to trade liberalization - and the unemployment rate. Convexity, in this context, means that the rate of unemployment rises more than proportionally to the rate of sectoral contraction. It follows that there is an optimal gradual rate of trade liberalization. If liberalization proceeds 'too quickly', then the cost to society through unemployment is greater than the standard efficiency gains through liberalization. Mussa's approach might be criticized because unemployment in his model is not well founded in micro theory. But it is probably fair to say that there is still no general agreement on the micro-foundations of unemployment. So Mussa's starting point of simply assuming a link between sectoral contraction and unemployment, then examining the implications, has been accepted as a worthwhile and interesting contribution in this area³.

Unilateral gradualism can also be explained by the political economy of tariff adjustment in declining industries. Cassing and Hillman (1986) have a model where, following

³Leamer's adjustment cost, measured in labour units, is proportional to the number of workers who move out of the import-competing sector. But as output is a concave function of output, adjustment costs measured in units of output are convex i.e. a 1% of the number of workers moving leads to more than a 1% decrease in output.

an exogenous negative shock in the world price, the import-competing sector can lobby the government for tariff protection. The level of the tariff is assumed to depend positively on the current level of employment in the sector. However, they focus on industry collapse (with the tariff falling to zero) rather than on gradual adjustment. Brainard and Verdier(1994) endogenize the relationship between employment and tariff via an explicit model of lobbying and find that adjustment will be gradual (i.e. both the import tariff and employment in the declining industry fall gradually over time). However, the Brainard and Verdier model has strictly convex costs of adjustment, so a social planner would also choose gradualism. Free trade is generally consistent with theories of unilateral gradualism.

3. Multilateral Gradualism and the Bicycle Theory

One crucial aspect overlooked by all models of unilateral gradualism is the terms-of-trade motivation for tariff setting. It has long been recognized that when countries have purchasing power on world markets, they can use it to improve their terms of trade using trade interventions like tariffs. Only relatively recently have developments in game-theory presented trade theorists with a range of conceptual tools for thinking about the strategic interactions that result.

The valuable thing about an explanation for gradualism that is fundamentally multilateral is that it provides a way of rationalizing the GATT process, whereby trade liberalization is achieved in a series of trade rounds. Although informal and anecdotal explanations have existed to justify the GATT process for at least as long as the institution itself has existed, a formal model had not been advanced until the relatively recent developments in this literature.

Taking account of each country's own incentive to set tariffs, it is well understood that any trade agreement must be *self-enforcing*. The standard mechanism is an agreed punishment against countries that renege. This punishment must be credible. For example, if everyone knows that an optimal tariff allows at least some trade, then it would not be credible for any one country to threaten to sever all trade relations. The same incentive to deviate from no-trade exists as to deviate from free trade.

The new literature on gradual trade liberalization plays on the credibility of threatened punishments in a trade agreement, and the way that these can change as a result of the liberalization process. Different motivations have been put forward by Staiger(1995), Devereux(1997), Furusawa and Lai(1999)). The general idea is that initially, full liberalization cannot be self-enforcing, as the benefits of deviating from free trade are too great to be offset by any credible punishment. But if there is partial liberalization, structural economic change reduces the benefits of deviation from further trade liberalization (and/or raises the costs of punishment to the deviator). The individual papers differ in their description of the structural change induced by partial liberalization. Staiger(1995) endows workers in the import competing sector with specific skills, making them more productive there than elsewhere in the economy. When they move out of this sector, they lose their skills with some probability. In Devereux(1997), there is dynamic learning-by-doing in the export sector. In Furusawa and Lai(1999), there are adjustment costs incurred when labor moves between sectors. Because of the existence of adjustment costs, adjustment is not eventually to free trade in Furusawa and Lai, but to a positive tariff where the marginal world benefit from tariff reduction is equal to the resulting marginal cost of adjustment (Furusawa and Lai, Section 3). In Staiger (1995) and Devereux (1997) uninterrupted liberalization eventually results in free trade.

One idea that has been associated with gradualism is that if negotiating rounds fail then there will be a collapse back to higher levels of protectionism. This idea was first discussed informally by Bergsten (1975, page 209-24), and dubbed the ‘bicycle’ theory by Bhagwati (1988), who borrowed the term from policy circles. The issue was first addressed formally by Staiger (1995), whose model has the property that if a round of trade liberalization fails then protectionism does indeed escalate back to the level of the previous round. However, the exact nature of the factors that give rise to gradualism fundamentally affect the specific characteristics of the liberalization process. Other theories where trade liberalization is gradual do not exhibit a collapse back to higher levels of protectionism if negotiating rounds fail.

The combination of tariff-liberalization-induced resource reallocation and the ‘use-it-or-lose-it’ sector specific skills in Staiger (1995) delivers a prediction of gradualism that confirms the bicycle theory. Contrastingly, the combination of tariff liberalization

induced resource reallocation and adjustment costs in Devereux(1997) and Furusawa and Lai (1999) mean that if the trade liberalization process is stopped by some unforeseen event then it is worthwhile and credible for all countries to commit to the maintenance of openness levels achieved up to that point.

4. Perpetual Trade Liberalization

Upon completion of the Uruguay Round, the eighth in GATT's history, the Director General, Peter Sutherland, had this to say:

“The new agreements, the new rules and structures it sets up - all mean a commitment to a continuing process of cooperation and reform.”

(*Focus GATT Newsletter* 105, 5)

Whilst the literature referred to above explains why liberalization may be gradual, Lockwood, Whalley and Zissimos (2001) propose a framework in which the process is motivated by political costs at the *international* level, resulting in a theory of ‘perpetual trade liberalization’.

Perpetual trade liberalization has two characteristics that do not exist in any other theory of trade liberalization as far as we know. First, no ‘efficient’ tariff level exists at which liberalization stops. Therefore, participants make ‘...a commitment to a continuing process of cooperation...’. Second, some liberalization must occur in *every* period along the liberalization path⁴.

The motivation for perpetual trade liberalization depends on the restriction of agents’ ability to cheat on the agreement, and on their ability to punish deviators. As explained above, the incentive to cheat, and the ability to punish are the two key factors conventionally thought to be necessary for a trade agreement in a repeated game. In real life, institutional constraints limit the actions of countries in both these respects. The formal approach of Lockwood, Whalley and Zissimos (2001) is to ask whether an agreement

⁴In other theories, where trade liberalization is gradual, there are equilibrium paths in which trade liberalization can occur in every period between the initial reduction and the final efficient tariff. But unlike for perpetual trade liberalization, this is not necessarily a feature of the process.

is actually possible under a polemical extreme in which both the costs of cheating on an agreement and on the ability to punish are higher than the terms of trade benefits from doing so. The answer is that an agreement is possible, but that trade liberalization becomes ‘perpetual’ as a result.

Limiting the costs of cheating in the first place, Article 2 of GATT (1994) in the Charter of the WTO specifies that a schedule of commitments be maintained. Results of tariff negotiations are dutifully recorded as scheduled commitments in the form of tariff bindings; a permanent and irrevocable commitment that tariffs will never rise above bound levels for the product in question. Tariff bindings under GATT/WTO *de facto* have acquired the status of an international commitment comparable to that of other international treaties. Bindings, if committed to, effectively slot into a box of enshrined cross country commitments comparable to military and diplomatic treaties. Violation of tariff bindings brings into question the soundness of a country’s financial commitments, its trustworthiness in strategic and military matters, its diplomatic reputation. Violating tariff bindings has large costs outside the tariff area. In this spirit, we assume that the political costs of raising tariffs above agreed bindings are higher than the terms of trade gains from doing so. Consequently, deviants cannot credibly threaten to raise tariffs against other countries; the worst that they can do is to fail to implement newly agreed measures.

Limiting the ability of countries to retaliate is the GATT/WTO ruling on the ‘Withdrawal of equivalent concessions’ which stipulates that retaliation is not allowed to go beyond the violation by the deviating country. If the political costs incurred by deviants mean that they do not raise tariffs, the worst punishment allowable by retaliating nations is to also suspend implementation of further liberalization measures. If retaliatory action goes further than this then it is assumed to incur the same political costs as an initial violation of tariff bindings. Unlike in the traditional theory of repeated tariff games, reversion to ‘optimal tariffs’ may be ‘too costly’ as a strategy of punishment in our model.

If the worst credible action both by deviators and by retaliators is simply to halt liberalization, it turns out that any (subgame-perfect) efficient equilibrium path of tariff reductions must involve perpetual liberalization and a positive asymptotic tariff. The reasoning is as follows. Each negotiating party must not concede too much in each round

of reductions. If they do, their partners in negotiation will renege on the reductions agreed in this round (and implicitly those that would have happened in the future), safe in the knowledge that they will not be punished because the costs of doing so are too high. Now, there are any number of such efficient equilibrium paths; the key point is that every single one of them exhibits perpetual trade liberalization. The most efficient tariff path is the one where the maximum possible liberalization is achieved without inducing partners to renege.

There is a very important point in this. Free trade cannot be reached in equilibrium. This is because the only mechanism to maintain currently negotiated market access concessions in the absence of a punishment is the promise of future tariff reductions. Put figuratively, countries lose the stick and have only carrots, so there must be a future supply of carrots at all times.

Our model is innovative in that the efficient tariff reduction path necessarily implies ongoing trade liberalization *ad infinitum*; tariffs are cut in *every* period. Momentum is important in the process because current liberalization is always motivated partly by the prospect of more liberalization in the future. As a result, if there is no prospect for future trade negotiations, current liberalization must cease as well. For example, suppose that a disagreement in some area not directly related to trade, such as international security or the environment, threatens a breakdown of cooperation in the future between two nations. Then under our model it may be rational to hold back on liberalization efforts not just in the future but today as well. Suspension of trade relations in response to seemingly unrelated international issues is often threatened or even enacted in the political arena⁵.

At the time of writing, some commentators say that the collision between a US and Chinese military aircraft threatens to descend into a new cold war. Just one week after the crisis broke, some US senators were already advocating a suspension of normal trading relations with China, and blocking their entry to the WTO. (“Seeing red” *Economist* 7th April, 2001). Dependency of current concessions on future liberalization has not featured in previous theories of gradual trade liberalization.

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5. Conclusions

The purpose of this paper has been give an overview on the literature that exists to explain why trade liberalization is gradual. This is particularly useful because it gives us a way of understanding why trade liberalization under the GATT has taken so long.

One less than satisfactory aspect of the analysis undertaken by Lockwood, Whalley and Zissimos (2001) is that the political costs of tariff reversals are not firmly micro-founded. However, it is clear that such costs exist and are very important in the international arena. And no theory exists of which we are aware that enables such costs to be taken into account. Therefore, in the absence of such a theory, we believe that it is worthwhile to simply assume that such costs exist in order to examine their consequences, rather than ignore their impact because they cannot be fully motivated.

A current example appears to highlight the potential importance of perpetual trade liberalization. Recall that a key consequence of perpetual trade liberalization is that liberalization today depends critically on future promises of increased market access. When countries loose the ability to raise protectionism, all they have to keep current liberalization on track is the promise of future concessions. Consequently, if factors exogenous to trade threaten future international relations, then trade talks stop immediately. This seems to be a particularly important observation at the time of writing. Some commentators have suggested that a crisis provoked between China and the US by the collision between military aircraft may provoke a descent into cold war. Consequently, trade relations appear to have been the first (not directly related) area to be threatened as a result. Perpetual trade liberalization can explain why. If cold war were to result in the future, putting a halt to trade liberalization, then it is rational to suspend current negotiations as well. This appears to be a very promising research area for the future.

Another promising direction would involve a weakening of the symmetry assumptions made throughout this literature, to allow trade block formation to be considered. The theory of repeated games has been used to study trade block formation, where a preferential trade agreement is supported by the credible threat of punishment. In a recent paper using a repeated game framework Bond, Syropoulos and Winters (2001) point out that trade liberalization within the European Union has been very slow. It may be that

our framework provides a way of understanding gradualism between members.

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